FINAL
DRAINAGE STUDY

CABEZON COMMONS
CABEZON TRACT 11
COMMERCIAL PROPERTY

Rio Rancho Estates Unit 16
Rio Rancho, New Mexico

for

CURB NORTH, LLC.
5160 SAN FRANCISCO NE
ALBUQUERQUE, NEW MEXICO 87109

March 13, 2008

Prepared By:

HUITT-ZOLLARS, Inc.
333 RIO RANCHO DRIVE NE, SUITE 101
RIO RANCHO, NEW MEXICO
(505) 892-5141

FINAL
DRAINAGE STUDY

CABEZON COMMONS
CABEZON TRACT 11
COMMERCIAL PROPERTY

I, Scott A. Eddings, being first duly sworn, upon my oath state that I am a registered professional engineer, qualified in Civil engineering, and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.

Registered Professional Engineer

DRAINAGE STUDY
FOR
CABEZON COMMONS
TRACT 11 COMMERCIAL PROPERTY

TABLE OF CONTENTS

APPENDICES

FINAL DRAINAGE STUDY
FOR
CABEZON COMMONS

PURPOSE

This drainage report addresses the storm water runoff and proposed infrastructure needed to convey the runoff from the Tract 11 Commercial Property of the Cabezon Redevelopment. This report will also demonstrate that the development of this project complies with the approved Cabezon Communities Phase I Drainage Management Plan and the Cabezon Communities Drainage Implementation Plan.

PROJECT LOCATION AND DESCRIPTION

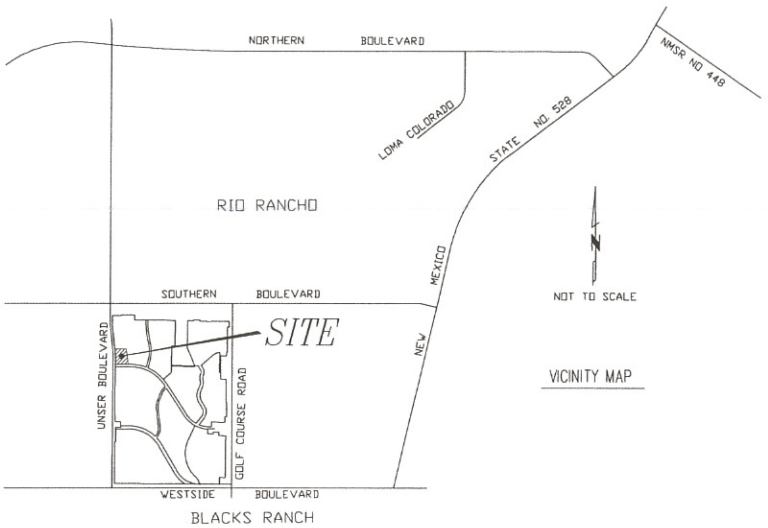


Exhibit 1 – Vicinity Map

The project is located at the northeast corner of the intersection of Unser Boulevard and Cabezon Boulevard. See **Exhibit 1**. The site is a commercial tract that is currently undeveloped but has been cleared of natural vegetation. The development is bounded by; The Yucatan at Cabezon subdivision to the north and east, Cabezon Blvd to the south and Unser Blvd to the west.

ZONING AND PLATTING STATUS

The zoning for this project is C-1, Commercial, of approximately 10.36 acres. The project is located in Tract 11 within Rio Rancho Estates Unit 16. The site is being re-platted to subdivide the property and this report is an attachment to the Preliminary Plat submittal for this project.

FLOOD HAZARD ZONES

Per FEMA's Flood Insurance Rate Map (FIRM) 35043C0894 C, dated July 16, 1996, no portion of the project site is located within a FEMA 100-year Flood Hazard Zone. See **Appendix A-1**.

JURISDICTIONS OF PUBLIC AGENCIES

Local

This project is located entirely within the City of Rio Rancho (CoRR) Municipal Limits and is therefore within their jurisdiction and must comply with the City's development requirements.

Regional

This project is located within the jurisdiction of the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA) and is therefore subject to their review.

RELATED REPORTS

The ***Cabezon Communities Phase I Drainage Management Plan (DMP)*** prepared by Wilson & Company, Engineers & Architects and dated February 2004. This study provides an overall drainage plan for this area, based on the Cabezon Communities Master Plan. The City and SSCAFCA approved the report. It determined the pre-developed drainage patterns for the area and the conceptual design for storm drain facilities in Cabezon.

The ***Cabezon Communities Drainage Implementation Plan (DIP)*** prepared by Wilson & Company, Engineers & Architects and dated February 19, 2004. This study provides permissible discharge rates for individual tracts and details the major infrastructure for the development.

The ***Final Drainage Study, Cabezon Redevelopment, Yucatan at Cabezon Subdivision*** prepared by Huitt-Zollars, Inc. and dated June 29, 2004. This study analyzed the developed runoff for Tract 3, which lies north and east of Tract 11. A review of this study indicates that Tract 3 is discharging less than allowed by the DMP. This finding was used as the basis for increasing the allowed discharge from Tract 11.

METHODOLOGY

This drainage study is based on the procedures outlined in the CoRR's "Grading and Drainage Design Requirements and Policies for Land Development in Rio Rancho (Revised 3-18-93)." That policy states, "The minimum criteria for hydrology and hydraulic calculations and design shall be as described in the Development Process Manual Section 22.2, City of Albuquerque (CoA DPM), latest revision, or the AHYMO version of the ARS HYMO Computer Program." This drainage study follows the procedures outlined in both the CoA DPM Section 22.2 and the AHYMO Computer Program.

PRECIPITATION

Because this project will utilize an on-site detention pond, the 100-yr 24-hr design storm was used for this analysis. The AHYMO Computer Program requires the 1, 6 and 24-hour precipitation values. These values were obtained from the ***Cabezon Communities Phase I DMP*** and are shown on **Table 1**.

Table 1
Precipitation Values

Return Period (yrs)	24 hr Rainfall (in)	6 hr Rainfall (in)	1 hr Rainfall (in)
100	2.7	2.2	1.8

LAND TREATMENTS

The land treatments used in the AHYMO Computer model are as described by Table A-4 of the CoA DPM Section 22.2, 1993 revision, and are summarized in **Table 2**.

Table 2
Land Treatment Classifications

Treatment	Land Condition
A	Soil uncompacted by human activity with 0 to 10 percent slopes. Native grasses, weeds and shrubs in typical densities with minimal disturbance to grading, groundcover and infiltration capacity. Croplands. Unlined Arroyos.
B	Irrigated lawns, parks and golf courses with 0 to 10 percent slopes. Soil uncompacted by human activity with slopes greater than 10 percent and less than 20 percent.
C	Soil compacted by human activity. Unpaved parking, roads and trail. Most vacant lots. Gravel or rock on plastic (desert landscaping)
D	Impervious areas, pavement and roofs.

The land treatments for Tract 11 were taken from the **Cabezon Communities Phase 1 DMP** and are as follows. **Historic**; **%A = 95, %B = 5, %C = 0, and %D = 0. Developed; %A = 0, %B = 0, %C = 15, %D = 85**.

STORM DRAIN HYDRAULICS

Storm Drains were modeled using Haestad Method's "StormCad" software. Head losses were entered based on the coefficients used in the Standard Method. The storm drain was designed based on peak discharges as indicated in the AHYMO model and the storm drain design is included in **Appendix D**.

EXISTING PRE-DEVELOPMENT CONDITIONS

The project site has been cleared of most vegetation and is rough graded. The site generally slopes from northwest to southeast. Runoff currently sheet flows off the site and into Cabezon Boulevard, where it is collected by an existing storm drain system. The existing storm drain for Cabezon Blvd is a 36" RCP, which lies behind the curb, on the north side of the street. It collects runoff via a series of grate inlets in the median of the street. Cabezon Blvd is reverse-crowned to facilitate the collection of runoff into the inlets.

A review of the ***Final Drainage Study, Cabezon Redevelopment, Yucatan at Cabezon Subdivision*** indicates that the discharge from Tract 3 is less than that allowed by the ***Cabezon Communities Phase I DMP***. Based on this finding, it was

determined that Tract 11 would be allowed to discharge more than allowed by the DMP, to make up the difference from Tract 3.

