City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 5, 2004

Mark Goodwin, P.E.
Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

Re: Redlands Shopping Center, Redlands Road at Atrisco Drive, Grading and Drainage Plan (G11/D63)

Dear Mr. Goodwin,

Based upon the information provided in your submittal received 1-05-04, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. If you have any questions regarding this permit please feel free to call the Public Works Hydrology section at 768-3654 (Charles Caruso) or 768-3645 (Brian Wolfe).

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services
BVB

C: Charles Caruso, Public Works Hydrology
File

G11/D63

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

May 14, 2003

City of Albuquerque
Hydrology Department
P.O. Box 1293
Albuquerque, NM 87103

Re: Redlands Shopping Center (Project No. 1002405)

To whom it may concern:

The subject property is located on the SW corner of Coors Blvd. and Redlands Road. The EPC approved a site plan for the site earlier this year and that plan is soon to be reviewed by DRB. With submittal of this plan we are requesting conceptual grading and drainage plan approval.

The 4.8 acre site is now vacant, although the property is surrounded by existing development or improved streets (curb and gutter) on all of its sides, except for along Coors Blvd. where there is just a pavement edge. There is no off-site flow coming on the property. There is an existing 42" RCP storm drain in Redlands Road fronting the site and flowing west to east that was installed with SAD198 in the late 1980's. Once flow in this pipe reaches Coors Blvd. it is directed north along Coors and then east to a river outfall down Sequoia Road. A vicinity map identifying the various storm drain locations in the area and the new one proposed with this development is attached hereto.

According to information obtained from the SAD 198 Drainage Report by Andrews, Asbury & Robert, Inc., the subject site is located within the southern reach of Sub-Basin A-4 (see attached basin map from the SAD's drainage report). The southern boundary of the SAD drainage basin goes through the south portion of the site. Instead of splitting flow between the two basins, the proposed design concept is to direct all on-site runoff north into the SAD's system. From Table 2 in the SAD report it has been determined that the allowable discharge into the Redlands storm drain from Basin A-4 is 36.1 cfs. Using areal percentages, it was determined that the allowable discharge from this site, including one-half of the Coors Blvd. R/W, is 3.97cfs. From the attached AHYMO run, the developed discharge rate from the site, including one-half of the Coors Blvd. R/W, is 3.87 cfs. The developed site discharge rate has been reduced with the aid of on-site ponding resulting from placement of a 3-½" diameter orifice plate over the outfall pipe within an on-site storm drain manhole. Other on-site runoff collected along the south boundary of the site is also conveyed north in another reach of on-site storm drain that also discharges into this controlled on-site storm drain manhole.

After on-site flow is throttled down out of the manhole, it is conveyed to a new drop inlet in Coors Blvd., where it will also collect roadside flow and then drain north to where it connects to a manhole on the existing 42" pipe in Redlands Road, just west of its intersection with Coors Blvd.

Please contact me if I can be of further assistance.

Sincerely,

MARK GOODWIN & ASSOCIATES, PA

John M. MacKenzie, PE
Vice President

JMM/bm

f:\\redlandsshoppingA02104/hydrologysubmit

611/D63

DRAINAGE REPORT

for

Redlands Shopping Center

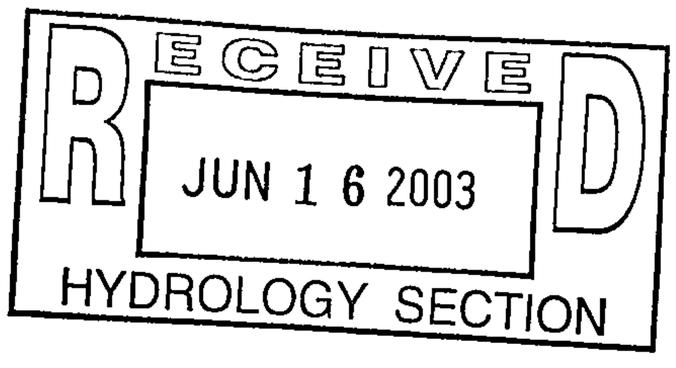
Prepared for:

American Home Furnishings

Prepared by:

John M. MacKenzie, PE
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

May 15, 2003



5-15-03

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 Coors/Redlands Shopping
SUBJECT Drainage
BY DMM DATE 4/14/03
CHECKED _____ DATE _____
SHEET ____ OF ____

HYDROLOGY

Subject property is part of the Special Assessment District 198 Drainage Study by Andrews, Asbury & Robert, Inc. 1985. Storm sewer was designed from this study and installed throughout the area, draining to a Rio Grande outfall via Tucson Rd. Existing 42" RCP fronts the entire site along Redlands Road. The subject property covers approximately 10.9% of Basin A-4 in the study.

According to Table 2 in the study, the increase in flow within the storm drain in Redlands due to Basin A-4 is 36.1 cfs. With rights to an 11% share of this flow, the subject site would be allowed a pro-rated discharge of 3.97 cfs including ½ the adjoining Coors Blvd. R/W.

From AHYMO, the site and the adjoining Coors Blvd. R/W generates a total discharge of 19.43 cfs in the developed condition. With aid of on-site ponding the rate has been reduced to 0.71 cfs. This coupled with the free discharge from the Coors Blvd R/W results in a total discharge of 3.87 cfs, which less than the allowable of 3.97.

The maximum water surface would be at elevation 5102.00, and then spill over the water block in the driveway on Coors Blvd.

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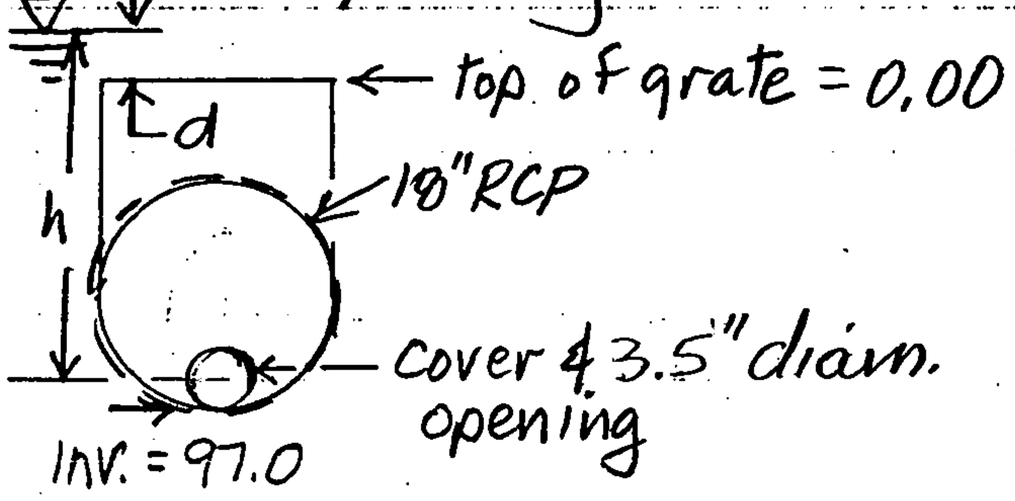
PROJECT Coors/Redlands Shopping
SUBJECT
BY DATE
CHECKED DATE
SHEET OF

4" ORIFICE ON OPENING OF ON-SITE STORM DRAIN

18" Storm drain to Coors Blvd. with steel cover on opening in on-site drop inlet.



$$Q = 0.6 A \sqrt{2gh}$$

$$A = \frac{\pi d^2}{4} = \frac{\pi (.29)^2}{4} = 0.0668 \text{ ft}^2$$

@ $d = 1.0'$, $h = 3.85'$ $\quad Q = 0.6(0.0668)\sqrt{64.4(3.85)} = 0.63$ cfs

@ $d = 1.64'$, $h = 4.49'$ $\quad Q = 0.04011\sqrt{64.4(4.49)} = 0.68$ cfs

@ $d = 2.0'$, $h = 4.85'$ $\quad Q = 0.04011\sqrt{64.4(4.85)} = 0.71$ cfs

D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS

PROJECT Redlands Shopping
SUBJECT Drainage
BY gmm DATE
CHECKED DATE
SHEET OF

PONDING CALCULATIONS

ELEV.	AREA	AVG. AREA	DEPTH	VOL	CUM. VOL.
0.00	0				
		5,323	1.0	5,323	0.1222
1.00	10,646				
		16,172	0.64	10,350	0.3598
1.64	21,698				
		32549	0.36	11,717	0.6288
2.00	43,400				

CITY OF ALBUQUERQUE
NEW MEXICO

DRAINAGE ANALYSIS

SPECIAL ASSESSMENT DISTRICT 198

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
ALBUQUERQUE, NEW MEXICO

TABLE 2 - DESIGN FLOWS

Analysis Point	Pipe Section	Tributary Areas	Total Area (AC.)	Flow Time (Mins) Inlet or Tc	Flow Time (Mins) Pipe	Flow Time (Mins) Total	I (in/hr)	C	Q (cfs)	Pipe Slope %	Pipe Size (in.)	Pipe V full (ft/sec)	Pipe Length (ft)
1A	-	A-1 & A-2	14.1	22.0	-	22.0	3.11	.65	28.5				
	1A to 2A				1.30				28.5	0.48	30	5.79	450
2A	-	A-1, A-2 & A-3	26.1			23.30	3.02	.66	52.0				
	2A to 3A				1.72				52.0	0.27	42	5.43	560
3A		A-1, A-2 A-3 & A-4	44.5			25.02	2.91	.68	88.1				
	3A to AB				1.25				88.1	0.38	48	7.05	530
AB		A-1, A-2 A-3 & A-4	44.5			26.27	2.84	.68	85.9				
1B	-	B-1	16.4	26.6	-	26.6	2.82	.62	28.7				
	1B to 2B				.61				28.7	2.11	24	10.46	380
2B		B-1 & B-2	21.2			27.21	2.79	.62	36.7				
	2B to 3B				0.91				36.7	0.73	30	7.14	390

