FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

September 22, 1987

Mike Yost, P.E.
Community Sciences Corporation
Post Office Box 1328
Corrales, New Mexico 87048

RE: GRADING PLAN FOR PRAIRIE RIDGE 8, SUBMITTED FOR ROUGH GRADING PERMIT SEPTEMBER 16, 1987 (C-12/D1E)

Dear Mike:

The preliminary grading plan, referred to above, with an engineer's stamp date of September 16, 1987, is approved for rough grading.

If you should have any questions regarding this project, please call me at 768-2650.

Cordially,

Stuart Reeder

G. Stuart Reeder, P.E.
C.E./Hydrology Section

xc: Bob Ryals, BCD

GSR/bsj

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P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

October 21, 1987

Mike Yost, P.E.
Community Sciences Corporation
Post Office Box 1328
Corrales, New Mexico 87048

RE: GRADING & DRAINAGE REPORT FOR PRAIRIE RIDGE, UNIT 7 & 8
RESUBMITTED OCTOBER 10, 1987 (~~C-12~~ D-12 E)

Dear Mr. Yost:

Your grading and drainage report for Prairie Ridge, Units 7 and 8, with an engineer's stamp date of October 12, 1987, is approved.

Prior to final plat sign-off, you will need an executed Subdivision Improvements Agreement, and the infrastructure bonded or built and accepted by the City.

If you have any questions, please call me at 768-2650.

Cordially,

Stuart Reeder, P.E.

G. Stuart Reeder, P.E.
C.E./Hydrology Section

xc: Bob Ryals, BCD

GSR/bsj

Revised August 20, 1987

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A) Purpose and Scope

Bellamah Community Development, is currently planning for the development of the Prairie Ridge Units 7 and 8. The proposed development consists of approximately 32.4 acres and is to be subdivided into approximately 80 RT Lots in Unit 7 and 104 RT Lots in Unit 8. This report presents an overall Drainage Management and Conceptual Grading Plan for approval by the City of Albuquerque and A.M.A.F.C.A. so that subsequent subdivision and development may commence.

B) Site Location and Topography

Prairie Ridge Units 7 and 8 occupy Parcels H-14, H-15 and H-16 of the Riverview Sector on Albuquerque's Northwest Mesa. The project area is bounded on the North by Calle Nortena, N.W., on the west by the Homestead Hills North subdivision, and on the south by Butterfield Trail. (See Plate 1).

Topography across the project area tends to slope in a southeasterly direction. Soils are primarily gravely sands and silts. The soils were representative of S.C.S. soil hydrologic groups A and B as shown in the "Piedras Marcadas Basin Drainage Management Plan", Figure 3, prepared by Tom

Mann Associates, Inc. for A.M.A.F.C.A. in February, 1983. Since most of the site is contained within a type "B" Soil group, a CN value of 70 is used in most cases.

C) Design Criteria

Flood Control Regulations

The drainage plan presented in this report has been designed to comply with AMAFCA resolution 80-15 which requires that proposed land development projects be designed such that no flooding of private properties will occur during any storm up to and including the 100 year frequency event.

Additionally, this drainage plan has been designed to comply with current City of Albuquerque Drainage Ordinance, specifically, Section 7, which dictates street criteria:

1. 100 year storm
   (a) Stormwater flow not to exceed a depth of 0.87' in any street

w/ STD. CURB of 8"

2. 10 year storm
   (a) Local Street
      (1) Velocity times depth less than 6.5
   (b) Arterial Streets
      (1) Flow not to exceed a depth of 0.50'

(2) Velocity times depth less than 6.5

(3) One driving land in each direction free of stormwater.

Engineering Parameters

In accordance with AMAFCA criteria all hydrological analysis is based on the 100 year frequency - 6 hour duration storm as represented in the NOAA Atlas for New Mexico.

A typical R1 Lot has a 57% impervious factor while a R-T Lot has a 62% impervious factor.

Ten year, six hour values were also used for subcatchments in accordance with City drainage policies regarding street flow.