ULTIMATE DEVELOPED CONDITIONS

The runoff from the commercial development will be collected by an on-site detention pond (**Pond A**) at the southeast corner of the property. A 24" RCP outfall pipe will drain **Pond A** into the existing storm drain system on the north side of Cabezon Blvd. This storm drain continues east on Cabezon Blvd, turns south on Trail Side Road and drains into the existing detention pond in Tract 17. The operation of **Pond A** is shown in **Table 3**.

Table 3
Onsite Detention Pond A 100-Yr Flood Routing Summary

Data / Result Description	Unit	DETENTION POND
Detention Pond AHYMO Hydrograph Number		POND.A
Return Period / Duration	Yr/ Hr	100/24
Total Drainage Area	Mi^2	0.0154
Inflow Time to Peak	Hrs	1.50
Inflow Peak Discharge	Ft^3/s	44.4
Inflow Total Runoff Volume	Ac-ft	2.04
Outflow Time to Peak	Hrs	1.65
Outflow Peak Discharge	Ft^3/s	26.59
Outflow Maximum Storage Volume at Peak	Ac-ft	0.4161
Outflow Total Runoff Volume	Ac-ft	2.04
Dead Storage Volume	Ac-Ft	N/A
Total Reservoir Storage Time	Hrs	24.00
Reservoir Invert Elevation	Ft	5322
Emergency Spillway Elevation	Ft	5326.5
Top of Embankment Elevation	Ft	5326.5
Maximum Water Surface Elevation	Ft	5325.59
Maximum Water Depth	Ft	3.59

CONCLUSION

Table 4 compares the findings of the analysis of Tract 11 with the results of both the approved ***Cabezon Communities Phase I Drainage Management Plan*** and the ***Cabezon Communities Drainage Implementation Plan.*** This comparison also includes Tract 3 in order to compare the total allowed runoff for the two Tracts to the actual discharge.

Table 4
Runoff Comparison for Tracts 3 & 11

Description	Tract 3 100-Yr Peak Discharge (Ft^3/s)	Tract 11 100-Yr Peak Discharge (Ft^3/s)	Total 100-Yr Peak Discharge (Ft^3/s)
Wilson & Co. DMP	270	14	284
Wilson & Co. DIP	270	14	284
HZI Plan	256	26.59	282.59

As **Table 4** shows, the Wilson & Co. DMP allows for 14 cfs discharging from Tract 11 and 270 cfs discharging from Tract 3. The discharge from the developed Tract 11 is 26.59 cfs, and the discharge from the developed Tract 3 is 256 cfs. Since the total discharge of 282.59 is less than the total allowed discharge of 284 cfs, this report does comply with both the ***Cabezon Communities Phase I Drainage Management Plan*** and the ***Cabezon Communities Drainage Implementation Plan.***

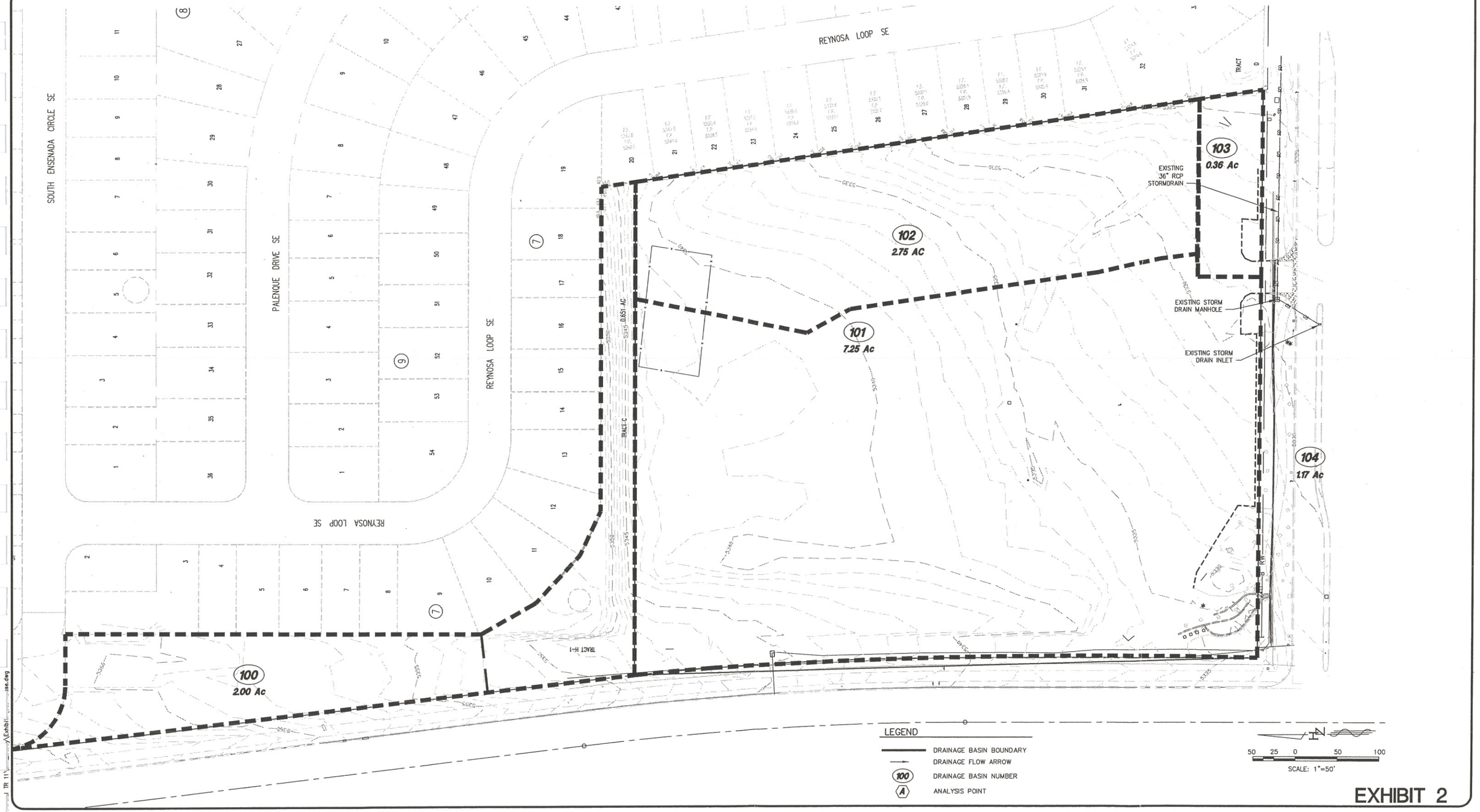


EXHIBIT 2

Designed For:

CURB NORTH, LLC

EXISTING BASIN MAP

CABEZON COMMONS
RIO RANCHO, NM

Designed By:

HUITT-ZOLLARS
Huitt-Zollars, Inc. Rio Rancho
333 Rio Rancho Drive NE, Suite 101
Rio Rancho, New Mexico 87124
Phone (505) 892-5141 Fax (505) 892-3259