Difference = 36.1 cfs

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
401 San Pedro, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project SAD-193 Sheet 3 of 15
By [illegible] Job No. 291
Chk'd [illegible] Date 9/85

TABLE 1 · DRAINAGE BASIN DATA

SUB-BASIN DESIGNATION	LENGTH (FT)	H (FT)	Tc (MINS)	AREA (AC.)	C	I (IN/HR)	Q=CIA (CFS)
A-1	1860	7.0	22.0	16.5 / 9.5*	0.65	3.11	19.2
A-2	700	4.5	8.4<10	5.2 / 4.6*	0.65	4.65	13.9
A-3	1350	8.0	14.5	12.0	0.67	3.85	30.9
A-4	1810	7.0	21.3	18.4	0.70	3.16	40.7
B-1	1650	3.0	26.6	16.4	0.62	2.82	28.7
B-2	970	6.0	11.0	7.3 / 4.8*	0.63	4.43	13.4
B-3	1800	8.0	20.1	17.1 / 11.1*	0.64	3.25	23.1
B-4	2200	11	22.5	21.8	0.68	3.08	45.7

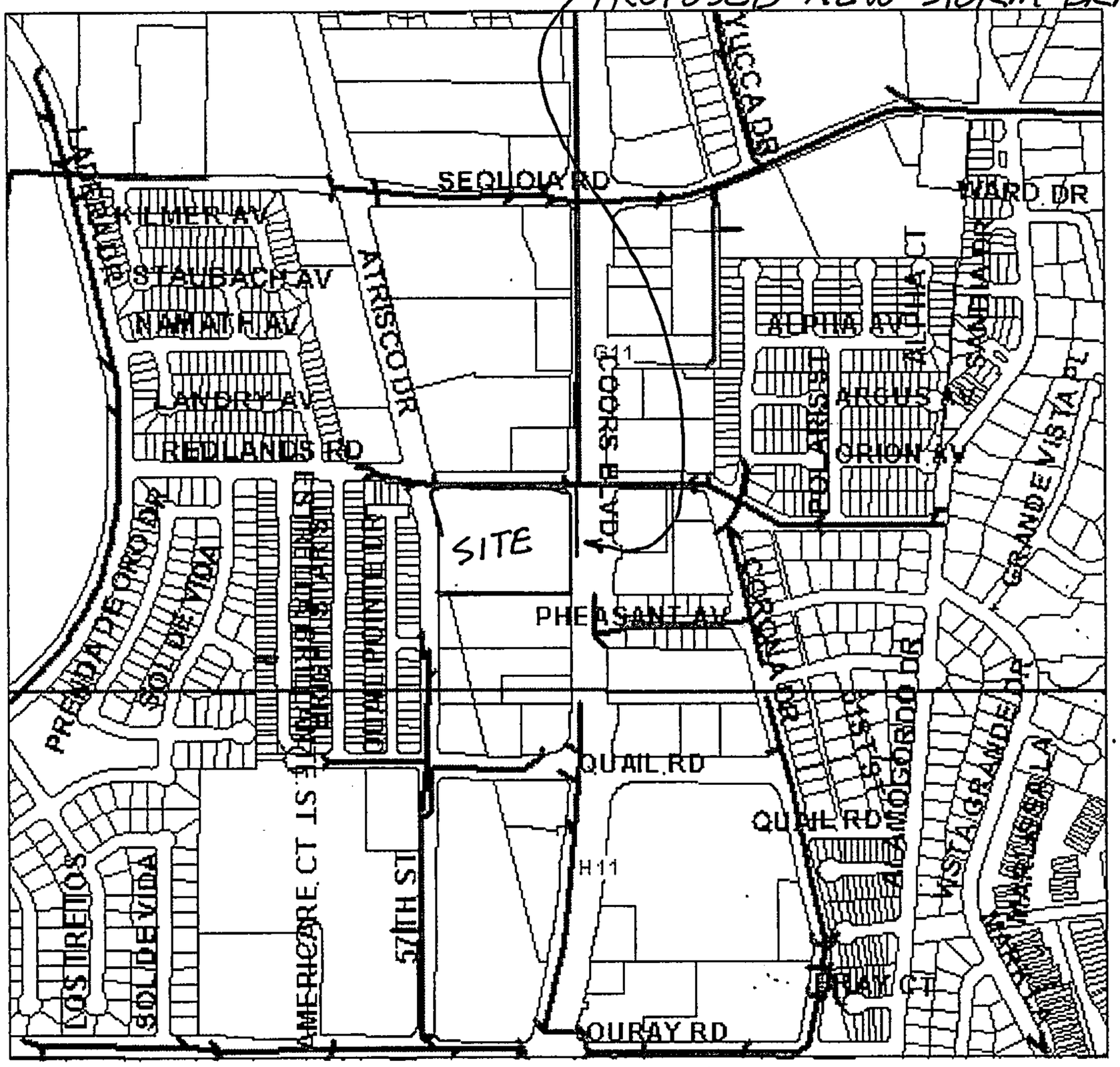
* CONTRIBUTING DRAINAGE AREA, DUE TO REAR YARD RETENTION

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
401 San Pedro, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project SAD-193 Sheet 1 of 15
By [illegible] Chkd ____ Date 9/85 Job No. 201

Activate By 'Clicking' on the Map

◉ Zoom In ○ Id Address ○ Id ZM ○ Pan ○ Zoom Out



ReDraw Screen

1999 AIR PHOTO (Metro Area Coverage)

CITY

LAY

- ☑ STREE
- ☐ PARKS
- ☐ CITY L
- ☑ ZONE
- ☐ NBR B
- ☐ COMM
- ☐ WATEI
- ☐ SEWEF
- ☑ STORM
- ☐ ZONIN
- ☐ LOT NI
- ☐ ZIP CO
- ☐ COUNC
- ☐ FLOOD
- ☑ PARCE
- ☐ CONTF
- ☐ SENAT
- ☐ REPRE
- ☐ COUNT
- ☐ PARCE
- ☐ CRIMI
- ☐ CITY F
- ☐ LAND
- ☐ 1960 CI

ZO

TE
ME

NEW GIS QUERY

Current DRC
Project Number:_____

FIGURE 12

INFRASTRUCTURE LIST

Date Submitted:_____
Date Site Plan Approved:_____
Date Preliminary Plat Approved:_____
Date Preliminary Plat Expires:_____
DRB Project No.:_____
DRB Application No.:_____

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

Redlands Shopping Center
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tract A-28-B1 and A-28-B2, NE Unit, Town of Atrisco Grant
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
			TRANSPORTATION						
		12'	Arterial Pvmt.	Coors Blvd.	Redlands	S. end of PL.	/	/	/
			Decel Lane						
			6' conc. SW						
			DRAINAGE						
		18"	Public RCP SD	Coors Blvd.	~~Midpoint of site~~ South PL	Redlands Rd.	/	/	/

1 Grading & Drainage Plan Certification Required before release of finacial guarantee.
2 Water / SAS infrastructure to include vavles, fittings, Firehydrants as depicted on site plan.
3 Storm drain infrastructure to include inlets and manholes

AGENT / OWNER

John M. MacKenzie,PE
NAME (print)