The four rainfalls pertinent to the study are as follows:

	10 Year	100 Year
One Hour	1.25"	1.9"
Six Hour	1.45"	2.2"

D. Computational Procedures

The analysis approach utilized follows standard engineering practice. Key points of confluence were selected, and subsequently the associated individual and aggregate contributing basins were defined.

Hydrological computations were accomplished by means of our MODSCS computer model. This model is based upon the Soil Conservation Service triangular unit hydrograph method, but the method has been modified to be more applicable to developed watershed conditions. The model avoids the common pitfall of grappling for an appropriate developed curve number by including percent impervious as an input variable. This fraction of the watershed is then modeled at a curve number of 95. An assigned curve number is applied to the balance of the watershed, and the runoffs are combined to yield the composite hydrograph. In addition the model has the capacity to route hydrographs through reservoirs and channels, or to translate hydrographs in time for summation with other sub-basins.

Times of concentration were estimated by using a combination of approximated street flow velocities and overland flow velocities (as applicable) from the upper subcatchment reaches to the confluence point of interest. A convenient formula for overland flow velocity takes the form:

$$Vo = KY^{0.5}$$

where Vo = overland flow velocities

Y = average ground slope in percent

K = a ground cover factor

Street velocities were estimated by use of the Manning equation for uniform flow.

For some watersheds with well defined stream beds the California Highways Formula for times of concentration was used to estimate the parameter directly. The equation takes the form:

$$Tc = \left[\frac{11.9\ L^3}{H}\right]^{.385}$$

Where

Tc = time of concentration in hours

L = reach length in miles

H = differential elevation in feet

All the characteristic hydrological parameters for each subcatchment are contained in Appendix A as part of the computer model output, and a summary of parameters and peak flow rates are given in Table 1.

Revised August 20, 1987

Flow Characteristics for conveyance swales, channels and streets were analyzed based on the Manning Equation for uniform flow. Streets are assumed to have a 2% cross slope from curb to crown and a standard or mountable curb.

E) Offsite Drainage

There is no off-site drainage from the east due to the slope of the adjacent area. These flows take an easterly direction.

The offsite drainage basins that impact the project area are illustrated on Plate 2. The size and characteristics of these basins are based on previous work by Community Sciences Corporation; including the "Drainage Management Plan for Shenandoah Units 4, 5 and 6," June, 1987 and the "Master Drainage Plan or Riverview", updated January, 1986.

The Shenandoah Units 4, 5 and 6 Subdivision contribute the majority of the offsite flows, with Homestead Hills North (which includes a small portion of Prairie Ridge Unit 4) contributing the remainder of the offsite flows for this project site. The flows are shown on Plate 2 as CN2 and HHN1 respectively. These flows will be combined with onsite basins and flow down Calle Nortena and Butterfield Trail.

The storm runoff carried by Calle Nortena will be transported to the Main Branch of the Piedras Marcadas Arroyo by a battery of catch basins as shown on Plate 2 and

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The storm runoff carried by Calle Nortena will be transported to the Main Branch of the Piedras Marcadas Arroyo by a battery of catch basins as shown on Plate 2 and

via storm sewer culverts. Storm runoff carried by Butterfield Trail will be transported to the South Branch of the Piedras Marcadas storm sewer culvert (installed with Prairie Ridge Units 4 and 5) via catch basins and culverts.

F) Onsite Drainage

Onsite drainage improvements are shown on Plate 2. Basins A1 and A2 are to drain into Butterfield Trail at Points 4 and 5 respectively. These flows are handled by the local streets. Storm runoff generated by Basin A3 take the route of streets until they embark on the eyebrow at the southeast corner in which they then enter a catch basin which drains into the storm water system in Butterfield Trail. The flows from Basins A1, A2 and enter the offsite flows from HHN1 traveling down Butterfield Trail and then take the path described with CN2 flows.