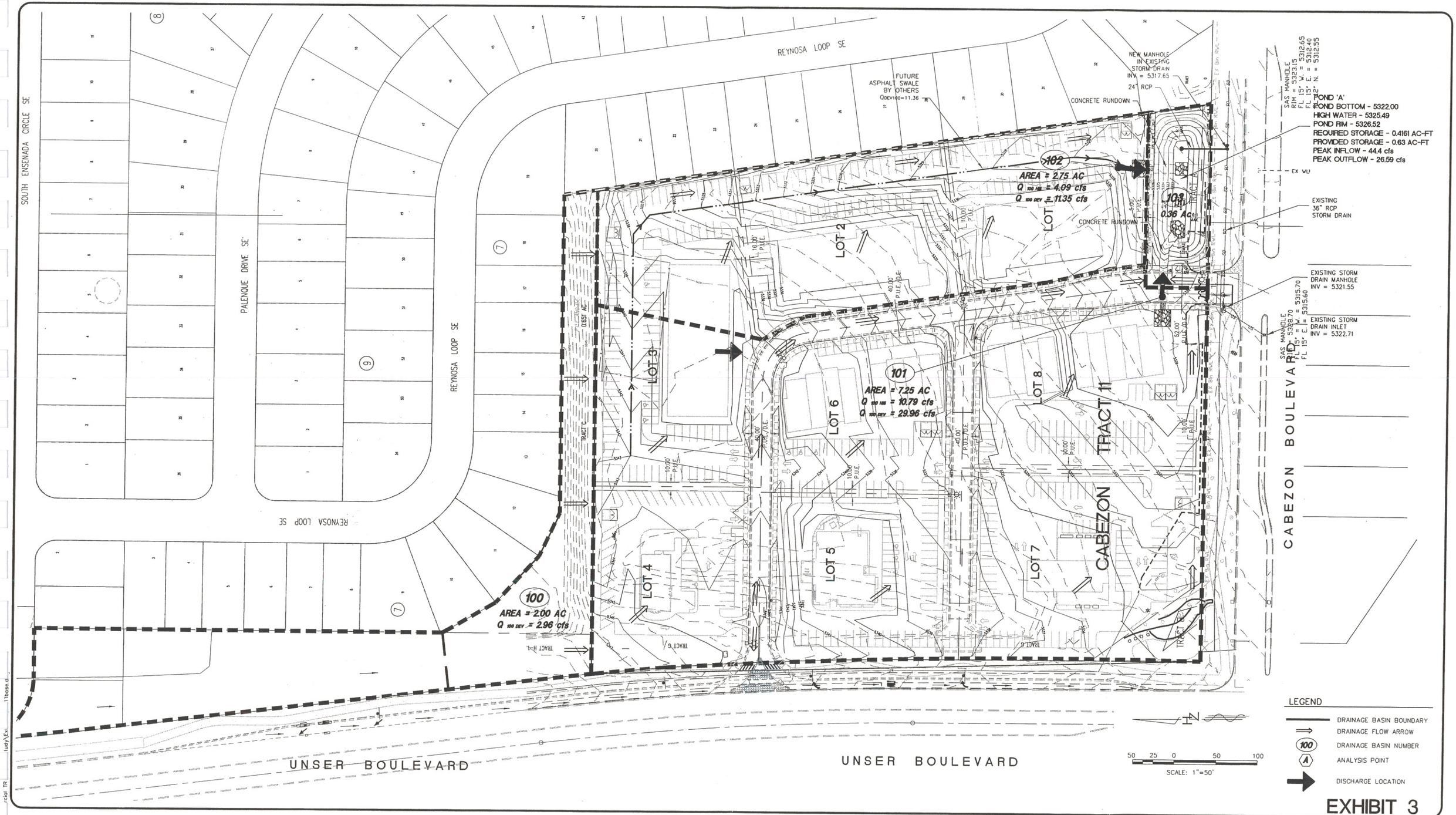


EXHIBIT 3

Designed For:

CURB NORTH, LLC.

DEVELOPED BASIN MAP

CABEZON TRACT 11
RIO RANCHO, NM

Designed By:

HUITT-ZOLLARS

Huitt-Zollars, Inc. Rio Rancho
333 Rio Rancho Drive NE, Suite 101
Rio Rancho, New Mexico 87124
Phone (505) 892-5141 Fax (505) 892-3259

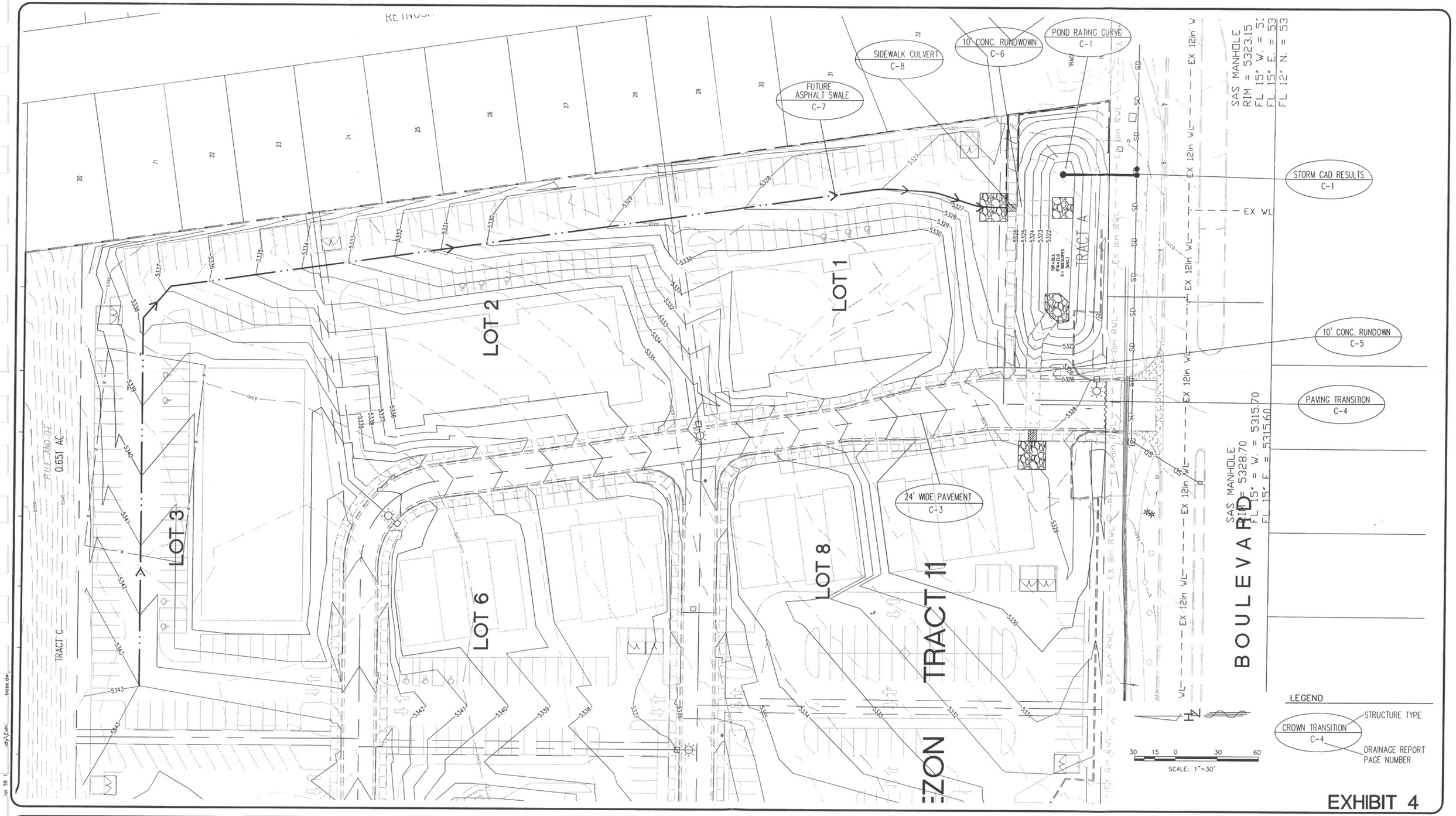


EXHIBIT 4

Designed For:

CURB NORTH, LLC.