MARK GOODWIN & ASSOCIATES
FIRM

John M. MacKenzie
SIGNATURE - date
4-29-03

MAXIMUM TIME ALLOWED TO CONSTRUCT THE IMPROVEMENTS WITHOUT A DRB

EXTENSION: _____

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

DRB CHAIR - date

PARKS & GENERAL SERVICES - date

TRANSPORTATION DEVELOPMENT - date

AMAFCA - date

UTILITY DEVELOPMENT - date

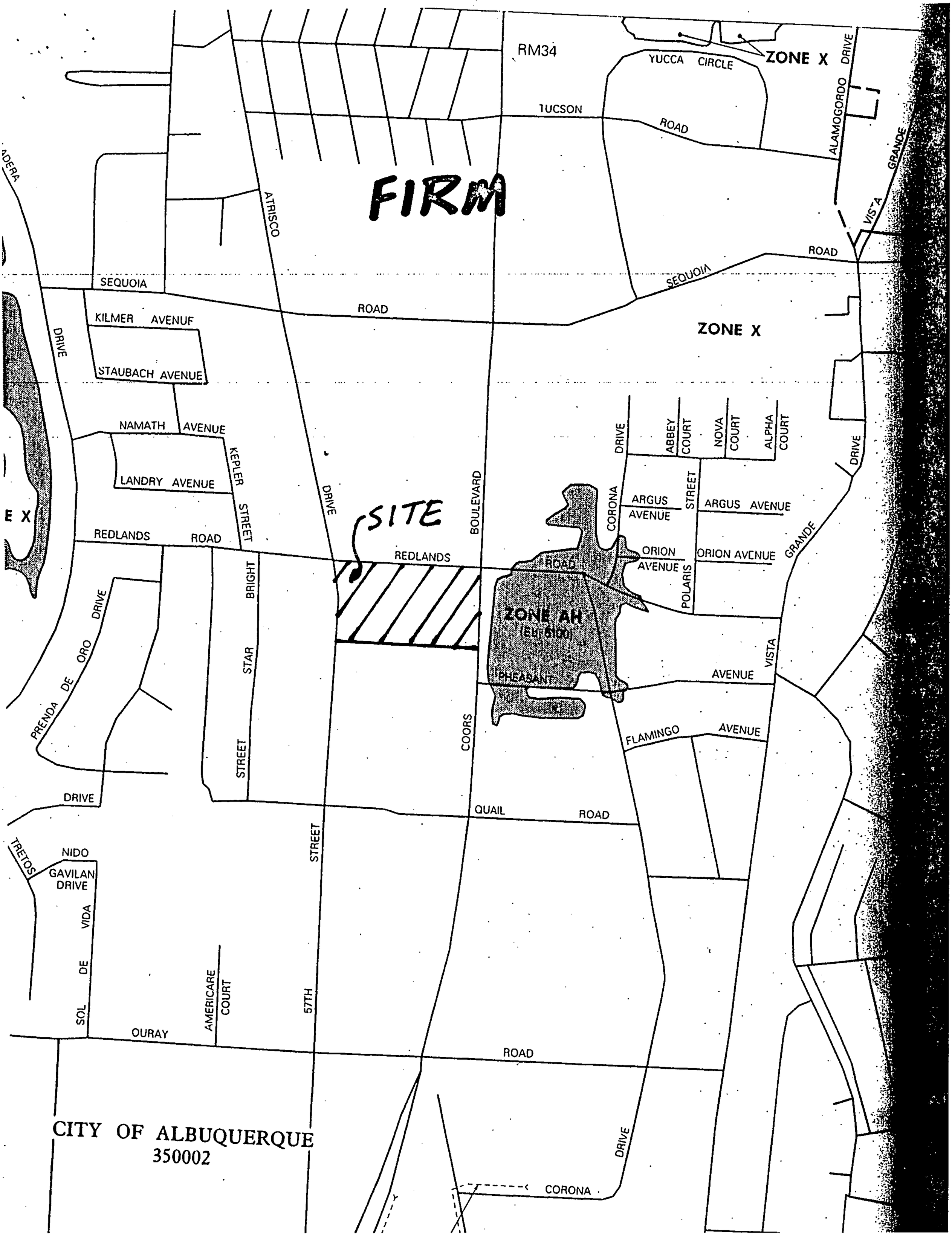
_____ - date

CITY ENGINEER - date

_____ - date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER



CITY OF ALBUQUERQUE
350002

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 04/15/2003
         START TIME (HR:MIN:SEC) = 14:23:44      USER NO.= M_GOODWN.I01
         INPUT FILE = REDLANDS.DAT


START                TIME=0.0
*****    REDLANDS SHOPPING CENTER ON COORS BLVD.
*****    FILE: F:\JOHN\AHYMO\REDLANDS APRIL 14, 2003
*****
*****    100-YEAR 6-HOUR STORM EVENT
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.88 IN RAIN SIX=2.23 IN
                     RAIN DAY=2.65 IN DT=0.033333 HR

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033333 HOURS       END TIME =     5.999940 HOURS
                   .0000   .0018   .0037   .0056   .0075   .0095   .0115
                   .0136   .0157   .0179   .0201   .0224   .0247   .0271
                   .0296   .0322   .0348   .0375   .0403   .0432   .0462
                   .0494   .0526   .0560   .0595   .0631   .0670   .0710
                   .0752   .0797   .0844   .0896   .0951   .1011   .1139
                   .1424   .1864   .2495   .3357   .4489   .5933   .7730
                   .9924  1.1953  1.2802  1.3519  1.4157  1.4737  1.5271
                  1.5767  1.6231  1.6665  1.7074  1.7460  1.7824  1.8169
                  1.8496  1.8806  1.9100  1.9379  1.9644  1.9706  1.9765
                  1.9822  1.9875  1.9926  1.9975  2.0023  2.0068  2.0112
                  2.0154  2.0195  2.0235  2.0274  2.0311  2.0348  2.0383
                  2.0418  2.0452  2.0485  2.0517  2.0548  2.0579  2.0609
                  2.0639  2.0668  2.0697  2.0725  2.0752  2.0779  2.0805
                  2.0832  2.0857  2.0882  2.0907  2.0932  2.0956  2.0979
                  2.1003  2.1026  2.1048  2.1071  2.1093  2.1115  2.1136
                  2.1157  2.1178  2.1199  2.1220  2.1240  2.1260  2.1280
                  2.1299  2.1319  2.1338  2.1357  2.1375  2.1394  2.1412
                  2.1430  2.1448  2.1466  2.1484  2.1501  2.1518  2.1536
                  2.1552  2.1569  2.1586  2.1602  2.1619  2.1635  2.1651
                  2.1667  2.1683  2.1699  2.1714  2.1730  2.1745  2.1760
                  2.1775  2.1790  2.1805  2.1820  2.1834  2.1849  2.1863
                  2.1877  2.1892  2.1906  2.1920  2.1933  2.1947  2.1961
                  2.1975  2.1988  2.2002  2.2015  2.2028  2.2041  2.2054
                  2.2067  2.2080  2.2093  2.2106  2.2119  2.2131  2.2144
                  2.2156  2.2168  2.2181  2.2193  2.2205  2.2217  2.2229
                  2.2241  2.2253  2.2265  2.2277  2.2288  2.2300

*****
***** EXISTING, UNDEVELOPED CONDITIONS-5.56 ACRES-ENTIRE
***** ONSITE BASIN, INCLUDING COORS BLVD. R/W (60')
```

```
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.0087 SQ MI
                     PER A=0 PER B=0 PER C=94 PER D=6
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   2.0609     CFS   UNIT VOLUME =     .9941       B =   526.28      P60 = 1.8800
    AREA =       .000522 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .105980HR     TP =    .133300HR     K/TP RATIO =    .795046     SHAPE CONSTANT, N =  4.509462
    UNIT PEAK =   23.792     CFS   UNIT VOLUME =     .9999       B =   387.81      P60 = 1.8800
    AREA =       .008178 SQ MI    IA =     .35000 INCHES    INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=1 CODE=24

                              PARTIAL HYDROGRAPH   100.10

     TIME      FLOW        TIME      FLOW        TIME      FLOW        TIME      FLOW        TIME      FLOW
      HRS       CFS         HRS       CFS         HRS       CFS         HRS       CFS         HRS       CFS
     .000        .0        1.333       1.7       2.667        .2       4.000        .0       5.333        .0
     .667        .0        2.000       2.3       3.333        .0       4.667        .0       6.000        .0

    RUNOFF VOLUME =      1.06944 INCHES      =         .4962 ACRE-FEET
    PEAK DISCHARGE RATE =       16.71 CFS  AT    1.500 HOURS    BASIN AREA =    .0087 SQ. MI.


