City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 3, 1995

Stephen L. Crawford, PE
Community Sciences Corp.
P.O. Box 1328
Corrales, N.M. 87048

RE: REVISED ENGINEER'S CERTIFICATION FOR LAS MARCADAS SUBD (C-12/D2B)
RECEIVED FEBRUARY 3, 1995 FOR FINANCIAL GUARANTY RELEASE
ENGINEER'S STAMP DATED 9-28-94

Dear Mr. Crawford:

Based on the information included in the submittal referenced above, City Hydrology accepts the revised Engineer's Certification of grading & drainage and releases the Financial Guaranty for City Project Number 4773.90.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Billy Goolsby, DRC Chairman
John Mahoney, W.M. Limited Partnership, P.O.Box 40510, Alb., NM 87195

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

September 29, 1994

Stephen L. Crawford, P.E.
Community Sciences Corp.
P.O. Box 1328
Corrales NM 87048

RE: CLARIFICATION FOR LAS MARCADAS SUBDIVISION (C12-D2B)
RECEIVED SEPTEMBER 23, 1994 FOR CHANGE ORDER APPROVAL
LETTER DATED SEPTEMBER 22, 1994

Dear Mr. Crawford:

Based on the information included in the Clarification Letter dated September 22, 1994 and Amendment #5 dated 8-29-94; City Hydrology approves Change Order #2.

Engineer's Certification of grading & drainage, per DPM checklist, must be approved before the Financial Guaranty will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Terri Martin, DRC - Project #4773.90
Andrew Garcia, Permits

WPHYD/7801/jpc

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

August 29, 1994

Stephen L. Crawford, P.E.
Community Sciences Corp.
P.O. Box 1328
Corrales NM 87048

RE: ENGINEER'S CERTIFICATION FOR LAS MARCADAS SUBDIVISION (C12-D2B)
RECEIVED AUGUST 12, 1994 FOR FINANCIAL GUARANTY RELEASE
ENGINEER'S STAMP DATED 8-9-94

Dear Mr. Crawford:

Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification of grading & drainage and releases the Financial Guaranty for City Project #4773.90.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Lynda-Michelle DeVanti, Project #4773.90

WPHYD/7801/jpc

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 10, 1993

Stephen L. Crawford, P.E.
Community Sciences Corp.
P.O. Box 1328
Corrales NM 87048

RE: DRAINAGE REPORT FOR LAS MARCADS SUBIDIVISION, (C12-D2B), ENGINEER'S STAMP DATED JULY 30, 1993

Dear Mr. Crawford:

Based on the information provided on the referenced submittal received on August 9, 1993, the plan is acceptable for Rough Grading Permit and Preliminary Plat approval.

Prior to Work Order approval, kindly address the following comments to this office:

1. The sedimentation analysis for the pond in lot 17-P1 and 18-P1 must be resolved and approved by AMAFCA. Also the pond details are required to be designed to City Standards and be submitted for review.

2. Please submit the Hydraulic Grade Line analysis with the plan and profiles for the storm drain system.

3. A drainage maintenance covenant agreement and easement will need to be executed for the temporary pond.

4. AMAFCA's signature will need to be secured on the work order plan for the temporary pond. This signature will indicate that you have met your obligations on the infrastructure list for the permanent storm drain improvements.

5. An approved variance for the wall height above 8 feet must be submitted.

These comments incorporate AMAFCA's review as well. AMAFCA will be following up with a letter on their review of your sediment analysis received August 3, 1993. If you should have any questions, please do not hesitate to call me at 768-2650.