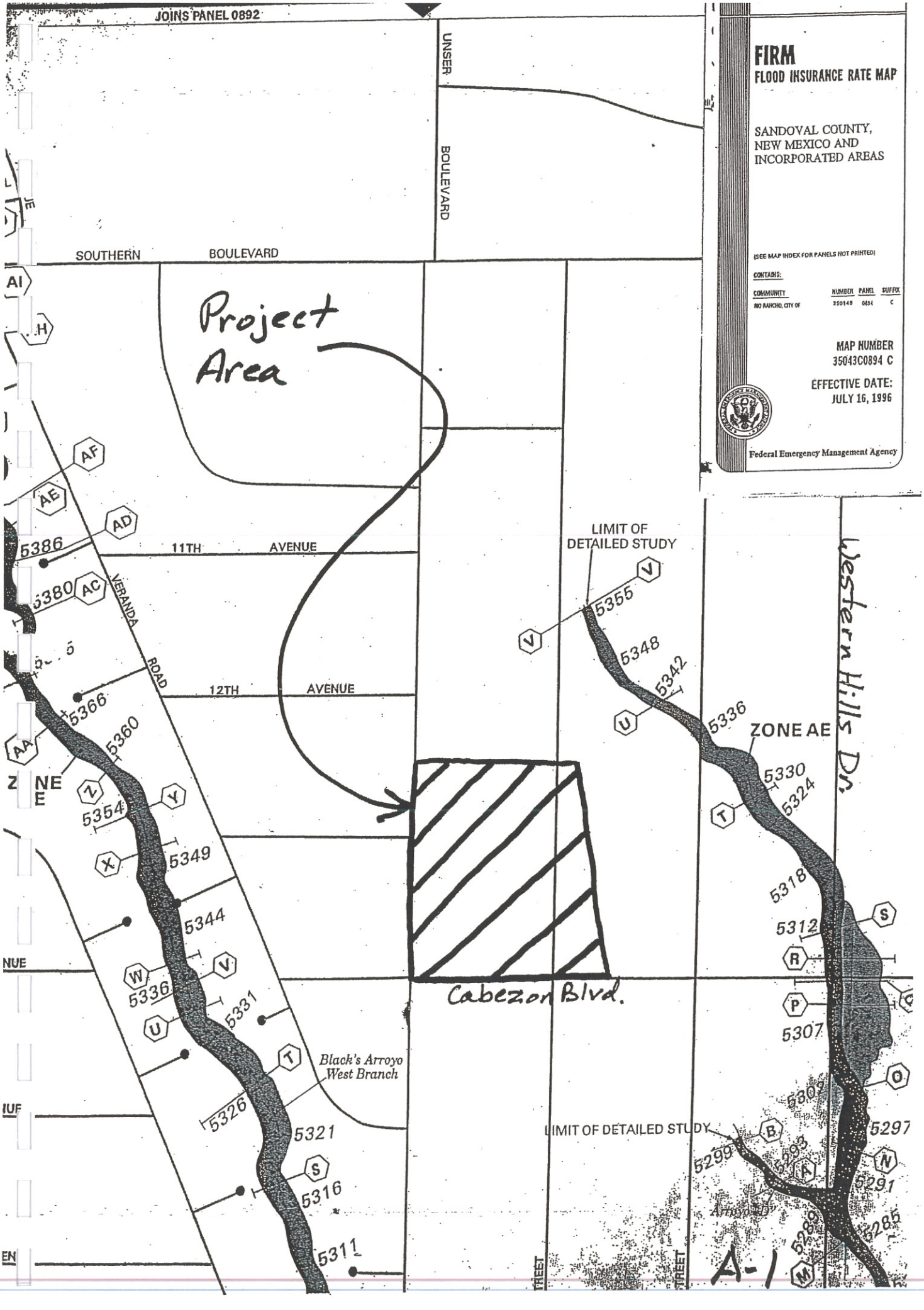
HYDRAULIC STRUCTURES

CABEZON TRACT 11
RIO RANCHO, NM

Designed By:

HUITT-ZOLLARS

Huitt-Zollars, Inc. Rio Rancho
333 Rio Rancho Drive NE, Suite 101
Rio Rancho, New Mexico 87124
Phone (505) 892-5141 Fax (505) 892-3259


JOINS PANEL 0892
UNSER BOULEVARD
SOUTHERN BOULEVARD
FIRM
FLOOD INSURANCE RATE MAP
SANDOVAL COUNTY, NEW MEXICO AND INCORPORATED AREAS
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
RIO RANCHO, CITY OF 350140 0894 C
MAP NUMBER 35043C0894 C
EFFECTIVE DATE: JULY 16, 1996
Federal Emergency Management Agency
Project Area
11TH AVENUE
12TH AVENUE
VERANDA ROAD
LIMIT OF DETAILED STUDY
ZONE AE
Western Hills Dr.
Cabezon Blvd.
Black's Arroyo West Branch
Arroyo "D"
5386
5380
5366
5360
5354
5349
5344
5336
5331
5326
5321
5316
5311
5355
5348
5342
5336
5330
5324
5318
5312
5307
5299
5297
5291
5285
A-1

Cabezon Tract 11
100-Year 24-Hour Duration Storm
AHYMO Summary File

```
 67h8.5v0T_&18D
 YMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c     RUN DATE (MON/DAY/YR) =08/13/2007
 ,PUT FILE = G:\Proj\170568~1\DRN_ST~1\AHYMO\CAB11--1.DAT                           USER NO.= AHYMO-I-9702a01000150-SH

                                                       PEAK        RUNOFF                TIME TO    CFS      PAGE =   1
                                 FROM  TO                                                 
                     HYDROGRAPH  ID    ID      AREA    DISCHARGE   VOLUME    RUNOFF     PEAK      PER
COMMAND          IDENTIFICATION  NO.   NO.   (SQ MI)    (CFS)      (AC-FT)  (INCHES)   (HOURS)   ACRE       NOTATION

                                                                                                          TIME=       .00
START
LOCATION                        RIO RANCHO
*S
*S    CABEZON TRACT 11 COMMERCIAL
*S
*S    FN:CAB11-COMM.DAT  -  HYMO PER JAN 1997 DPM REVISIONS
*S
*S
*S                                                                                                        RAIN24=   2.700
RAINFALL  TYPE= 2
*S***************************************************************
*S BULK FOR SEDIMENT - HISTORIC                                                                           PK BF =    1.18
SEDIMENT BULK
*S----------------------------------------------------------------
*S COMPUTE OFFSITE BASIN HISTORIC
COMPUTE NM HYD      100.HIS   -     1      .00310       2.96     .084     .50620   1.500    1.493 PER IMP=    .00
*S----------------------------------------------------------------
*S COMPUTE ONSITE BASIN HISTORIC
COMPUTE NM HYD      101.HIS   -     2      .01131      10.79     .305     .50620   1.500    1.490 PER IMP=    .00
*S----------------------------------------------------------------
*S COMPUTE ONSITE BASIN HISTORIC
COMPUTE NM HYD      102.HIS   -     3      .00428       4.09     .116     .50620   1.500    1.492 PER IMP=    .00
*S----------------------------------------------------------------
*S COMPUTE ONSITE POND DEVELOPED
COMPUTE NM HYD      PONDA.DEV -    12      .00006        .13     .004    1.12644   1.500    3.509 PER IMP=    .00
*S----------------------------------------------------------------
*S BULK FOR SEDIMENT - DEVELOPED                                                                          PK BF =    1.05
SEDIMENT BULK
*S----------------------------------------------------------------
*S COMPUTE ONSITE BASIN DEVELOPED
COMPUTE NM HYD      101.DEV   -    10      .01131      29.96    1.415    2.34567   1.500    4.139 PER IMP=  85.00
*S----------------------------------------------------------------
*S COMPUTE ONSITE BASIN DEVELOPED
COMPUTE NM HYD      102.DEV   -    11      .00428      11.35     .535    2.34567   1.500    4.142 PER IMP=  85.00
*S----------------------------------------------------------------
*S ADD HISTORIC OFFSITE BASIN 100 TO DEVELOPED ONSITE BASIN 101
ADD HYD                  20.00 1&10  20    .01441      32.92    1.499    1.94992   1.500    3.569
 ----------------------------------------------------------------
   ADD ID 20 TO BASIN 102
.DD HYD                  21.00 11&20 21    .01869      44.27    2.034    2.04053   1.500    3.701
*S----------------------------------------------------------------
*S ADD ID 21 TO POND
ADD HYD                  22.00 21&12 22    .01875      44.40    2.038    2.03760   1.500    3.700
*S----------------------------------------------------------------
*S ROUTE THROUGH POND.A
ROUTE RESERVOIR         POND.A   22   7    .01875      26.59    2.038    2.03760   1.650    2.216 AC-FT=    .416
*S------------------------------------------------------------------
*S COMPUTE OFFSITE BASIN DEVELOPED
COMPUTE NM HYD      103.DEV   -     8      .00183       4.94     .237    2.42469   1.500    4.222 PER IMP=  90.00
*S----------------------------------------------------------------
*S ADD POND.A TO CAB.BLVD
ADD HYD             STORMDRAIN  7& 8  9    .02058      29.85    2.274    2.07199   1.600    2.266
*S------------------------------------------------------------------
FINISH
_(s0p10h4099T_&16D__
```


01/11/08 1:23 PM
?:\Proj\17056801-Cabezon Commercial TR 11\Drn_Study\AHYMO\ahymosum-CAB11.doc