*****
*****
***** ON-SITE DEVELOPED CONDITIONS, EXCLUDING EXISTING COORS
***** BLVD R/W AND ADDITIONAL R/W REQUIRED FOR DEDICATION)
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.0075 SQ MI
                     PER A=0 PER B=15 PER C=0 PER D=85
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   25.169     CFS   UNIT VOLUME =     .9989       B =   526.28      P60 = 1.8800
    AREA =       .006375 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130816HR     TP =    .133300HR     K/TP RATIO =    .981365     SHAPE CONSTANT, N =  3.598385
    UNIT PEAK =   2.7635     CFS   UNIT VOLUME =     .9953       B =   327.44      P60 = 1.8800
    AREA =       .001125 SQ MI    IA =     .50000 INCHES    INF =    1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333
```

PRINT HYD ID=2 CODE=24

PARTIAL HYDROGRAPH 100.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	4.6	4.000	.1	6.000	.1		
.667	.0	2.667	.4	4.667	.1	6.667	.0		
1.333	5.6	3.333	.2	5.333	.1				

RUNOFF VOLUME = 1.79745 INCHES = .7190 ACRE-FEET
PEAK DISCHARGE RATE = 19.43 CFS AT 1.500 HOURS BASIN AREA = .0075 SQ. MI.

*****
***** COORS BLVD. R/W AT FULL BUILT SECTION
COMPUTE NM HYD ID=3 HYD NO=100.3 AREA=0.0012 SQ MI
PER A=0 PER B=0 PER C=15 PER D=85
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.0270 CFS UNIT VOLUME = .9965 B = 526.28 P60 = 1.8800
AREA = .001020 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .105980HR TP = .133300HR K/TP RATIO = .795046 SHAPE CONSTANT, N = 4.509462
UNIT PEAK = .52368 CFS UNIT VOLUME = .9755 B = 387.81 P60 = 1.8800
AREA = .000180 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=24

PARTIAL HYDROGRAPH 100.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.9	2.667	.1	4.000	.0	5.333	.0
.667	.0	2.000	.8	3.333	.0	4.667	.0	6.000	.0

RUNOFF VOLUME = 1.84682 INCHES = .1182 ACRE-FEET
PEAK DISCHARGE RATE = 3.22 CFS AT 1.500 HOURS BASIN AREA = .0012 SQ. MI.

***** DEVELOPED PORTION OF RUNOFF TO BE ROUTED THROUGH POND
***** AND THEN COMBINED WITH COORS R/W FLOW BEFORE ENTERING

***** EXISITNG 42" STORM DRAIN IN REDLANDS

ROUTE RESERVOIR ID=4 HYD NO=102.1 INFLOW ID=2 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	DEPTH(FT)
0.0	0.0	00.00
0.63	0.1222	01.00
0.68	0.3598	01.64
0.71	0.6288	02.00
0.73	0.7538	02.20

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.80	.00	.00	.000	.00
1.60	13.45	1.57	.333	.67
2.40	.82	1.97	.605	.71
3.20	.17	1.94	.583	.70
4.00	.11	1.89	.546	.70
4.80	.11	1.84	.507	.70
5.60	.13	1.79	.469	.69
6.40	.01	1.73	.430	.69
7.20	.00	1.67	.384	.68
8.00	.00	1.59	.339	.68
8.80	.00	1.47	.295	.67
9.60	.00	1.35	.251	.66
10.40	.00	1.23	.208	.65
11.20	.00	1.12	.166	.64
12.00	.00	1.00	.124	.63
12.80	.00	.72	.088	.45
13.60	.00	.51	.063	.32
14.40	.00	.36	.044	.23
15.20	.00	.26	.032	.16
16.00	.00	.18	.023	.12
16.80	.00	.13	.016	.08
17.60	.00	.09	.011	.06
18.40	.00	.07	.008	.04
19.20	.00	.05	.006	.03

PEAK DISCHARGE = .707 CFS - PEAK OCCURS AT HOUR 2.47
MAXIMUM WATER SURFACE ELEVATION = 1.968
MAXIMUM STORAGE = .6052 AC-FT INCREMENTAL TIME= .033333HRS

PRINT HYD ID=4 CODE=24

PARTIAL HYDROGRAPH 102.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	.7	8.000	.7	12.000	.6	16.000	.1
.667	.0	4.667	.7	8.667	.7	12.667	.5	16.667	.1
1.333	.1	5.333	.7	9.333	.7	13.333	.4	17.333	.1
2.000	.7	6.000	.7	10.000	.7	14.000	.3	18.000	.0
2.667	.7	6.667	.7	10.667	.6	14.667	.2	18.666	.0
3.333	.7	7.333	.7	11.333	.6	15.333	.2	19.333	.0

RUNOFF VOLUME = 1.78710 INCHES = .7148 ACRE-FEET
PEAK DISCHARGE RATE = .71 CFS AT 2.467 HOURS BASIN AREA = .0075 SQ. MI.

```
*****
***** COMBINE HYDROGRAPHS BASINS 2 & 3 AFTER ROUTING TO REPRESENT
***** DISCHARGE REACHING EXISTING 42" STORM DRAIN IN REDLANDS RD.
ADD HYD              ID=5 HYD NO=101.1 ID=3ID=4
PRINT HYD            ID=5 CODE=24
```

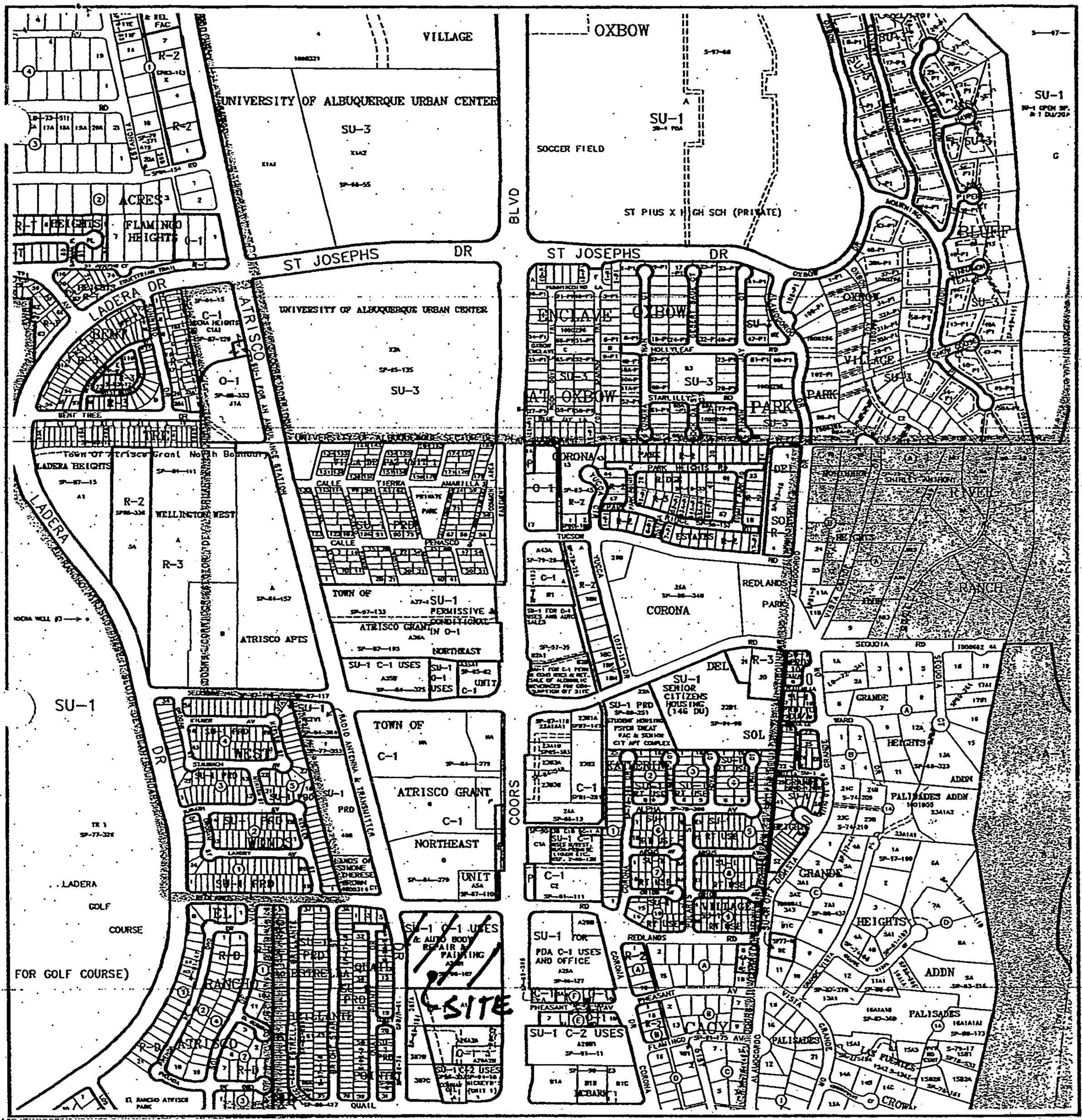
PARTIAL HYDROGRAPH 101.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	.7	8.000	.7	12.000	.6	16.000	.1
.667	.0	4.667	.7	8.667	.7	12.667	.5	16.667	.1
1.333	1.1	5.333	.7	9.333	.7	13.333	.4	17.333	.1
2.000	1.5	6.000	.7	10.000	.7	14.000	.3	18.000	.0
2.667	.8	6.667	.7	10.667	.6	14.667	.2	18.666	.0
3.333	.7	7.333	.7	11.333	.6	15.333	.2	19.333	.0

RUNOFF VOLUME = 1.79531 INCHES = .8330 ACRE-FEET
PEAK DISCHARGE RATE = 3.87 CFS AT 1.500 HOURS BASIN AREA = .0087 SQ. MI.