Cordially,

Gilbert Aldaz, P.E. & P.S.
City/County Floodplain Administrator

xc: Clifford E. Anderson, AMAFCA
Fred Aguirre, City Hydrologist
File

wp+7801

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

March 10, 2004

Steven Morrow, P.E.
Brasher & Lorenz
2201 San Pedro NE, Building 1 Suite 1200
Albuquerque, NM 87110

Re: Las Marcadas, 9401 Golf Course Rd. NW, Certificate of Occupancy
Engineer's Stamp dated 12-18-03 (C12/D2B)
Certification dated 3-08-04

Dear Mr. Morrow,

Based upon the information provided in your submittal received 3-09-04, the above referenced certification is approved for release of permanent Certificate of Occupancy by Hydrology.

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

Sincerely,

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

C: Phyllis Villanueva
file

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

November 11, 2003

Dennis Lorenz, P.E.
Brasher & Lorenz
2201 San Pedro NE
Albuquerque, NM 87110

Re: Tract A-3 Las Marcadas, Traffic Circulation Layout
Engineer's Stamp dated 9-18-03 (C12/D2B)

Dear Mr. Lorenz,

Based upon the information provided in your submittal received 10-15-03, the above referenced plan is approved for Building Permit with the following conditions:

1. Curve 16 will have a radius of 15 feet.
2. The location of the handicap spaces will be revised per zoning.

Prior to Certificate of Occupancy release, Engineer Certification of this plan and the above mentioned changes will be required.

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

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

November 5, 2003

Dennis Lorenz, P.E.
Brasher & Lorenz
2201 San Pedro NE
Albuquerque, NM 87110

Re: Tract 3A Las Marcadas Subdivision, Golf Course Rd. NW, Grading and Drainage Plan

Engineer's Stamp dated 10-14-03 (C12/D02B)

Dear Mr. Lorenz,

Based upon the information provided in your submittal received 10-15-03, 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.

A separate permit (SO#19) is required for construction within City Right of Way. A copy of this approval letter must be on hand when applying for the excavation permit. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

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

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

Sincerely,

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

C: Matt Cline, Arroyo Maintenance
Pam Lujan, Excavation Permits
file

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

January 9, 2004

Dennis Lorenz, PE
Brasher & Lorenz
2201 San Pedro NE
Albuquerque, NM 87110

RE: Las Marcadas Subdivision Tract A-3
Revised Grading and Drainage Plan
Engineer's Stamp Dated 12-18-03 (C-12/D2B)

Dear Mr. Lorenz:

Based upon the information provided in your submittal received 12-23-03, the above referenced plan is approved for Building Permit and SO#19 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, signoff by the City's Storm Drain Maintenance section and an Engineer Certification per the DPM checklist will be required.

If you have any questions please call me at 924-3986.

Sincerely,

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

C: Matt Cline, CoA
Pam Lujan, CoA
file

TABLE OF CONTENTS

I. PURPOSE AND SCOPE

W. M. Limited Partners is currently planning for the development of Las Marcadas Subdivision. The proposed development consists of approximately 28.9 acres and is to be subdivided into 81 lots.

This report presents an overall Drainage Management and Conceptual Grading Plan for approval by the City of Albuquerque in order that subsequent subdivision and development may commence.

II. SITE DESCRIPTION AND HISTORY

The project site is located in Paradise Valley TR. 2-A and 4-A along the west side of Golf Course Road, NW between Eagle Ranch TR and Paradise Boulevard, NW (See Vicinity Map).

The land generally slopes from northwest to southeast with primarily 3% to 5% slopes. Some of the property near the rear of the development has slopes up to 10%. The soils are classified as "Bluepoint loamy find sand" according to the Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, US SCS, 1977. This series falls in the US SCS hydrologic group A.

There are no existing arroyos or flood plains through this site. The existing sheet flow that enters the northwest side will be collected in a desiltation pond and then discharged via storm sewer to a temporary retention pond located at the southeast corner of the development. This pond will be eliminated with future construction of Golf Course Road and the completion of the storm sewer system associated therewith. After that future construction by others, the pond may be eliminated as part of the commercial development of lot 4-A-2 by connecting the storm sewer system of this development to pipe in Golf Course Road.