Cabezon Tract 11
100-Year 24-Hour Duration Storm
AHYMO Output File

```
 67h8.5v0T_&18D

    AHYMO PROGRAM (AHYMO_97) -                        - Version:  1997.02c
         RUN DATE (MON/DAY/YR) = 08/13/2007
         START TIME (HR:MIN:SEC) = 10:24:39     USER NO.= AHYMO-I-9702a0100015O-SH
         INPUT FILE = G:\Proj\170568~1\DRN_ST~1\AHYMO\CAB11--~1.DAT

START                TIME=0.0 CODE 0 LINES -6
LOCATION             RIO RANCHO
     City of Rio Rancho soil infiltration values (LAND FACTORS) used for computations.
     Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
          A             0.65                  1.67
          B             0.50                  1.25
          C             0.35                  0.83
          D             0.10                  0.04

*S
*S    CABEZON TRACT 11 COMMERCIAL
*S
*S    FN:CAB11-COMM.DAT  -  HYMO PER JAN 1997 DPM REVISIONS
*S
*S
*S
RAINFALL             TYPE=-2  RAIN QUARTER=0.0  RAIN ONE=1.8
                     RAIN SIX=2.2      RAIN DAY=2.7      DT=.05

               COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =    .050000 HOURS       END TIME =    24.000000 HOURS
*
*S**************************************************************
*S BULK FOR SEDIMENT - HISTORIC
SEDIMENT BULK            CODE=1    BULK FACTOR=1.18
*S---------------------------------------------------------------
*S COMPUTE OFFSITE BASIN HISTORIC
COMPUTE NM HYD         ID=1 HYD=100.HIS AREA=0.0031 SQ MI
                       %A=95 %B=5 %C=0 %D=0 TP=0.133 HR
                       MASS RAINFALL=-1

     K =   .163419HR    TP =   .133000HR    K/TP RATIO =  1.228711     SHAPE CONSTANT, N =  2.898105
     UNIT PEAK =   6.3726    CFS   UNIT VOLUME =    .9961       B =   273.41      P60 = 1.8000
     AREA =      .003100 SQ MI    IA =    .64250 INCHES    INF =   1.64900 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.18000 AT PEAK FLOW.

PRINT HYD              ID=1 CODE=10

                                   HYDROGRAPH FROM AREA 100.HIS

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000        .0          1.000       .0          2.000        .3         3.000        .0         4.000        .0
     .500        .0          1.500      3.0          2.500        .1         3.500        .0

    RUNOFF VOLUME =      .50620 INCHES     =        .0837 ACRE-FEET
    PEAK DISCHARGE RATE =       2.96 CFS  AT   1.500 HOURS   BASIN AREA =   .0031 SQ. MI.


*S---------------------------------------------------------------
*S COMPUTE ONSITE BASIN HISTORIC
COMPUTE NM HYD         ID=2 HYD=101.HIS AREA=0.01131 SQ MI
                       %A=95 %B=5 %C=0 %D=0 TP=0.133 HR
                       MASS RAINFALL=-1

     K =   .163419HR    TP =   .133000HR    K/TP RATIO =  1.228711     SHAPE CONSTANT, N =  2.898105
     UNIT PEAK =   23.250    CFS   UNIT VOLUME =    .9977       B =   273.41      P60 = 1.8000
     AREA =      .011310 SQ MI    IA =    .64250 INCHES    INF =   1.64900 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.18000 AT PEAK FLOW.

PRINT HYD              ID=2 CODE=10

                                   HYDROGRAPH FROM AREA 101.HIS

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000        .0          1.000       .0          2.000       1.0         3.000        .1         4.000        .0
     .500        .0          1.500      10.8         2.500        .4         3.500        .0         4.500        .0

    RUNOFF VOLUME =      .50620 INCHES     =        .3053 ACRE-FEET
    PEAK DISCHARGE RATE =      10.79 CFS  AT   1.500 HOURS   BASIN AREA =   .0113 SQ. MI.


*S---------------------------------------------------------------
*S COMPUTE ONSITE BASIN HISTORIC
COMPUTE NM HYD         ID=3 HYD=102.HIS AREA=0.00428 SQ MI
                       %A=95 %B=5 %C=0 %D=0 TP=0.133 HR
                       MASS RAINFALL=-1

     K =   .163419HR    TP =   .133000HR    K/TP RATIO =  1.228711     SHAPE CONSTANT, N =  2.898105
     UNIT PEAK =   8.7983    CFS   UNIT VOLUME =    .9967       B =   273.41      P60 = 1.8000
```

```
     AREA =      .004280 SQ MI    IA =     .64250 INCHES     INF =   1.64900 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.18000 AT PEAK FLOW.

PRINT HYD             ID=3 CODE=10

                                    HYDROGRAPH FROM AREA 102.HIS

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000       .0          1.000       .0         2.000        .4         3.000        .0         4.000        .0
     .500       .0          1.500      4.1         2.500        .1         3.500        .0

    RUNOFF VOLUME =      .50620 INCHES     =        .1155 ACRE-FEET
    PEAK DISCHARGE RATE =       4.09 CFS  AT   1.500 HOURS   BASIN AREA =    .0043 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE ONSITE POND DEVELOPED
COMPUTE NM HYD        ID=12 HYD=PONDA.DEV AREA=0.00006 SQ MI
                      %A=0 %B=0 %C=100 %D=0 TP=0.133 HR
                      MASS RAINFALL=-1

     K =   .104841HR    TP =   .133000HR    K/TP RATIO =   .788276     SHAPE CONSTANT, N =  4.552994
     UNIT PEAK =   .17616    CFS   UNIT VOLUME =    .9337       B =   390.49      P60 = 1.8000
     AREA =      .000060 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.18000 AT PEAK FLOW.

PRINT HYD             ID=12 CODE=10

                                    HYDROGRAPH FROM AREA PONDA.DEV

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000       .0           .500       .0         1.000        .0         1.500        .1         2.000        .0

    RUNOFF VOLUME =     1.12644 INCHES     =        .0036 ACRE-FEET
    PEAK DISCHARGE RATE =        .13 CFS  AT   1.500 HOURS   BASIN AREA =    .0001 SQ. MI.


 S--------------------------------------------------------------------
 S BULK FOR SEDIMENT - DEVELOPED
SEDIMENT BULK           CODE=1    BULK FACTOR=1.05
*S--------------------------------------------------------------------
*S COMPUTE ONSITE BASIN DEVELOPED
COMPUTE NM HYD        ID=10 HYD=101.DEV AREA=0.01131 SQ MI
                      %A=0 %B=0 %C=15 %D=85 TP=0.133 HR
                      MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   38.040    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 1.8000
     AREA =      .009614 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =   .104841HR    TP =   .133000HR    K/TP RATIO =   .788276     SHAPE CONSTANT, N =  4.552994
     UNIT PEAK =   4.9809    CFS   UNIT VOLUME =    .9992       B =   390.49      P60 = 1.8000
     AREA =      .001697 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.05000 AT PEAK FLOW.

PRINT HYD             ID=10 CODE=10

                                    HYDROGRAPH FROM AREA 101.DEV

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000       .0          5.000        .2        10.000        .2        15.000        .2        20.000        .1
     .500       .0          5.500        .2        10.500        .2        15.500        .2        20.500        .1
    1.000       .1          6.000        .3        11.000        .2        16.000        .2        21.000        .1
    1.500      30.0          6.500        .3        11.500        .2        16.500        .2        21.500        .1
    2.000       7.0          7.000        .3        12.000        .2        17.000        .2        22.000        .1
    2.500       1.0          7.500        .3        12.500        .2        17.500        .2        22.500        .1
    3.000        .4          8.000        .2        13.000        .2        18.000        .2        23.000        .1
    3.500        .3          8.500        .2        13.500        .2        18.500        .2        23.500        .1
    4.000        .2          9.000        .2        14.000        .2        19.000        .1        24.000        .1
    4.500        .2          9.500        .2        14.500        .2        19.500        .1        24.500        .0

    RUNOFF VOLUME =     2.34567 INCHES     =       1.4149 ACRE-FEET
    PEAK DISCHARGE RATE =       29.96 CFS  AT   1.500 HOURS   BASIN AREA =    .0113 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE ONSITE BASIN DEVELOPED
COMPUTE NM HYD        ID=11 HYD=102.DEV AREA=0.00428 SQ MI
                      %A=0 %B=0 %C=15 %D=85 TP=0.133 HR
                      MASS RAINFALL=-1
```