```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 14:23:44
```



CITY OF
Albuquerque

Albuquerque Geographic Information System
PLANNING DEPARTMENT

GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

G-11-Z

Map Amended through January 21, 2003

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 2, 2004

Mark Goodwin, P.E.
Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

Re: Redlands Shopping Center, Redlands Road at Atrisco Drive, Grading and Drainage Plan (G11/D63)

Dear Mr. Goodwin,

Based upon the information provided in your submittal received 11-12-03, the above referenced plan cannot be approved for Building Permit until the following comments are addressed:

1. Note 2 does not seem to apply.
2. The grading and drainage plan must be signed, stamped, and dated by a licensed Professional Engineer.

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

Sincerely,

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

C: file

DRAINAGE INFORMATION SHEET
(REV. 1/28/2003rd)

PROJECT TITLE: Redlands Shopping Center — ZONE MAP/DRG #: G-11/D63

DRB#: — EPC #: 1002405 — W.O.#:

LEGAL DESCRIPTION: Tract A-28-B1 and A-28-B2, NE Unit Town of Atrisco

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Scott Davis
ADDRESS:	PO Box 90606	PHONE:	828-2200
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87199
OWNER:	AMERICAN HOME FURNISHINGS	CONTACT:	
ADDRESS:	PO Box 3685, Station D	PHONE:	883-2015
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87190
ARCHITECT:	Dekker / Perish / Sabatini Ltd	CONTACT:	
ADDRESS:	6801 Jefferson NE, Suite 100	PHONE:	761-4222
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87109
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**
- x DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- x 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
- x BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TEMP)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (specify)

WAS A PRE-DESIGN CONFERENCE ATTENDED?

- ____ YES
- x NO
- ____ COPY PROVIDED

RECEIVED
NOV 12 2003
HYDROLOGY SECTION

DATE SUBMITTED: 11-11-03 — BY: Scott Davis

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.

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

November 11, 2003

Bradley L. Bingham, PE
Senior Engineer, Planning Department
P.O. Box 1293
Albuquerque, NM 87103

Re: Redlands Shopping Center (City Drainage File # G11//D63)

Dear Mr. Bingham:

Included for your review and approval is a revised site grading & drainage plan for the referenced project. A conceptual grading and drainage plan was previously submitted to your office, and subsequently approved by you for Site Development Plan for Building Permit via a letter to this office dated 06-16-2003. At this time, a more detailed grading plan is being submitted for the purpose of obtaining further approval for Building Permit.

In your review, you will note that the overall grading/drainage concept for this site follows very closely that which was previously submitted to your office. In summarizing the overall concept from the earlier submittal, it is our intent that in the developed stat, storm waters from this site will be ponded on-site and released at a controlled rate of 0.71 cfs during the 100-year, 6-hour storm event into the existing Redlands/Coors storm drain system. As stated in the earlier submittal, the flood waters will be routed to the Redlands/Coors system utilizing a proposed 18" diameter storm drain. A 3.5" diameter orifice opening, within the on-site drop inlet, will regulate the discharge from the site to 0.71 cfs. A new Type 'C' drop inlet is proposed within the new curb east of the site to collect ½ street flows from Coors, and route them within the new 18" storm drain to the existing Redlands/Coors system. You will note in your review that the south leg of the on-site storm drain system has been removed from the plan. The small areas south and east of the building will now be allowed to surface flow to Coors Blvd. where any flood waters generated will be collected within the new curb and gutter and delivered to the proposed Type 'C' drop inlet. For your convenience in reviewing this re-submittal, an additional copy of the earlier submittal hydrology calculations have been included.

On site change you will note in your review is a re-configuration of the building foot prints. Although the changes did not alter the developed drainage management plan for the site, and additional plan has been included with this submittal in the event the City deems an additional traffic circulation)TCL) review is warranted (DPC Site Plan Approval previously obtained).

If you have any questions, or if I can supply you with additional information, feel free to contact me at 828-2200.