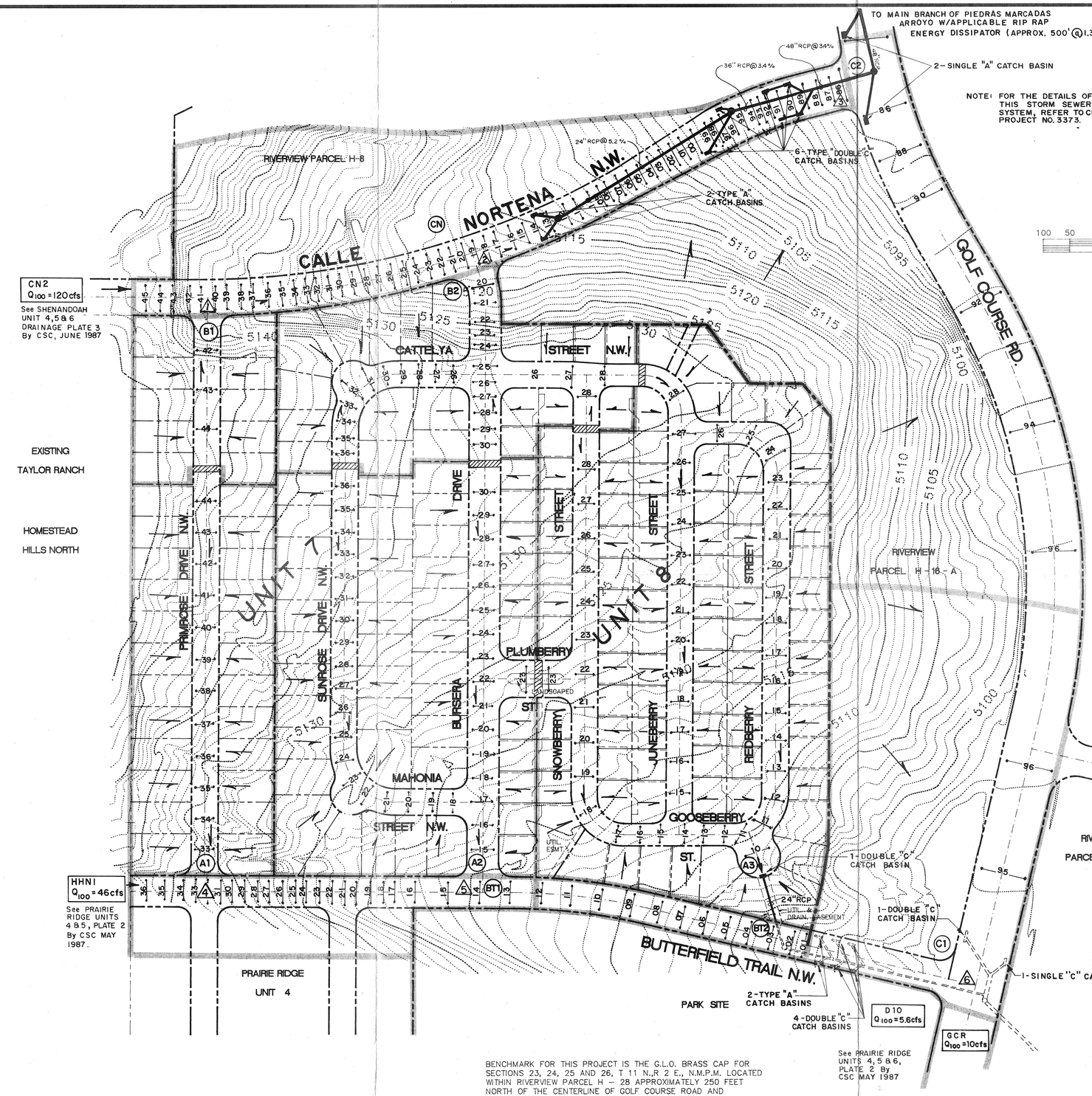
Basins B1 and B2 drain into calle Nortena at points 1 and 2 respectively. These flows are also handled by the Local Streets and take the path described earlier with flows from CN2.

G) Erosion Control

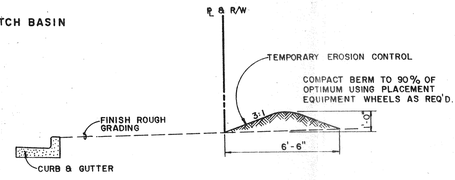
Control of excessive soil erosion into City Streets and drainage improvements during construction will be

accomplished by use of temporary lot line, water-trap berms. These will be windrowed into place following mass grading operations and left in place until each home is constructed and sold. Plate 2 illustrates the dimensions of these berms, and they will be located along those boundaries of each lot which are common to City rights of way or public easement.