III. DESIGN CRITERIA

A. 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" and Chapter 22 of the Development Process Manual (DPM), and subsequently adopted general policies of the City of Albuquerque.

1. 100-year storm:

   a. Stormwater flow depth not to exceed the top of curb in any street

   b. Jump depth to be contained within right-of-way.

2. 10-year storm:

   a. Local street - velocity times depth less than 6.5

b. Arterial streets:

i. Flow not to exceed a depth of 0.50
ii. Velocity times depth less than 6.5
iii. One driving lane in each direction free of stormwater

B. Engineering Parameters

In accordance with AMAFCA criteria, all hydrological analysis is based on the 100-year frequency, 6-hour duration storm, as represented in Section 22.2, Hydrology, of the "Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, New Mexico, January, 1993."

Ten-year, 6-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	1.26"	1.90"
Six-Hour	1.48"	2.23"

IV. COMPUTATIONAL PROCEDURES

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

Hydrological computations were accomplished by means of the March 1992 version of AHYMO Computer Program as developed by AMAFCA. The input parameters and resulting flows for the basins are summarized on Table 1. Summary and detailed AHYMO printouts are contained in Appendix A.

Times of concentration were estimated using the Upland Method and then converted to times to peak (Lg), in accordance with the above referenced Section 22.2 which also establishes the minimum time of concentration as 12 minutes.

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 lip of gutter to crown and curb and gutter per City of Albuquerque Standard Details. Finished grade at the right-of-way is 0.33 above top of curb.

V. OFF-SITE DRAINAGE

Watershed areas 101, 105.2, and 106 constitute the off-site drainage that must be conveyed through the site. The flow in area 101 will be concentrated in a desiltation basin located along the southwest side of the project. This runoff will then be transported to a temporary retention pond at the southeast corner of the property via a 36" RCP storm drain. Area 105.2 will be diverted into the cul-de-sac street flow and area 106 will access the street via a 20' drainage right-of-way. A 10' wide easement along the rear property line will convey the sheet flow to these specified collection points. Retaining

walls will be used where necessary to regain natural grade and prevent the runoff from entering the property.

Area 102 is currently released at the northeast corner of the site and is to be diverted into Golf Course Road. It will then be intercepted at the temporary pond until future construction of Golf Course Road.

VI. ON-SITE DRAINAGE

A temporary retention pond is to be constructed at the southeast corner of the project. This pond is sized to contain the 100 year 24 hour storm for the residential section, drainage area 104 fully developed, and area 105 undeveloped. When this area develops, the existing storm sewer for Las Marcadas is to be extended to a storm sewer that will be constructed along Golf Course Road.

Flows in Marie Yvonne between 5+30 and 6+30 exceed the top of curb for 100 year flows. Since only two lots contribute to this area producing minimal flows above the curb line, the transition from mountable to standard curb and gutter will be constructed at the cul-de-sac.

VII. 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. Conceptual Grading & Drainage Plan (Plate 3), located in the pockets at the end of this report, 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 easements.

TABLE I

EXISTING DEVELOPMENT CONDITIONS

					LAND TREATMENT				INCREMENTAL		FUTURE TOTAL	
Basin I.D.	Area (Sq.Mi.)	Contr. Basin	Sum Area (Sq.Mi.)	T_c (Min.)	A	B	C	D	Q_{100} (cfs)	Q_{10} (cfs)	Q_{100} (cfs)	Q_{10} (cfs)
101	0.0883	101	0.0883	15.2	73	21	6	0	73.90	18.56	73.90	18.56
103	0.0161	101	0.1044	12.0	95	5	q	0	14.28	3.01	87.22	21.41
105.2	0.0009	105.2	0.0009	12.0	100	0	0	0	0.78	0.16	0.78	0.16
105.1	0.0013	105.2	0.0022	12.0	100	0	0	0	1.13	0.23	1.92	0.39
106	0.0054	106	0.0054	12.0	60	30	10	0	5.88	1.72	5.88	1.72
104.1	0.0304	106	0.0358	12.0	90	10	0	0	27.62	6.09	33.50	7.81
102	0.0083	102	0.0083	12.0	31	37	13	19	12.61	5.72	12.61	5.72
Total Flow Exiting This Site											134.37	34.84