Sincerely,

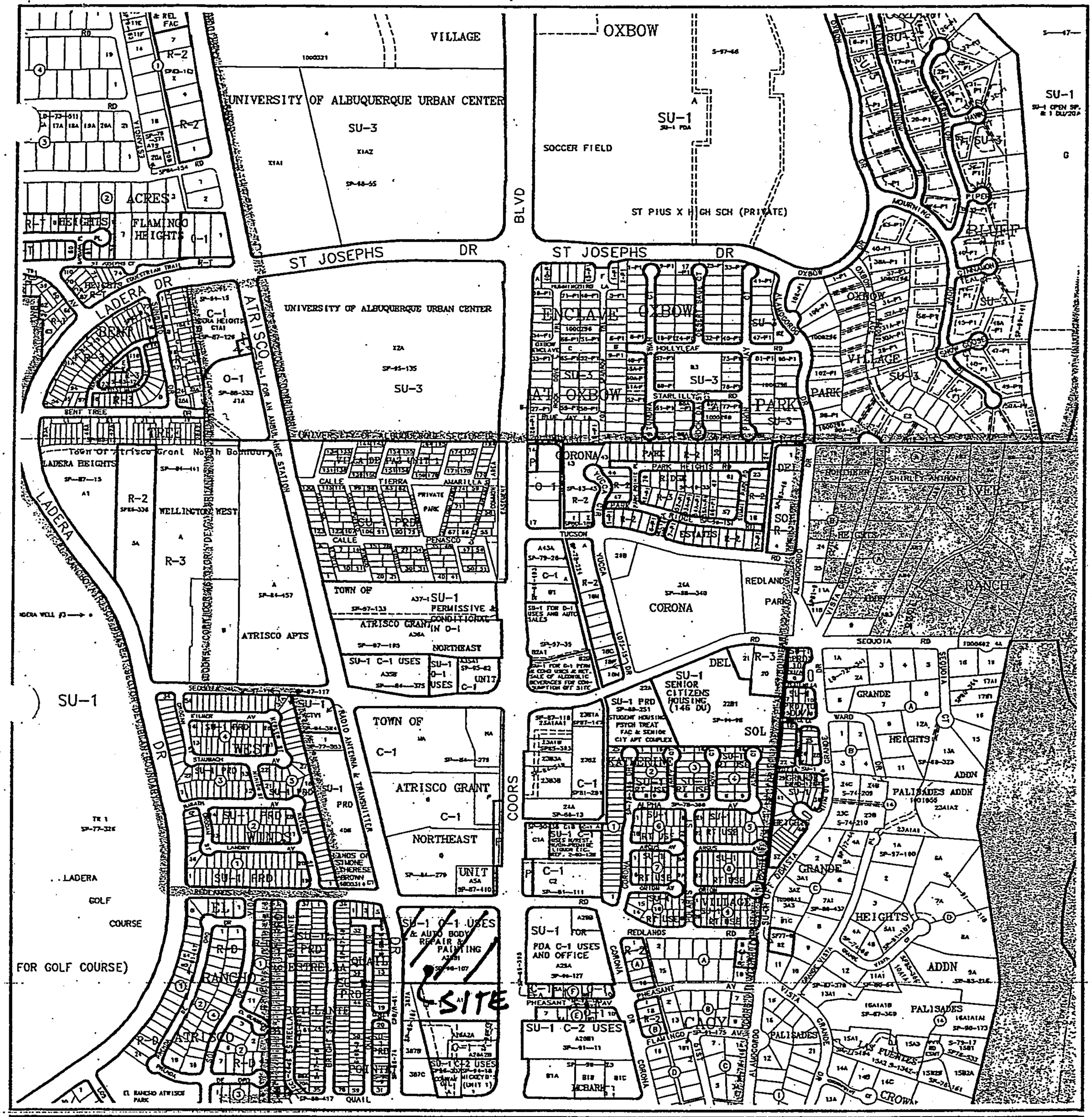
MARK GOODWIN & ASSOCIATES, PA

Scott Davis
Senior Engineer

SD\bg

RECEIVED
NOV 12 2003
HYDROLOGY SECTION

f:\a02104-redlands sc \ resubmittal ltr.



CITY OF
Albuquerque

AGIS
Albuquerque Geographic Information System
PLANNING DEPARTMENT

GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

G-11-Z

Map Amended through January 21, 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 Coors/Redlands Shopping
SUBJECT Drainage
BY JMM DATE 4/14/03
CHECKED _____ DATE _____
SHEET ___ OF ___

HYDROLOGY

Subject property is part of the Special ~~Assessment~~ District 198 Drainage Study by Andrews, Asbury & Robert, Inc. 1985. Storm sewer was designed from this study and installed throughout the area, draining to a Rio Grande outfall via Tucson Rd. Existing 42" RCP fronts the entire site along Redlands Road. The subject property covers approximately 10.9% of Basin A-4 in the study.

According to Table 2 in the study, the increase in flow within the storm drain in Redlands due to Basin A-4 is 36.1 cfs. With rights to an 11% share of this flow, the subject site would be allowed a pro-rated discharge of 3.97 cfs including ½ the adjoining Coors Blvd. R/W.

From AHYMO, the site and the adjoining Coors Blvd. R/W generates a total discharge of 19.43 cfs in the developed condition. With aid of on-site ponding the rate has been reduced to 0.71 cfs. This coupled with the free discharge from the Coors Blvd R/W results in a total discharge of 3.87 cfs, which less than the allowable of 3.97.

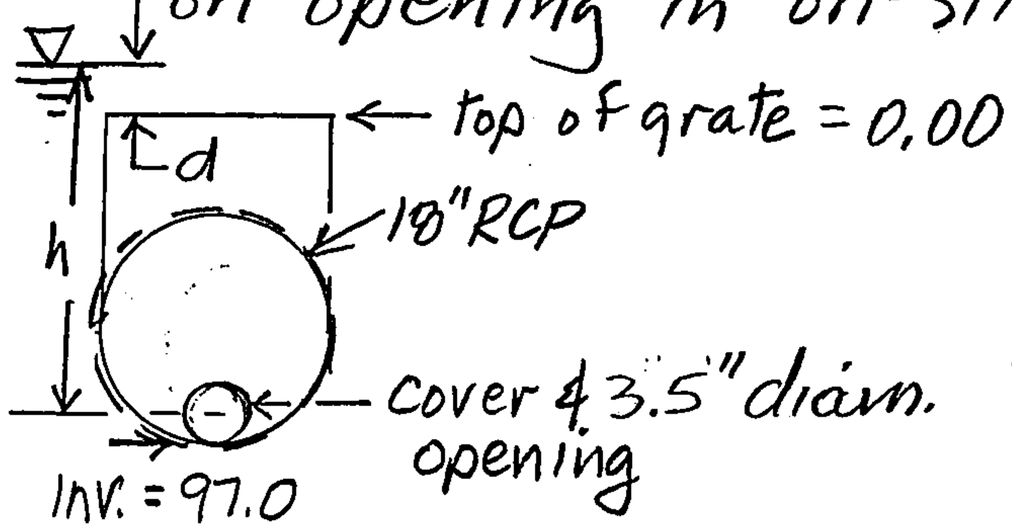
The maximum water surface would be at elevation 5102.00, and then spill over the water block in the driveway on Coors Blvd.

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 Coors/Redlands Shopping
SUBJECT
BY DATE
CHECKED DATE
SHEET OF

4" ORIFICE ON OPENING OF ON-SITE STORM DRAIN

18" Storm drain to Coors Blvd. with steel cover on opening in on-site drop inlet.



$$Q = 0.6 A \sqrt{2gh}$$

$$A = \frac{\pi d^2}{4} = \frac{\pi (.29)^2}{4} = 0.0668 \text{ ft}^2$$

@ $d = 1.0'$, $h = 3.85'$ $\quad Q = 0.6(0.0668)\sqrt{64.4(3.85)} = 0.63$ cfs

@ $d = 1.64'$, $h = 4.49'$ $\quad Q = 0.0401\sqrt{64.4(4.49)} = 0.68$ cfs

@ $d = 2.0'$, $h = 4.85'$ $\quad Q = 0.0401\sqrt{64.4(4.85)} = 0.71$ cfs

D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS

PROJECT Redlands Shopping
SUBJECT Drainage
BY gmm DATE
CHECKED DATE
SHEET OF

PONDING CALCULATIONS

ELEV.	AREA	AVG. AREA	DEPTH	VOL	CUM. VOL.
0.00	0				
		5,323	1.0	5,323	0.1222
1.00	10,646				
		16,172	0.64	10,350	0.3598
1.64	21,698				
		32549	0.36	11,719	0.6288
2.00	43,400				

TABLE 2 - DESIGN FLOWS

Analysis Point	Pipe Section	Tributary Areas	Total Area (Ac.)	Flow Time (mins) Inlet or Tc	Flow Time (mins) Pipe	Flow Time (mins) Total	I (in/hr)	C	Q (cfs)	Pipe Slope %	Pipe Size (in.)	Pipe V_{full} (ft/sec)	Pipe Length (ft)
1A	-	A-1 & A-2	14.1	22.0	-	22.0	3.11	.65	28.5				
	1A to 2A				1.30				28.5	0.48	30	5.79	450
2A	-	A-1, A-2 & A-3	26.1			23.30	3.02	.66	52.0				
	2A to 3A				1.72				52.0	0.27	42	5.43	560
3A		A-1, A-2 A-3 & A-4	44.5			25.02	2.91	.68	88.1				
	3A to AB				1.25				88.1	0.38	48	7.05	530
4B		A-1, A-2 A-3 & A-4	44.5			26.27	2.84	.68	85.9				
									Difference = 36.1 cfs				
1B	-	B-1	16.4	26.6	-	26.6	2.82	.62	28.7				
	1B to 2B				.61				28.7	2.11	24	10.46	380
2B		B-1 & B-2	21.2			27.21	2.79	.62	36.7				
	2B to 3B				0.91				36.7	0.73	30	7.14	390

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
401 San Pedro, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project: SAD-193 Sheet 3 of 15
By [illegible] Job No. 291
Chk'd [illegible] Date 9/85

TABLE 1 - DRAINAGE BASIN DATA

SUB-BASIN DESIGNATION	LENGTH (FT)	M (FT)	Tc (MINS)	AREA (AC.)	C	I (IN/HR)	Qp (CFS)
A-1	1860	7.0	22.0	16.5 / 9.5*	0.65	3.11	19.2
A-2	700	4.5	8.4 L 10	5.2 / 4.6*	0.65	4.65	13.9
A-3	1350	8.0	14.5	12.0	0.67	3.85	30.9
A-4	1810	7.0	21.3	18.4	0.70	3.16	40.7
B-1	1650	3.0	26.6	16.4	0.62	2.82	28.7
B-2	970	6.0	11.0	7.3 / 4.8*	0.63	4.43	13.4
B-3	1800	8.0	20.1	17.1 / 11.1*	0.64	3.25	23.1
B-4	2200	11	22.5	21.8	0.68	3.08	45.7

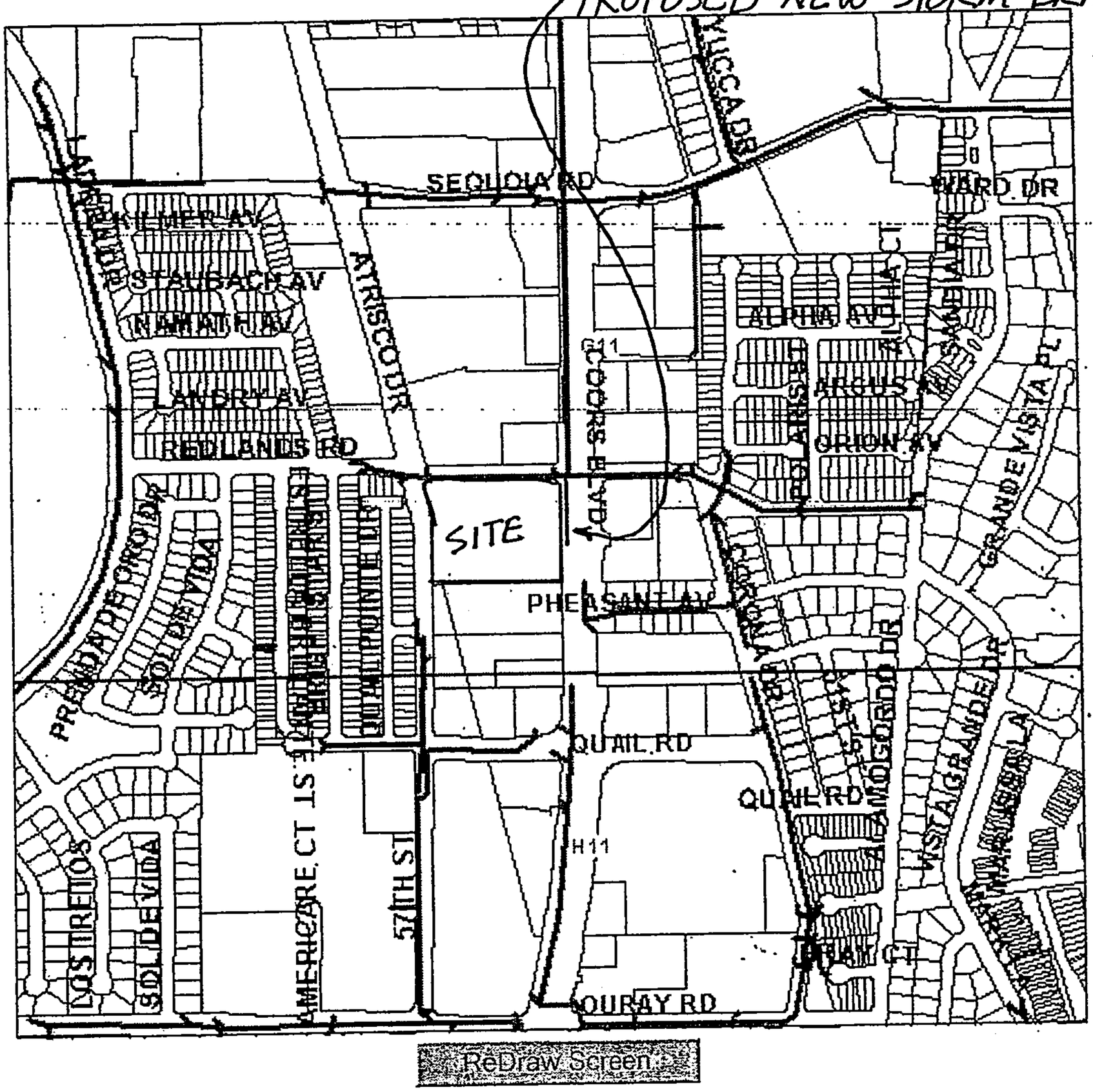
* CONTRIBUTING DRAINAGE AREA, DUE TO REAR YARD RETENTION

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
401 San Pedro, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project SAD-198 Sheet 1 of 15
By [illegible] Chk'd — Date 9/95 Job No. 201

Activate By 'Clicking' on the Map

Zoom In Id Address Id ZM Pan Zoom Out



1999 AIR PHOTO (Metro Area Coverage)

CITY

LAYE

STREE

PARKS

CITY L

ZONE

NBR B

COMM

WATEI

SEWER

STORM

ZONIN

LOT NI

ZIP CO

COUNC

FLOOD

PARCE

CONTR

SENAT

REPRE

COUNT

PARCE

CRIMI