COMMUNITY SCIENCES CORPORATION - CORRALES,NEW MEXICO - (505) 897-0000



BENCHMARK FOR THIS PROJECT IS THE G.L.O. BRASS CAP FOR SECTIONS 23, 24, 25 AND 26, T 11 N.,R 2 E., N.M.P.M. LOCATED WITHIN RIVERVIEW PARCEL H – 28 APPROXIMATELY 250 FEET NORTH OF THE CENTERLINE OF GOLF COURSE ROAD AND LA ORILLA ROAD, N.W. ELEVATION = 5112.83



TYPICAL SECTION THRU BERM
SCALE: 1" = 4'

PLATE 2

DRAINAGE PLAN

FOR

PRAIRIE RIDGE UNITS 7 AND 8

CITY OF ALBUQUERQUE,

BERNALILLO COUNTY, NEW MEXICO

JULY, 1987

LEGEND

- SUBCATCHMENT BOUNDARY
- WATER BLOCK
- (B1) AREA/POINT DESIGNATION
- FLOW LEADER
- SUBDIVISION BOUNDARIES
- 1 INTERSECTION DESIGNATION
- HHN1 Q100 = 46cfs OFFSITE DRAINAGE BASIN
- STORM SEWER, MANHOLE AND CATCH BASIN TO BE BUILT WITH THIS PROJECT
- STORM SEWER, MANHOLE AND CATCH BASIN TO BE BUILT WITH PRAIRIE RIDGE UNIT 4 (SEE CITY PROJECT NO. 3314)
- 22 CONCEPTUAL, PRELIMINARY GUTTER FLOWLINE ELEVATION. ALL LOCAL RESIDENTIAL STREETS TO HAVE MOUNTABLE CURB AND GUTTER

LOT GRADING SPECIFICATIONS

1) CROSS LOT DRAINAGE WILL NOT BE PERMITTED. IF LOCAL CONDITIONS SHOULD DICTATE A RELAXATION OF THIS RULE, THEN THE APPROPRIATE PUBLIC OR PRIVATE DRAINAGE EASEMENTS WILL BE DEDICATED ON THE PLAT.

2) CRITERIA FOR SETTING LOT ELEVATION CONTROL GRADES SHALL INCLUDE THE FOLLOWING:
   A) ALL DRAINAGE SWALES AND YARD AREAS SHALL HAVE MINIMUM SLOPES OF 1% AND MAXIMUM SLOPES OF 3 HORIZONTAL TO 1 VERTICAL.
   B) BUILDING PADS SHALL BE SET AT LEAST 0.2' ABOVE THE HIGHEST ELEVATION OF ADJACENT SWALES.
   C) PAD ELEVATIONS WILL BE ASSUMED TO BE EQUAL TO FINISHED FLOOR OF GARAGE. MINIMUM DRIVEWAY SLOPES SHALL BE 1% AND DRIVEWAY SLOPES SHALL NOT EXCEED 14%.
   D) USEABLE YARD AREAS SHALL HAVE MINIMUM DIMENSIONS OF 30' X 15'. SHALL HAVE MINIMUM SLOPES OF 1% AND MAXIMUM SLOPES OF 5%.

3) WHERE YARD GRADES OF ADJACENT LOTS AT PROPERTY LINES CANNOT BE MATCHED USING THE ABOVE CRITERIA, RETAINING WALLS SHALL BE PROVIDED TO ACCOMMODATE GRADE DIFFERENTIALS.

REVISED 10/12/87

APPROVED FOR DRAINAGE
20 Oct 87
DATE
G.S. Reeder c/m
SIGNATURE
ADVISE DRAINAGE INSPECTOR WHEN GRADING EXECUTED

MICHAEL J. YOST
NEW MEXICO
9663
REGISTERED PROFESSIONAL ENGINEER
10/23/87

community sciences corporation
LAND PLANNING ENGINEERING SURVEYING
P.O. Box 1328

RECEIVED
OCT 14 1987
HYDROLOGY SECTION