Cabezon Tract 11
100-Year 24-Hour Duration Storm
AHYMO Output File

```
K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   14.395    CFS   UNIT VOLUME =    .9983      B =   526.28      P60 = 1.8000
AREA =      .003638 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .104841HR    TP =   .133000HR    K/TP RATIO =   .788276     SHAPE CONSTANT, N =  4.552994
UNIT PEAK =   1.8849    CFS   UNIT VOLUME =    .9954      B =   390.49      P60 = 1.8000
AREA =      .000642 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

   BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.05000 AT PEAK FLOW.

PRINT HYD              ID=11 CODE=10

                                HYDROGRAPH FROM AREA 102.DEV

    TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
     HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
    .000       .0         5.000        .1        10.000        .1        15.000        .1        20.000        .1
    .500       .0         5.500        .1        10.500        .1        15.500        .1        20.500        .1
   1.000       .0         6.000        .1        11.000        .1        16.000        .1        21.000        .1
   1.500      11.3         6.500        .1        11.500        .1        16.500        .1        21.500        .1
   2.000       2.7         7.000        .1        12.000        .1        17.000        .1        22.000        .1
   2.500       .4         7.500        .1        12.500        .1        17.500        .1        22.500        .1
   3.000       .1         8.000        .1        13.000        .1        18.000        .1        23.000        .0
   3.500       .1         8.500        .1        13.500        .1        18.500        .1        23.500        .0
   4.000       .1         9.000        .1        14.000        .1        19.000        .1        24.000        .0
   4.500       .1         9.500        .1        14.500        .1        19.500        .1        24.500        .0

   RUNOFF VOLUME =     2.34567 INCHES     =        .5354 ACRE-FEET
   PEAK DISCHARGE RATE =      11.35 CFS  AT   1.500 HOURS   BASIN AREA =    .0043 SQ. MI.


*S--------------------------------------------------------------------
*S ADD HISTORIC OFFSITE BASIN 100 TO DEVELOPED ONSITE BASIN 101
ADD HYD                        ID=20  HYD=20 IDS 1 AND 10
PRINT HYD                      ID=20 CODE=10

                                OUTFLOW HYDROGRAPH REACH    20.00

    TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
     HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
    .000       .0         5.000        .2        10.000        .2        15.000        .2        20.000        .1
    .500       .0         5.500        .2        10.500        .2        15.500        .2        20.500        .1
   1.000       .1         6.000        .3        11.000        .2        16.000        .2        21.000        .1
   1.500      32.9         6.500        .3        11.500        .2        16.500        .2        21.500        .1
   2.000       7.3         7.000        .3        12.000        .2        17.000        .2        22.000        .1
   2.500       1.1         7.500        .3        12.500        .2        17.500        .2        22.500        .1
   3.000       .4         8.000        .2        13.000        .2        18.000        .2        23.000        .1
   3.500       .3         8.500        .2        13.500        .2        18.500        .2        23.500        .1
   4.000       .2         9.000        .2        14.000        .2        19.000        .1        24.000        .1
   4.500       .2         9.500        .2        14.500        .2        19.500        .1        24.500        .0

   RUNOFF VOLUME =     1.94992 INCHES     =       1.4986 ACRE-FEET
   PEAK DISCHARGE RATE =      32.92 CFS  AT   1.500 HOURS   BASIN AREA =    .0144 SQ. MI.


*S--------------------------------------------------------------------
*S ADD ID 20 TO BASIN 102
ADD HYD                        ID=21  HYD=21 IDS 11 AND 20
PRINT HYD                      ID=21 CODE=10

                                OUTFLOW HYDROGRAPH REACH    21.00

    TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
     HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
    .000       .0         5.000        .3        10.000        .3        15.000        .2        20.000        .2
    .500       .0         5.500        .3        10.500        .3        15.500        .2        20.500        .2
   1.000       .2         6.000        .4        11.000        .3        16.000        .2        21.000        .2
   1.500      44.3         6.500        .4        11.500        .3        16.500        .2        21.500        .2
   2.000       9.9         7.000        .4        12.000        .3        17.000        .2        22.000        .2
   2.500       1.5         7.500        .3        12.500        .3        17.500        .2        22.500        .2
   3.000       .6         8.000        .3        13.000        .3        18.000        .2        23.000        .2
   3.500       .4         8.500        .3        13.500        .3        18.500        .2        23.500        .2
   4.000       .3         9.000        .3        14.000        .2        19.000        .2        24.000        .2
   4.500       .3         9.500        .3        14.500        .2        19.500        .2        24.500        .0

   RUNOFF VOLUME =     2.04053 INCHES     =       2.0340 ACRE-FEET
   PEAK DISCHARGE RATE =      44.27 CFS  AT   1.500 HOURS   BASIN AREA =    .0187 SQ. MI.


*S--------------------------------------------------------------------
*S ADD ID 21 TO POND
ADD HYD                        ID=22  HYD=22 IDS 21 AND 12
PRINT HYD                      ID=22 CODE=10

                                OUTFLOW HYDROGRAPH REACH    22.00

    TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
```

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	5.000	.3	10.000	.3	15.000	.2	20.000	.2
.500	.0	5.500	.3	10.500	.3	15.500	.2	20.500	.2
1.000	.2	6.000	.4	11.000	.3	16.000	.2	21.000	.2
1.500	44.4	6.500	.4	11.500	.3	16.500	.2	21.500	.2
2.000	9.9	7.000	.4	12.000	.3	17.000	.2	22.000	.2
2.500	1.5	7.500	.3	12.500	.3	17.500	.2	22.500	.2
3.000	.6	8.000	.3	13.000	.3	18.000	.2	23.000	.2
3.500	.4	8.500	.3	13.500	.3	18.500	.2	23.500	.2
4.000	.3	9.000	.3	14.000	.2	19.000	.2	24.000	.2
4.500	.3	9.500	.3	14.500	.2	19.500	.2	24.500	.0

RUNOFF VOLUME = 2.03760 INCHES = 2.0376 ACRE-FEET
PEAK DISCHARGE RATE = 44.40 CFS AT 1.500 HOURS BASIN AREA = .0188 SQ. MI.

```
*S--------------------------------------------------------------------
*S ROUTE THROUGH POND.A
ROUTE RESERVOIR          ID=7 HYD=POND.A INFLOW=22 CODE=10
                                    OUTFLOW   STORAGE   ELEV
                                    0.00      0.00      5322.0
                                    3.92      0.062     5323.0
                                    13.27     0.165     5324.0
                                  23.25     0.313     5325.0
                                  29.64     0.510     5326.0

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
```

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	5322.00	.000	.00
.50	.00	5322.00	.000	.00
1.00	.17	5322.01	.000	.02
1.50	44.40	5324.94	.305	22.70
2.00	9.94	5324.28	.206	16.05
2.50	1.46	5322.75	.046	2.92
3.00	.57	5322.23	.014	.91
3.50	.37	5322.11	.007	.45
4.00	.31	5322.09	.005	.34
4.50	.30	5322.08	.005	.30
5.00	.31	5322.08	.005	.30
5.50	.32	5322.08	.005	.32
6.00	.35	5322.09	.005	.34
6.50	.37	5322.09	.006	.37
7.00	.36	5322.09	.006	.36
7.50	.35	5322.09	.006	.35
8.00	.34	5322.09	.005	.34
8.50	.33	5322.08	.005	.33
9.00	.32	5322.08	.005	.32
9.50	.31	5322.08	.005	.31
10.00	.30	5322.08	.005	.30
10.50	.29	5322.08	.005	.30
11.00	.29	5322.07	.005	.29
11.50	.28	5322.07	.004	.28
12.00	.27	5322.07	.004	.27
12.50	.26	5322.07	.004	.27
13.00	.26	5322.07	.004	.26
13.50	.25	5322.07	.004	.26
14.00	.25	5322.06	.004	.25
14.50	.24	5322.06	.004	.24
15.00	.24	5322.06	.004	.24
15.50	.23	5322.06	.004	.23
16.00	.23	5322.06	.004	.23
16.50	.22	5322.06	.004	.23
17.00	.22	5322.06	.004	.22
17.50	.22	5322.06	.003	.22
18.00	.21	5322.05	.003	.21
18.50	.21	5322.05	.003	.21
19.00	.21	5322.05	.003	.21
19.50	.20	5322.05	.003	.20
20.00	.20	5322.05	.003	.20
20.50	.20	5322.05	.003	.20
21.00	.19	5322.05	.003	.19
21.50	.19	5322.05	.003	.19
22.00	.18	5322.05	.003	.19
22.50	.19	5322.05	.003	.18
23.00	.18	5322.05	.003	.18
23.50	.18	5322.05	.003	.18
24.00	.17	5322.04	.003	.18
24.50	.01	5322.01	.001	.04
25.00	.00	5322.00	.000	.00

PEAK DISCHARGE = 26.593 CFS - PEAK OCCURS AT HOUR 1.65
MAXIMUM WATER SURFACE ELEVATION = 5325.523
MAXIMUM STORAGE = .4161 AC-FT INCREMENTAL TIME= .050000HRS

```
PRINT HYD                ID=7 CODE=10
```