FUTURE DEVELOPMENT CONDITIONS

					LAND TREATMENT				INCREMENTAL		FUTURE TOTAL	
Basin I.D.	Area (Sq.Mi.)	Contr. Basin	Sum Area (Sq.Mi.)	T_c (Min.)	A	B	C	D	Q_{100} (cfs)	Q_{10} (cfs)	Q_{100} (cfs)	Q_{10} (cfs)
106	0.0054	106	0.0054	12	60	30	10	0	5.88	1.72	5.88	1.72
113	0.1070	106	0.1610	12	0	25	25	50	23.79	13.93	29.59	15.60
101	0.0883	101	0.0883	15.2	73	21	6	0	73.90	18.56	73.90	18.56
123	0.0079	101	0.0962	12	0	25	25	50	17.57	10.29	89.14	27.94
105.2	0.0009	105.2	0.0009	12	100	0	0	0	0.78	0.16	0.78	0.16
133	0.0028	105.2	0.0037	12	0	25	25	50	6.24	3.65	7.01	3.80
143	0.0043	123,133	0.1203	12	0	25	25	50	9.57	5.60	133.94	37.06
153	0.0007	143	0.1210	12	0	25	25	50	1.57	0.92	135.46	53.17
105	0.0155	153	0.1365	12	0	5	5	90	42.17	27.40	175.57	79.26
102	0.0083	102	0.0083	12	31	37	13	19	12.61	5.72	12.61	5.72
163	0.0017	163	0.0017	12	0	25	25	50	3.79	2.22	3.79	2.22
104	0.0042	163	0.0059	12	0	25	25	50	11.44	7.43	15.23	9.65
Total Flow Entering Temporary Pond											177.08	71.52

TABLE 2

STREET FLOW CHARACTERISTICS

Street	Location	Q_{100}	Street Width	% Slope	D_N	V_N	F	D_C	V_C	* Jump Depth	** Pool Depth	Remarks
Jill Patricia	0+00-4+00	15.23	32	3.00	.36	4.05	1.91	.43	2.54	0.71	0.56	Standard C & G
	4+00-6+00	3.79	28	3.79	.18	3.01	1.91	.23	1.82	0.38	0.29	Mountable C & G
	6+00-8+50	5.88	28	1.00	.26	2.06	1.07	.27	1.95	0.28	0.34	Mountable C & G
	8+50-14+50	14.06	28	2.50	.30	3.67	1.74	.36	2.56	0.59	0.49	Mountable C & G
	14+50-16+30	17.57	28	2.50	.32	4.01	1.78	.39	2.74	0.67	0.55	Mountable C & G
Marna Lynn	16+30-21+30	13.10	28	2.88	.29	3.74	1.85	.35	2.50	0.59	0.47	Mountable C & G
	21+30-32+00	4.37	28	2.00	.21	2.49	1.47	.24	1.87	0.32	0.31	Mountable C & G
	23+00-25+50	4.37	32	1.20	.28	2.10	1.14	.29	1.90	0.30	0.36	Standard C & G
Marie Yvonne	0+00-5+30	19.23	28	2.80	.32	4.29	1.89	.41	2.81	0.72	0.56	Mountable C & G
	5+30-8+00	29.59	28	2.80	.43	5.08	1.96	.55	3.27	1.00	0.76	Standard C & G
Golf Course Road		27.84	30	2.31	.55	5.01	1.81	.68	3.15	1.01	0.87	Standard C & G

* Jump Depth = $- Y_N/2 + (Y^2_N/2 + 4 * V^2_N * D_N/g)^{0.5}$

** Pool Depth = $D_C + 1.25 * V^2_C/(2g)$