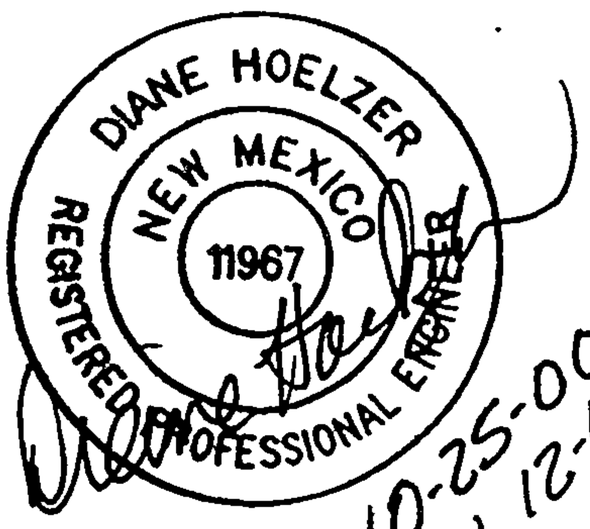
DRAINAGE REPORT

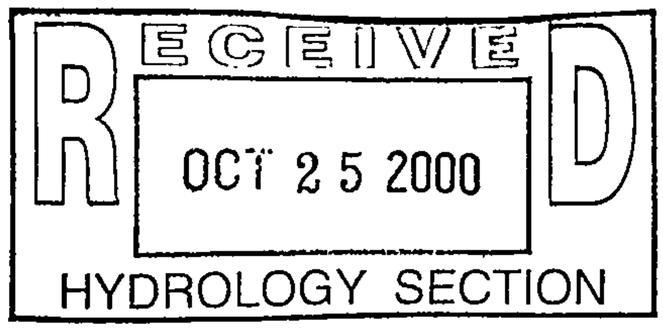
FOR

Villa Del Norte Unit 2

VISTA DEL NORTE MASTER PLANNED COMMUNITY
(OSUNA AND EDITH)



10-25-00
REV. 12-6-00



Mark Goodwin & Associates, P.A.

OCTOBER 2000

I. PROJECT DESCRIPTION

The proposed "Villa Del Norte Subdivision Unit 2' is identified as Tract T-2 within the Vista Del Norte Master Planned Community (DRB 98-071) and Tract H-1 on the Site Plan (Pocket 1). This developing community is roughly bounded by the AMAFCA North Diversion Channel to the east, Edith Blvd. to the west, Osuna Road to the south and Paseo Del Norte to the north. The project site is bounded by Vista Del Norte Drive and the AMAFCA North Diversion channel and is just north of Villa Del Norte Unit 1. This project covers approximately 9.1 acres and will be developed into 55 single family residential homes with a design layout similar to Villa Del Norte Unit 1.

II. DRAINAGE DESIGN CRITERIA AND PREVIOUS REPORTS

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The 100-year 6-hour storm event was analyzed to determine street capacities and sizing of the internal storm drain system using P(1 hr) = 2.00", P(6 hr)=2.30". The Land Treatment values used in the AHYMO analysis are shown in Table 1. The 100 year 24 hour storm was used in the analysis of the middle and north detention ponds.

Parson Brinkerhoff (AVID) prepared the approved drainage report for Vista Del Norte Master Drainage Plan Unit 1. This current drainage report used their report as a guide for this drainage plan with some modifications as will be addressed below.

III. EXISTING DRAINAGE CONDITIONS

III. A. Vista Del Norte Unit 1 Master Drainage Plan

The backbone infrastructure for Vista Del Norte Unit 1 which includes paving, sanitary sewer, water, storm drain and detention ponds have been constructed. As part of this backbone system the internal roads have been constructed which establish paved access from Osuna Road to the project site's southwest property corner. A 16" waterline exists in Vista Del Norte Drive creating a looped waterline connection between Osuna Road and Ranchitos Road. There is an existing 54" storm drain stub at the end of Vista Monte Drive culdesac that connects to a 60" storm drain which outfalls into the Vista Del Norte Unit 1 master plan middle pond. The south detention pond facilities have been constructed as well as the middle pond. The North detention pond has been preliminarily designed. Refer to pocket 2 for AVID's "Vista Del Norte Drainage Plan".