HYDROGRAPH FROM AREA POND.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.500	.3	11.000	.3	16.500	.2	22.000	.2

.500	.0	6.000	.3	11.500	.3	17.000	.2	22.500	.2
1.000	.0	6.500	.4	12.000	.3	17.500	.2	23.000	.2
1.500	22.7	7.000	.4	12.500	.3	18.000	.2	23.500	.2
2.000	16.0	7.500	.4	13.000	.3	18.500	.2	24.000	.2
2.500	2.9	8.000	.3	13.500	.3	19.000	.2	24.500	.0
3.000	.9	8.500	.3	14.000	.2	19.500	.2	25.000	.0
3.500	.4	9.000	.3	14.500	.2	20.000	.2		
4.000	.3	9.500	.3	15.000	.2	20.500	.2		
4.500	.3	10.000	.3	15.500	.2	21.000	.2		
5.000	.3	10.500	.3	16.000	.2	21.500	.2		

RUNOFF VOLUME = 2.03760 INCHES = 2.0376 ACRE-FEET
PEAK DISCHARGE RATE = 26.59 CFS AT 1.650 HOURS BASIN AREA = .0188 SQ. MI.

```
*S--------------------------------------------------------------------
*S COMPUTE OFFSITE BASIN DEVELOPED
COMPUTE NM HYD          ID=8 HYD=103.DEV AREA=0.00183 SQ MI
                        %A=0 %B=0 %C=10 %D=90 TP=0.133 HR
                        MASS RAINFALL=-1
```

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.5171 CFS UNIT VOLUME = .9976 B = 526.28 P60 = 1.8000
AREA = .001647 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .104841HR TP = .133000HR K/TP RATIO = .788276 SHAPE CONSTANT, N = 4.552994
UNIT PEAK = .53729 CFS UNIT VOLUME = .9793 B = 390.49 P60 = 1.8000
AREA = .000183 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.05000 AT PEAK FLOW.

```
PRINT HYD               ID=8 CODE=10
```

HYDROGRAPH FROM AREA 103.DEV

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.0	10.000	.0	15.000	.0	20.000	.0
.500	.0	5.500	.0	10.500	.0	15.500	.0	20.500	.0
1.000	.0	6.000	.0	11.000	.0	16.000	.0	21.000	.0
1.500	4.9	6.500	.0	11.500	.0	16.500	.0	21.500	.0
2.000	1.2	7.000	.0	12.000	.0	17.000	.0	22.000	.0
2.500	.2	7.500	.0	12.500	.0	17.500	.0	22.500	.0
3.000	.1	8.000	.0	13.000	.0	18.000	.0	23.000	.0
3.500	.0	8.500	.0	13.500	.0	18.500	.0	23.500	.0
4.000	.0	9.000	.0	14.000	.0	19.000	.0	24.000	.0
4.500	.0	9.500	.0	14.500	.0	19.500	.0	24.500	.0

RUNOFF VOLUME = 2.42469 INCHES = .2366 ACRE-FEET
PEAK DISCHARGE RATE = 4.94 CFS AT 1.500 HOURS BASIN AREA = .0018 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD POND.A TO CAB.BLVD
ADD HYD                 ID=9 HYD=STORMDRAIN IDi=7 IDii=8
PRINT HYD               ID=9 CODE=10
```

HYDROGRAPH FROM AREA STORMDRAIN

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.500	.4	11.000	.3	16.500	.3	22.000	.2
.500	.0	6.000	.4	11.500	.3	17.000	.2	22.500	.2
1.000	.0	6.500	.4	12.000	.3	17.500	.2	23.000	.2
1.500	27.6	7.000	.4	12.500	.3	18.000	.2	23.500	.2
2.000	17.2	7.500	.4	13.000	.3	18.500	.2	24.000	.2
2.500	3.1	8.000	.4	13.500	.3	19.000	.2	24.500	.0
3.000	1.0	8.500	.4	14.000	.3	19.500	.2	25.000	.0
3.500	.5	9.000	.4	14.500	.3	20.000	.2		
4.000	.4	9.500	.4	15.000	.3	20.500	.2		
4.500	.3	10.000	.3	15.500	.3	21.000	.2		
5.000	.3	10.500	.3	16.000	.3	21.500	.2		

RUNOFF VOLUME = 2.07199 INCHES = 2.2742 ACRE-FEET
PEAK DISCHARGE RATE = 29.85 CFS AT 1.600 HOURS BASIN AREA = .0206 SQ. MI.