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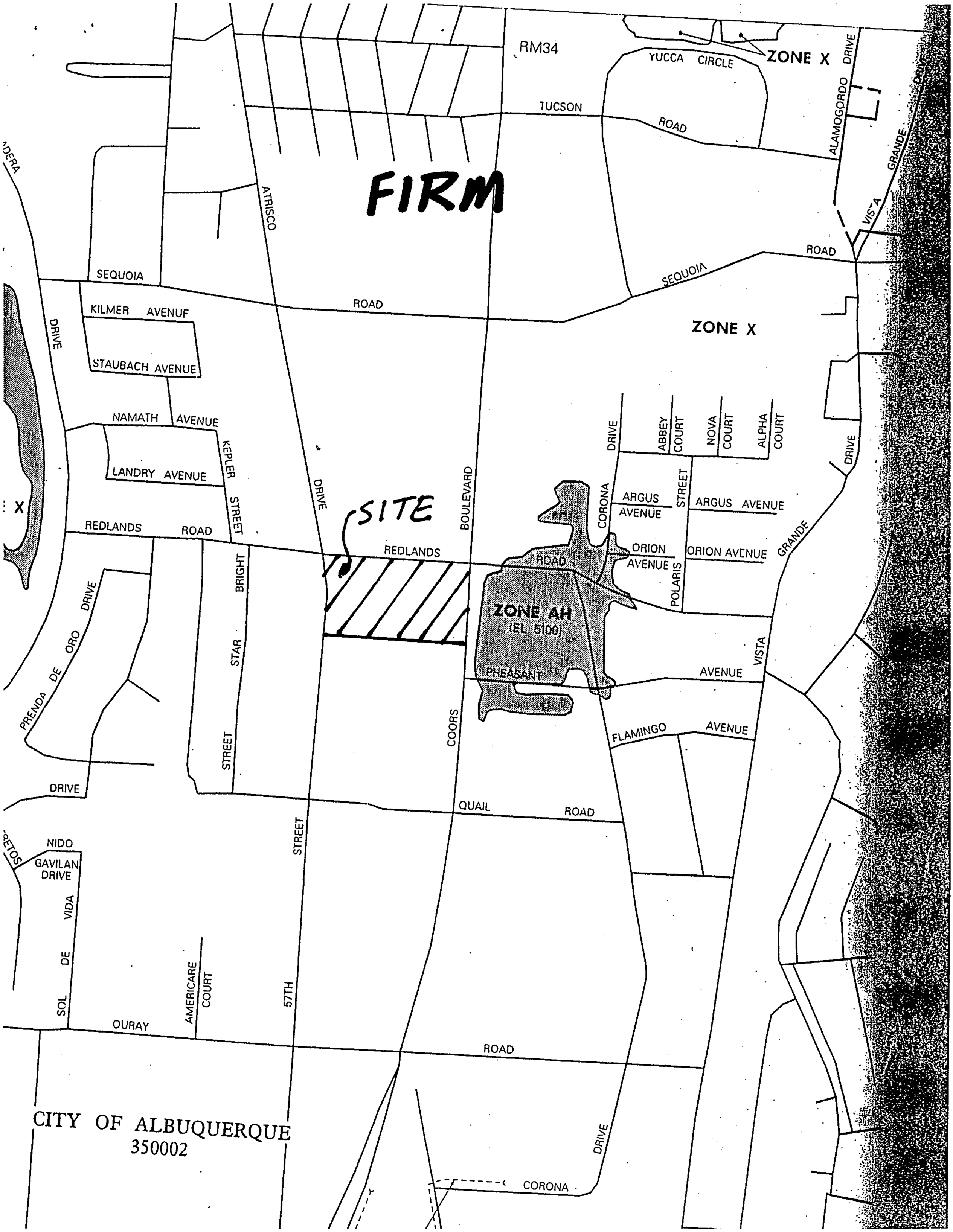

CITY OF ALBUQUERQUE
350002

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 04/15/2003
         START TIME (HR:MIN:SEC) = 14:23:44      USER NO.= M_GOODWN.I01
         INPUT FILE = REDLANDS.DAT


START                TIME=0.0
*****    REDLANDS SHOPPING CENTER ON COORS BLVD.
*****    FILE: F:\JOHN\AHYMO\REDLANDS APRIL 14, 2003
*****
*****    100-YEAR 6-HOUR STORM EVENT
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.88 IN RAIN SIX=2.23 IN
                     RAIN DAY=2.65 IN DT=0.033333 HR

                  COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                  DT =     .033333 HOURS       END TIME =     5.999940 HOURS
                     .0000   .0018   .0037   .0056   .0075   .0095   .0115
                     .0136   .0157   .0179   .0201   .0224   .0247   .0271
                     .0296   .0322   .0348   .0375   .0403   .0432   .0462
                     .0494   .0526   .0560   .0595   .0631   .0670   .0710
                     .0752   .0797   .0844   .0896   .0951   .1011   .1139
                     .1424   .1864   .2495   .3357   .4489   .5933   .7730
                     .9924  1.1953  1.2802  1.3519  1.4157  1.4737  1.5271
                    1.5767  1.6231  1.6665  1.7074  1.7460  1.7824  1.8169
                    1.8496  1.8806  1.9100  1.9379  1.9644  1.9706  1.9765
                    1.9822  1.9875  1.9926  1.9975  2.0023  2.0068  2.0112
                    2.0154  2.0195  2.0235  2.0274  2.0311  2.0348  2.0383
                    2.0418  2.0452  2.0485  2.0517  2.0548  2.0579  2.0609
                    2.0639  2.0668  2.0697  2.0725  2.0752  2.0779  2.0805
                    2.0832  2.0857  2.0882  2.0907  2.0932  2.0956  2.0979
                    2.1003  2.1026  2.1048  2.1071  2.1093  2.1115  2.1136
                    2.1157  2.1178  2.1199  2.1220  2.1240  2.1260  2.1280
                    2.1299  2.1319  2.1338  2.1357  2.1375  2.1394  2.1412
                    2.1430  2.1448  2.1466  2.1484  2.1501  2.1518  2.1536
                    2.1552  2.1569  2.1586  2.1602  2.1619  2.1635  2.1651
                    2.1667  2.1683  2.1699  2.1714  2.1730  2.1745  2.1760
                    2.1775  2.1790  2.1805  2.1820  2.1834  2.1849  2.1863
                    2.1877  2.1892  2.1906  2.1920  2.1933  2.1947  2.1961
                    2.1975  2.1988  2.2002  2.2015  2.2028  2.2041  2.2054
                    2.2067  2.2080  2.2093  2.2106  2.2119  2.2131  2.2144
                    2.2156  2.2168  2.2181  2.2193  2.2205  2.2217  2.2229
                    2.2241  2.2253  2.2265  2.2277  2.2288  2.2300

*****
***** EXISTING, UNDEVELOPED CONDITIONS-5.56 ACRES-ENTIRE
***** ONSITE BASIN, INCLUDING COORS BLVD. R/W (60')
```

```
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.0087 SQ MI
                     PER A=0 PER B=0 PER C=94 PER D=6
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   2.0609     CFS   UNIT VOLUME =     .9941       B =   526.28      P60 = 1.8800
    AREA =       .000522 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .105980HR     TP =    .133300HR     K/TP RATIO =    .795046     SHAPE CONSTANT, N =  4.509462
    UNIT PEAK =   23.792     CFS   UNIT VOLUME =     .9999       B =   387.81      P60 = 1.8800
    AREA =       .008178 SQ MI    IA =     .35000 INCHES    INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=1 CODE=24

                                PARTIAL HYDROGRAPH   100.10

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000        .0          1.333       1.7         2.667        .2         4.000        .0         5.333        .0
     .667        .0          2.000       2.3         3.333        .0         4.667        .0         6.000        .0

    RUNOFF VOLUME =      1.06944 INCHES      =         .4962 ACRE-FEET
    PEAK DISCHARGE RATE =       16.71 CFS  AT    1.500 HOURS    BASIN AREA =    .0087 SQ. MI.


*****
*****
***** ON-SITE DEVELOPED CONDITIONS, EXCLUDING EXISTING COORS
***** BLVD R/W AND ADDITIONAL R/W REQUIRED FOR DEDICATION)
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.0075 SQ MI
                     PER A=0 PER B=15 PER C=0 PER D=85
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   25.169     CFS   UNIT VOLUME =     .9989       B =   526.28      P60 = 1.8800
    AREA =       .006375 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130816HR     TP =    .133300HR     K/TP RATIO =    .981365     SHAPE CONSTANT, N =  3.598385
    UNIT PEAK =    2.7635     CFS   UNIT VOLUME =     .9953       B =   327.44      P60 = 1.8800
    AREA =       .001125 SQ MI    IA =     .50000 INCHES    INF =    1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333
```