III. B. Project Site

Under existing drainage conditions runoff from the site is in a general northwesterly direction. Offsite runoff from the AMAFCA North Diversion channel earthen side slopes enter the project site from the east. Additional offsite runoff from AMAFCA's earthen side slopes located along Villa Del Norte Unit 1 enter the property site through a 12' wide diversion swale. There are no other offsite flows that enter the project site.

IV. DEVELOPED DRAINAGE CONDITIONS

IV. A. Vista Del Norte Unit 2 Master Plan

A preliminary grading and drainage plan and backbone infrastructure plan have been designed for Vista Del Norte Unit 2. The Vista Del Norte Unit 1 Drainage Plan prepared by AVID Engineering (pocket 2) defined the major drainage basin divide between the Middle pond and the proposed future North pond. This drainage basin divide has been modified as shown on the Vista Del Norte Unit 2 Master Utility Plan (pocket 3) which results in a reduction of the total runoff volume that drains to the Middle pond. In an effort to minimize the

probable importation of dirt, the drainage basin divide shifted in response to the low, flat grades that exist in the vicinity of Valle Norte Road near Tract B, Tract C and the northern part of Tract E. These low grades resulted in shifting the runoff in this area from the Middle Pond to the North Pond. Some of this change is being offset by conveying runoff from the proposed Villa Del Norte Unit 2 to the ~~North~~ Middle pond instead of the ~~Middle~~ North pond as shown in the Vista Del Norte Unit 1 master plan. The North detention pond will be sized to accommodate the additional runoff being diverted from the Middle detention pond. The future maximum allowable discharge from the North Detention pond is 4.15 cfs as determined in the Revised Drainage Report for the Alameda Business Park (BHI Report, Feb 1999). The plan is gravity flow at this maximum rate through a 24" storm sewer to the Alameda Lift station located north of Paseo Del Norte and east of Edith Blvd.

Table 2A and 2B summarize the revisions to the approved Vista Del Norte Unit 1 Drainage Management Plan. The acreages and Land Treatment values were updated from the Vista Del Norte Unit 1 values. According to the Vista Del Norte Unit 1 Drainage Plan the runoff volume to the Middle pond from Tracts B, E and F is 10.39 acre-feet (refer to Table 2B). The revised total runoff volume to the Middle pond from Tracts B and H-1 and portions of Tract E is 8.202 acre-feet (refer to Table 2A). This results in a reduction of runoff volume to the Middle pond of 2.19 acre-feet.

According to the Vista Del Norte Unit 1 Drainage Plan, the total runoff volume going to the North pond is 27.79 acre-feet (Table 2B). The revised runoff volume to the North Pond is 29.43 acre-feet. This results in a revised increase of approximately 1.64 acre-feet. (Difference due to less density)

The Vista Del Norte Unit 2 Master Utility Plan (pocket 3) shows the layout of the proposed waterline, sanitary sewer and storm drain as well as the subasin boundaries and the revised Middle Pond / North Pond drainage basin divide. According to the proposed Vista Del Norte Unit 2 master drainage plan, the existing 54" storm drain in Vista Monte Drive will be extended north in Vista Monte Drive to intercept flows from a portion of Tract E and will be extended east in the future proposed street right-of-way near the south property line of Tract E to Vista Del Norte Drive where flows from the proposed Villa Del Norte Unit 2 subdivision will be intercepted and conveyed to the Middle pond. This proposed master drainage plan and storm drain system has been preliminarily designed as shown in the Vista Del Norte Unit 2 Master Utility Plan (Pocket 3).