```
*S--------------------------------------------------------------------
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 10:24:39
(s0p10h4099T_&16D__
```

Detention Pond Rating Curve

POND A

Pond Designation 6:1 SIDE SLOPES

Elevation	Area	Average Area	Volume	Accumulative Volume
	sf	sf	Ac-Ft	Ac-Ft
5322.0	*1900*			
		2708	0.062	0.062
5323.0	*3516*			
		4466	0.103	0.165
5324.0	*5415*			
		6466	0.148	0.313
5325.0	*7516*			
		8633	0.198	0.511
5326.0	*9750*			
		5191	0.119	0.630
5326.5	*11013*			
		0	0.000	0.630
5326.5	*11013*			

Rating Table Report
POND A OUTFALL

Range Data:

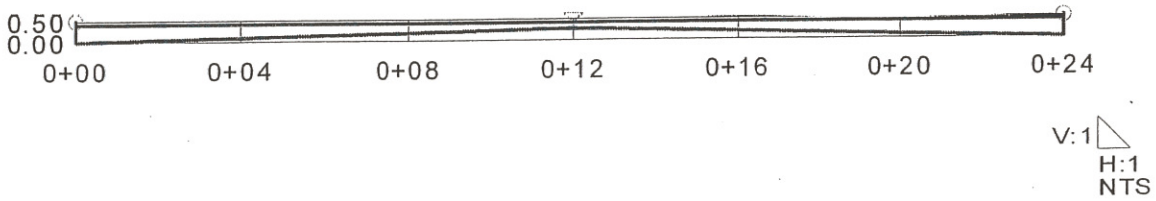
	Minimum	Maximum	Increment
Allowable HW E	5,322.00	5,326.00	0.50 ft

HW Elev. (ft)	Discharge (cfs)
5,322.00	0.00
5,322.50	1.05
5,323.00	3.92
5,323.50	8.17
5,324.00	13.27
5,324.50	18.66
5,325.00	23.25
5,325.50	26.64
5,326.00	29.64

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	24' WIDE PAVEMENT
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.01600	
Channel Slope	0.028000	ft/ft
Water Surface Elev	0.40	ft
Elevation Range	.00 to 0.50	
Discharge	36.20	cfs



$Q_{100\ DEV}$ = 29.96 cfs ∴ OK

Concrete Valley within roadway must carry approx. 15 cfs.

C-3

Cross Section
Cross Section for Triangular Channel

Project Description	
Worksheet	Triangular Channe
Flow Element	Triangular Channe
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coeffic	0.016	
Channel Slope	020000	ft/ft
Depth	0.41	ft
Left Side Slope	40.00	H : V
Right Side Slope	40.00	H : V
Discharge	30.00	cfs

— OK 0.5' TBC

Paving transition for Pond Rundown

Basin 101

C-4

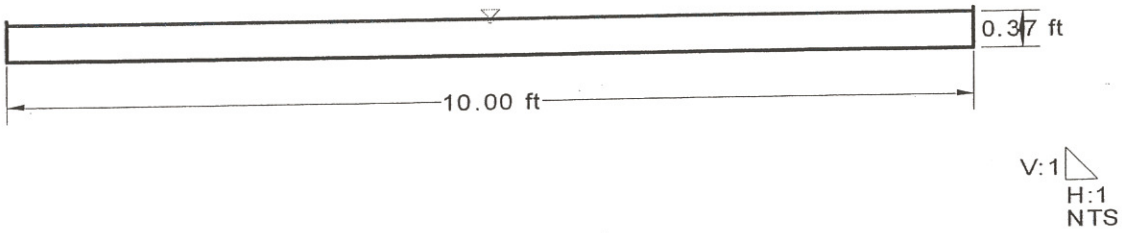
Cross Section

Cross Section for Rectangular Channel

Project Description	
Worksheet	Rectangular Chann
Flow Element	Rectangular Chann
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coeffic	0.013	
Channel Slope	020000	ft/ft
Depth	0.37	ft
Bottom Width	10.00	ft
Discharge	29.96	cfs

→ OK Actual Depth of Channel = 0.5'



Concrete Channel @ Pond Inlet

Basin 101

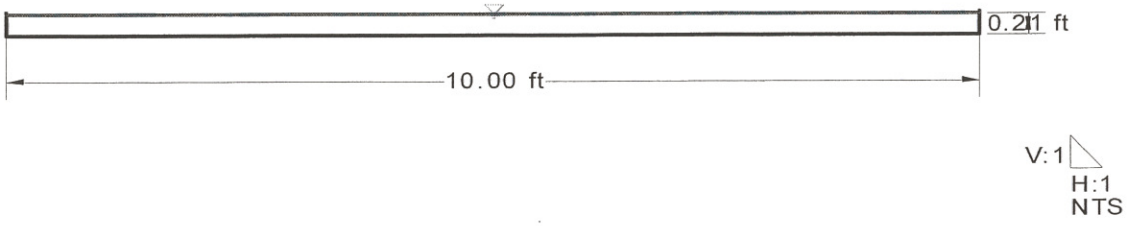
C-5

Cross Section
Cross Section for Rectangular Channel

Project Description	
Worksheet	CONCRETE RUNDOW
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coeffic	0.013	
Channel Slope	020000	ft/ft
Depth	0.21	ft
Bottom Width	10.00	ft
Discharge	11.35	cfs

– OK - Channel height is 0.5'



Basin 102

C-6

Asphalt Swale Parking Area - Basin 102
Worksheet for Triangular Channel

Project Description	
Worksheet	Asphalt Swale - Basi
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.020	
Channel Slope	010000	ft/ft
Left Side Slope	50.00	H : V
Right Side Slope	50.00	H : V
Discharge	11.40	cfs

Results		
Depth	0.32	ft
Flow Area	5.2	ft²
Wetted Perim	32.23	ft
Top Width	32.23	ft
Critical Depth	0.32	ft
Critical Slope	0.010768	ft/ft
Velocity	2.20	ft/s
Velocity Head	0.07	ft
Specific Energ	0.40	ft
Froude Numb	0.96	
Flow Type	Subcritical	

24" Sidwalk Culvert
Worksheet for Rectangular Channel

Project Description	
Worksheet	24" Sidewalk Cul
Flow Element	Rectangular Cha
Method	Manning's Formu
Solve For	Discharge

Input Data		
Mannings Coeffic	0.013	
Channel Slope	020000	ft/ft
Depth	0.40	ft
Bottom Width	2.00	ft

Results		
Discharge	5.61	cfs
Flow Area	0.8	ft²
Wetted Perim	2.80	ft
Top Width	2.00	ft
Critical Depth	0.63	ft
Critical Slope	0.005503	ft/ft
Velocity	7.01	ft/s
Velocity Head	0.76	ft
Specific Energ	1.16	ft
Froude Numb	1.95	
Flow Type	Supercritical	

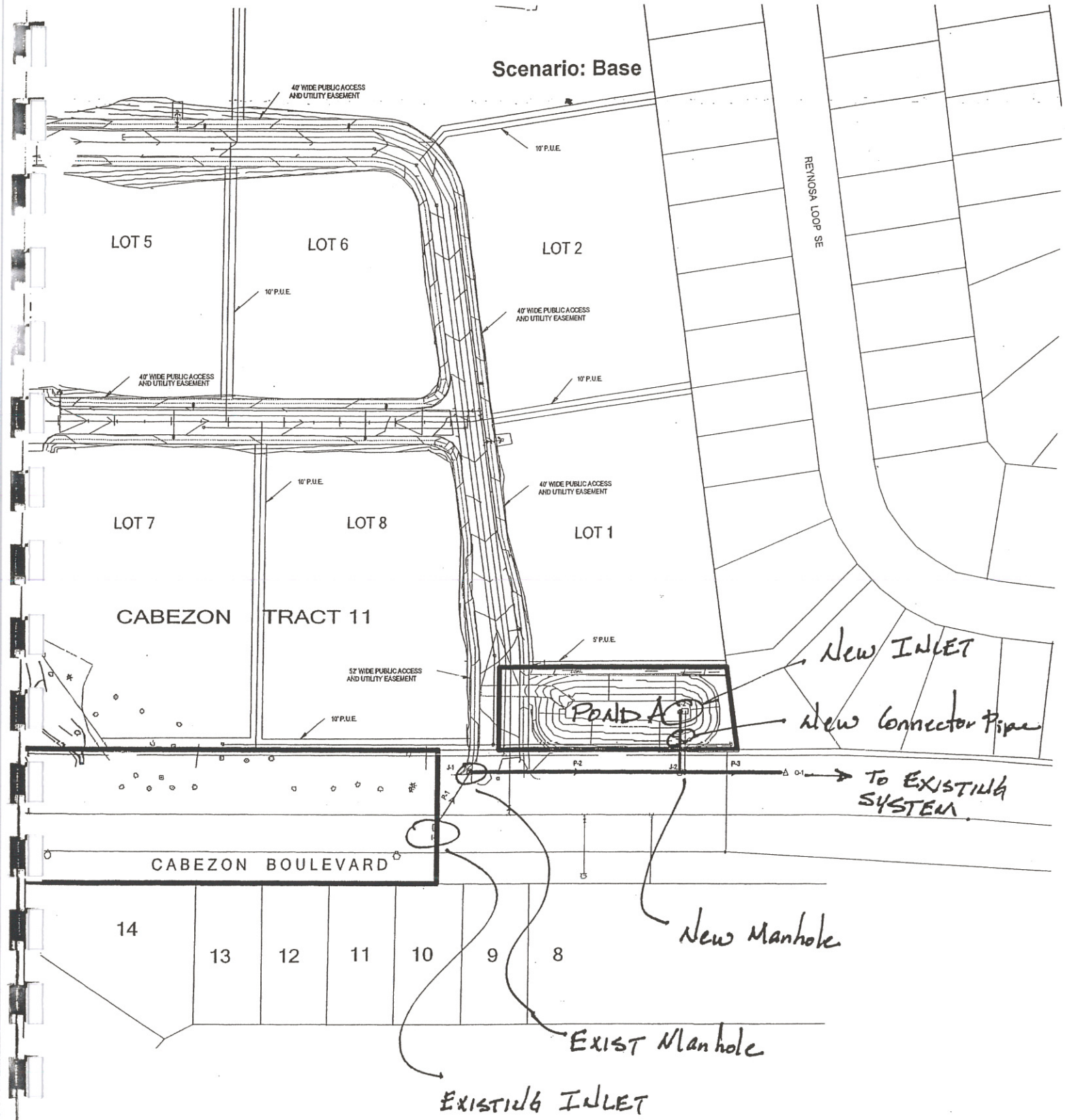
11.4 Required. Use 3-24" S.W.C.

Combined Pipe\Node Report

Label	Length (ft)	Section Size	Total Flow (cfs)	Full Capacity (cfs)	Average Velocity (ft/s)	Upstream Node	Downstream Node	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Constructed Slope (ft/ft)	Hydraulic Grade Line In (ft)	Upstream Ground Elevation (ft)	Hydraulic Grade Line Out (ft)	Downstream Ground Elevation (ft)
P-1	58.00	24 inch	4.94	31.99	7.39	I-1	J-1	5,322.71	5,321.55	0.020000	5,323.49	5,327.70	5,322.39	5,328.57
P-2	195.00	36 inch	4.94	94.32	7.05	J-1	J-2	5,321.55	5,317.65	0.020000	5,322.25	5,328.57	5,319.86	5,324.00
P-3	92.00	36 inch	29.92	94.32	11.84	J-2	O-1	5,317.65	5,315.81	0.020000	5,319.42	5,324.00	5,317.02	5,323.00
P-4	55.00	24 inch	24.98	63.62	19.03	I-2	J-2	5,322.00	5,317.65	0.079091	5,323.76	5,326.00	5,319.86	5,324.00

D-1

 Huitt-Zollars, Inc.
37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666



D-2

Title: CABEZON TRACT 11 COMMERCIAL
g:\...\drn_study\hydraulics\cab-11.stm
03/30/07 11:15:24 AM

Haestad Methods Solution Center Watertown, CT 06795 USA +1-203-755-1666

Project Engineer: hzi
StormCAD v5.6 [05.06.012.00]