PRINT HYD ID=2 CODE=24

PARTIAL HYDROGRAPH 100.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	4.6	4.000	.1	6.000	.1		
.667	.0	2.667	.4	4.667	.1	6.667	.0		
1.333	5.6	3.333	.2	5.333	.1				

RUNOFF VOLUME = 1.79745 INCHES = .7190 ACRE-FEET
PEAK DISCHARGE RATE = 19.43 CFS AT 1.500 HOURS BASIN AREA = .0075 SQ. MI.

*****
***** COORS BLVD. R/W AT FULL BUILT SECTION
COMPUTE NM HYD ID=3 HYD NO=100.3 AREA=0.0012 SQ MI
PER A=0 PER B=0 PER C=15 PER D=85
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.0270 CFS UNIT VOLUME = .9965 B = 526.28 P60 = 1.8800
AREA = .001020 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .105980HR TP = .133300HR K/TP RATIO = .795046 SHAPE CONSTANT, N = 4.509462
UNIT PEAK = .52368 CFS UNIT VOLUME = .9755 B = 387.81 P60 = 1.8800
AREA = .000180 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=24

PARTIAL HYDROGRAPH 100.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.9	2.667	.1	4.000	.0	5.333	.0
.667	.0	2.000	.8	3.333	.0	4.667	.0	6.000	.0

RUNOFF VOLUME = 1.84682 INCHES = .1182 ACRE-FEET
PEAK DISCHARGE RATE = 3.22 CFS AT 1.500 HOURS BASIN AREA = .0012 SQ. MI.

***** DEVELOPED PORTION OF RUNOFF TO BE ROUTED THROUGH POND
***** AND THEN COMBINED WITH COORS R/W FLOW BEFORE ENTERING

***** EXISITNG 42" STORM DRAIN IN REDLANDS

ROUTE RESERVOIR ID=4 HYD NO=102.1 INFLOW ID=2 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	DEPTH(FT)
0.0	0.0	00.00
0.63	0.1222	01.00
0.68	0.3598	01.64
0.71	0.6288	02.00
0.73	0.7538	02.20

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.80	.00	.00	.000	.00
1.60	13.45	1.57	.333	.67
2.40	.82	1.97	.605	.71
3.20	.17	1.94	.583	.70
4.00	.11	1.89	.546	.70
4.80	.11	1.84	.507	.70
5.60	.13	1.79	.469	.69
6.40	.01	1.73	.430	.69
7.20	.00	1.67	.384	.68
8.00	.00	1.59	.339	.68
8.80	.00	1.47	.295	.67
9.60	.00	1.35	.251	.66
10.40	.00	1.23	.208	.65
11.20	.00	1.12	.166	.64
12.00	.00	1.00	.124	.63
12.80	.00	.72	.088	.45
13.60	.00	.51	.063	.32
14.40	.00	.36	.044	.23
15.20	.00	.26	.032	.16
16.00	.00	.18	.023	.12
16.80	.00	.13	.016	.08
17.60	.00	.09	.011	.06
18.40	.00	.07	.008	.04
19.20	.00	.05	.006	.03

PEAK DISCHARGE = .707 CFS - PEAK OCCURS AT HOUR 2.47
MAXIMUM WATER SURFACE ELEVATION = 1.968
MAXIMUM STORAGE = .6052 AC-FT INCREMENTAL TIME= .033333HRS

PRINT HYD ID=4 CODE=24

PARTIAL HYDROGRAPH 102.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	.7	8.000	.7	12.000	.6	16.000	.1
.667	.0	4.667	.7	8.667	.7	12.667	.5	16.667	.1
1.333	.1	5.333	.7	9.333	.7	13.333	.4	17.333	.1
2.000	.7	6.000	.7	10.000	.7	14.000	.3	18.000	.0
2.667	.7	6.667	.7	10.667	.6	14.667	.2	18.666	.0
3.333	.7	7.333	.7	11.333	.6	15.333	.2	19.333	.0

RUNOFF VOLUME = 1.78710 INCHES = .7148 ACRE-FEET
PEAK DISCHARGE RATE = .71 CFS AT 2.467 HOURS BASIN AREA = .0075 SQ. MI.

```
*****
***** COMBINE HYDROGRAPHS BASINS 2 & 3 AFTER ROUTING TO REPRESENT
***** DISCHARGE REACHING EXISTING 42" STORM DRAIN IN REDLANDS RD.
ADD HYD             ID=5 HYD NO=101.1 ID=3ID=4
PRINT HYD           ID=5 CODE=24
```

PARTIAL HYDROGRAPH 101.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	.7	8.000	.7	12.000	.6	16.000	.1
.667	.0	4.667	.7	8.667	.7	12.667	.5	16.667	.1
1.333	1.1	5.333	.7	9.333	.7	13.333	.4	17.333	.1
2.000	1.5	6.000	.7	10.000	.7	14.000	.3	18.000	.0
2.667	.8	6.667	.7	10.667	.6	14.667	.2	18.666	.0
3.333	.7	7.333	.7	11.333	.6	15.333	.2	19.333	.0

RUNOFF VOLUME = 1.79531 INCHES = .8330 ACRE-FEET
PEAK DISCHARGE RATE = 3.87 CFS AT 1.500 HOURS BASIN AREA = .0087 SQ. MI.

```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 14:23:44
```

Current DRC
Project Number:_____

FIGURE 12

INFRASTRUCTURE LIST

Date Submitted:_____
Date Site Plan Approved:_____
Date Preliminary Plat Approved:_____
Date Preliminary Plat Expires:_____
DRB Project No.:_____
DRB Application No.:_____

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

Redlands Shopping Center
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tract A-28-B1 and A-28-B2, NE Unit, Town of Atrisco Grant
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
			TRANSPORTATION						
		12'	Arterial Pvmt. Decel Lane 6' conc. SW	Coors Blvd.	Redlands	S. end of PL.	/	/	/
			DRAINAGE						
		18"	Public RCP SD	Coors Blvd.	~~Midpoint of site~~ South PL	Redlands Rd.	/	/	/

1 Grading & Drainage Plan Certificaiton Required before relase of finacial guarantee.
2 Water / SAS Infrastructure to include vavles, fitlings, Firehydrants as depicted on site plan.
3 Storm drain infrastructure to include inlets and manholes

AGENT / OWNER

John M. MacKenzie,PE
NAME (print)

MARK GOODWIN & ASSOCIATES
FIRM

John M. MacKenzie
SIGNATURE - date
4-29-03

MAXIMUM TIME ALLOWED TO CONSTRUCT THE IMPROVEMENTS WITHOUT A DRB EXTENSION: _____

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

DRB CHAIR - date
PARKS & GENERAL SERVICES - date
TRANSPORTATION DEVELOPMENT - date
AMAFCA - date
UTILITY DEVELOPMENT - date
_____ - date
CITY ENGINEER - date
_____ - date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER

DRAINAGE INFORMATION SHEET
(REV. 1/28/2003rd)

PROJECT TITLE: Redlands Shopping Center — ZONE MAP/DRG #: G-11/D63

DRB#: — EPC #: 1002405 — W.O.#:

LEGAL DESCRIPTION: Tract A-28-B1 and A-28-B2, NE Unit Town of Atrisco

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Scott Davis
ADDRESS:	PO Box 90606	PHONE:	828-2200
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87199
OWNER:	AMERICAN HOME FURNISHINGS	CONTACT:	
ADDRESS:	PO Box 3685, Station D	PHONE:	883-2015
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87190
ARCHITECT:	Dekker / Perish / Sabatini Ltd	CONTACT:	
ADDRESS:	6801 Jefferson NE, Suite 100	PHONE:	761-4222
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87109
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**
- x DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- x 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
- x BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TEMP)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (specify)

RECEIVED
JAN 05 2004
HYDROLOGY SECTION

RECEIVED
NOV 12 2003
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED?

- ____ YES
- x NO
- ____ COPY PROVIDED

DATE SUBMITTED: 1/5/04 — BY:

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.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 16, 2003

John MacKenzie PE
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

Re: Redlands Shopping Center Conceptual Grading and Drainage Plan
Engineer stamp dated 5-15-03 (G11/D63)

Dear Mr. MacKenzie,

Based on information contained in your submittal dated 5-15-03, the above referenced plan is approved for Site Development Plan for Building Permit action by the DRB.

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

Sincerely,

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

C: file

G-11/D63

DRAINAGE INFORMATION SHEET
(REV. 1/28/2003rd)

PROJECT TITLE: Redlands Shopping Center — ZONE MAP/DRG #: G-11

DRB#: — EPC #: 1002405 — W.O.#:

LEGAL DESCRIPTION: Tract A-28-B1 and A-28-B2, NE Unit, Town of Atrisco

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	John M. MacKenize, PE
ADDRESS:	PO Box 90606	PHONE:	828-2200
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87199
OWNER:	AMERICAN HOME FURNISHINGS	CONTACT:	
ADDRESS:	PO Box 3685, Station D	PHONE:	883-2015
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87190
ARCHITECT:	Dekker / Perich / Sabatini Ltd	CONTACT:	
ADDRESS:	6801 Jefferson NE, Suite 100	PHONE:	761-4222
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87109
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
- X 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
- X 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) ____

WAS A PRE-DESIGN CONFERENCE ATTENDED?

- ____ YES
- X NO
- ____ COPY PROVIDED

RECEIVED
MAY 15 2003
HYDROLOGY SECTION

DATE SUBMITTED: 5-15-03 — BY: John M. MacKenzie

John M. MacKenzie, PE

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:

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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.