IV. B. Project Site

The 100 year "developed conditions" peak discharge from the project site is 33.62 cfs. Offsite flows from the AMAFCA North Diversion channel side slopes that enters the project site from the east is 10.12 cfs. These offsite flows will be conveyed in a swale along the east property line before discharging into a small sedimentation pond located next to Lot 3. Overflow from this pond will enter Villa Corrales Road through a series of sidewalk culverts. Runoff will be conveyed as street flow to a series of inlets in Villa Corrales Road and several sump inlets located at the end of Villa Clavel and Villa Lila streets. ~~A storm drain system will convey flows in Vista Del Norte Drive to a temporary retention pond located in Tract E. This pond has been sized to retain the 100 year 10 day storm event.~~ deleted DMH 12-6-00

The ultimate drainage plan for this site is for the storm sewer to be extended west to the existing 54" storm sewer in Vista Monte Drive. This construction will be included in the future Tract E development. will be built DMH 12-6-00

Calculations supporting Table 3 Summary of street capacities can be found in Appendix B Hydraulics. The storm drain analysis can be found in Appendix C. The storm drain schematic is in pocket 4 Villa Del Norte Unit 2 Offsite Storm Drain Plan. According to the Vista Del Norte Unit 1 AHYMO analysis, the maximum water surface elevation in the Middle Pond is 5026.50'. Using this elevation as the initial HGL, the water is above the grate at Inlet #14 within the Tract E development. At this elevation the water surface is just below grate within Villa Del Norte Unit 2. Assuming an initial HGL in the Middle Pond of 5025.0' decreases the water surface elevation at inlet #14 to 0.2' below flowline and well below grate grade within the Villa Del Norte Unit 2 subdivision. The grade issue as it relates to the water surface elevations at inlet #14 in Tract E can be addressed at the time Tract E develops. The preliminary storm sewer was designed to a minimum slope of 0.5 percent throughout.

FUTURE 36" SD

TEMPORARY RETENTION POND
MAX. WSEL = ±37.50
REQ'D VOLUME = 1.9 AF
DESIGN VOLUME = 1.92 AF

SDMH#3

NEW 24" RCP

SDMH#1

36" RCP

SDMH#2

NEW 18" RCP

VISTA DEL NORTE DR.

5' LANDSCAPE EASEMENT

SGL "C" INLET

DBL "A" INLET

DOUBLE "A" INLET W/ = 33.50

VILLA DEL NORTE - UNIT 1
FILED: 7/23/99 VOL. 99C FOLIO 205

VILLA CLAVEL

Q=22.13 CFS

VILLA MARGARITA

Q=15.3 CFS

VILLA TULIPAN

VILLA ROSADO

Q=4.25 CFS

VILLA CORRALES NE

Q=12.73 CFS

Q=8.86 CFS

Q=10.1 CFS

4' WIDE BERM
EL. = 44.50

5' WIDE SIDEWALK CULVERTS
2 - 24"
1 - 12"

SUBBASIN H1

SUBBASIN H2

SUBBASIN H3

SUBBASIN H4

SUBBASIN H5

SUBBASIN H6

SUBASIN BOUNDRY

EXISTING 30' PNM GAS PIPELINE AND COMMUNICATION EASEMENT
10/17/91, BK. 91-18, PG. 4253-4256

A00012VDN\EXHIBIT1\10-24-00\ MJR

EXHIBIT 1
SUBASIN BOUNDARIES

VISTA DEL NORTE UNIT 2
MASTER PLAN

TABLE 1 SUMMARY OF HYDROLOGIC PARAMETERS

LOCATION	AREA (acres)	AREA (sq.mi.)	DU's	LAND TR.D	LAND TR. C	LAND TR. B
TRACT B			108			
B1	8.98	0.01403		32.6		67.4
B2	5.30	0.00828		32.6		67.4
B3	6.22	0.00972		32.6		67.4
B4	4.69	0.00732		32.6		67.4
B5	1.48	0.00231		32.6		67.4
B6	4.60	0.00719		32.6		67.4
B7	2.86	0.00446		32.6		67.4
TRACT C	15.18	0.02372	96	59.2		40.8
TRACT D	40.48	0.06325	243	56.9		43.1
TRACT E			195			
1E	2.96	0.00462		50		50
2E	3.32	0.00519		50		50
3E	2.16	0.00338		50		50
4E	1.58	0.00246		50		50
5E	2.08	0.00325		50		50
6E	3.27	0.00511		50		50
7E	4.41	0.00688		50		50
8E	3.23	0.00505		50		50
9E	5.30	0.00829		50		50
10E	2.87	0.00449		50		50
11E	4.88	0.00763		50		50
1P	4.00	0.00624		0		100
TRACT G	17.4	0.02719	106	57.5		42.5
TRACT T-1	11.5	0.01797		57.5		42.5
TRACT H-1			55			

LOCATION	AREA (acres)	AREA (sq.mi.)	DU's	LAND TR.D	LAND TR. C	LAND TR. B
1H1	4.906	0.00766		60		40
1H2	1.132	0.00177		64.1		35.9
1H3	0.6336	0.00099		80		20
1H4	2.433	0.00380		60		40
1H5	2.216	0.00346			100	
1H6	1.075	0.00168			100	
TRACT H-2	14.6	0.02281	74	50		50
TRACT N	5.83	0.00911	C-2	90		10
TRACT O	8.01	0.01252	I-P	90		10
TRACT P	22.39	0.03498	I-P	90		10
TRACT Q	3.42	0.00534	I-P	90		10
TRACT R	4.05	0.00633	I-P	90		10
TRACT S	0.55	0.00086	I-P	90		10
TRACT T-4-A	21.44	0.0335	I-P	90		10
V.NORTE VN 1	1.01	0.00158	ROAD	60		40
V.NORTE VN 2	1.78	0.00278	ROAD	60		40
V.NORTE VN 3	4.29	0.00670	ROAD	60		40
L.LOMITAS LL1	4.73	0.00739	ROAD	79.6		20.4
V.MONTE VM1	1.96	0.003071	ROAD	77		23
V.MONTE VM2	0.27	0.000428	ROAD	77		23
V.MONTE VM3	0.73	0.001137	ROAD	77		23

VISTA DEL NORTE UNIT 2
MASTER PLAN

TABLE 2A SUMMARY OF DEVELOPED DRAINAGE CONDITIONS

LOCATION	AREA (acres)	AREA (sq.mi.)	DU's	MIDDLE POND Q100	MIDDLE POND AC.FT.	NORTH POND Q100	NORTH POND AC.FT.
TRACT B			108	**102.25**	**3.648**		
B1	8.98	0.01403		26.90	0.960		
B2	5.30	0.00828		15.88	0.567		
B3	6.22	0.00972		18.64	0.665		
B4	4.69	0.00732		14.04	0.501		
B5	1.48	0.00231		4.44	0.158		
B6	4.60	0.00719		13.79	0.492		
B7	2.86	0.00446		8.56	0.305		
TRACT C	15.18	0.02372	96			**55.04**	**2.165**
TRACT D	40.48	0.06325	243			**144.54**	**5.648**
TRACT E			195	**74.55**	**2.759**	**57.37**	**2.191**
1E	2.96	0.00462		10.09	0.385		
2E	3.32	0.00519				11.33	0.433
3E	2.16	0.00338				7.38	0.282
4E	1.58	0.00246				5.38	0.205
5E	2.08	0.00325				7.10	0.271
6E	3.27	0.00511				11.16	0.426
7E	4.41	0.00688				15.02	0.574
8E	3.23	0.00505		11.03	0.421		
9E	5.30	0.00829		18.09	0.691		
10E	2.87	0.00449		9.81	0.374		
11E	4.88	0.00763		16.65	0.636		
1P	4.00	0.00624		8.88	0.252		
TRACT G	17.4	0.02719	106			**62.39**	**2.442**
TRACT T-1	11.5	0.01797				**38.2**	**1.327**
TRACT H-1			55	**43.74**	**1.633**		

LOCATION	AREA (acres)	AREA (sq.mi.)	DU's	MIDDLE POND Q100	MIDDLE POND AC.FT.	NORTH POND Q100	NORTH POND AC.FT.
1H1	4.906	0.00766		17.88	0.704		
1H2	1.132	0.00177		4.25	0.169		
1H3	0.6336	0.00099		2.61	0.108		
1H4	2.433	0.00380		8.88	0.349		
1H5	2.216	0.00346		6.81	0.204		
1H6	1.075	0.00168		3.31	0.099		
TRACT H-2	14.6	0.02281	74			**49.75**	**1.902**
TRACT N	5.83	0.00911	C-2			**25.41**	**1.072**
TRACT O	8.01	0.01252	I-P			**34.91**	**1.474**
TRACT P	22.39	0.03498	I-P			**97.52**	**4.118**
TRACT Q	3.42	0.00534	I-P			**14.90**	**0.629**
TRACT R	4.05	0.00633	I-P			**17.66**	**0.745**
TRACT S	0.55	0.00086	I-P			**2.41**	**0.101**
TRACT T-4	21.44	0.03350	I-P			**93.39**	**3.944**
V.NORTE VN 1	1.01	0.00158	ROAD	3.70	0.145		
V.NORTE VN 2	1.78	0.00278	ROAD			**6.50**	**0.256**
V.NORTE VN 3	4.29	0.00670	ROAD			**15.64**	**0.616**
L.LOMITAS LL1	4.73	0.00739	ROAD			**19.43**	**0.803**
V.MONTE VM1	1.96	0.003071	ROAD	7.39	0.294		
V.MONTE VM2	0.27	0.000428	ROAD	**1.04**	**0.041**		
V.MONTE VM3	0.73	0.001138	ROAD	**2.96**	**0.121**		
				----------	---------	----------	---------
TOTAL				**224.54**	**8.202**	**735.06**	**29.43**

(*) Discharges offsite

f:\vistadel.nor\hydr_sum.tbl

10-23-00

TOTAL DISCHARGE = 959.60 CFS

TOTAL VOLUME= 37.635 ACRE-FEET

Table 2B Summary of Vista del Norte Unit 1 Master Plan Developed Drainage Conditions

BASINS	Area (acres)	100yr-24hr Peak Flow (cfs)	100yr - 24hr Runoff Volume (acre-ft)	Sediment Bulking Factor	Land Treatment
North Basin Subbasin	---	---	---	---	---
C	17.09	**58.28**	**2.17**	1.06	58%B, 42%D
D	42.67	**127.07**	**5.46**	1.07	58%B, 42%D
G	31.63	**122.30**	**4.77**	1.09	44%B, 56%D
H	24.06	**93.95**	**3.66**	1.10	44%B, 56%D
N	6.53	**29.87**	**1.26**	1.05	10%B, 90%D
O	7.93	**22.47**	**0.75**	1.05	80%B, 20%D
P	23.94	**104.49**	**4.33**	1.06	20%B, 80%D
Q	3.14	**14.35**	**0.59**	1.11	20%B, 80%D
R	2.55	**11.61**	**0.48**	1.10	20%B, 80%D
S	1.27	**5.66**	**0.23**	1.07	20%B, 80%D
Way-Cor site	22.41	**98.71**	**4.09**	1.07	20%B, 80%D
Subtotal		**688.76**	**27.79**		
Middle Basin Subbasins	---	---	---	---	---
B	32.51	**115.04**	**4.27**	1.10	58%B, 42%D
½ E	20.86	**73.83**	**2.74**	1.10	58%B, 42%D
½ E	20.86	**73.83**	**2.74**	1.10	58%B, 42%D
F	6.50	**19.21**	**0.64**	1.05	80%B, 20%D
Subtotal		**281.91**	**10.39**		
Total North & Middle Ponds		**970.67**	**38.18**		

f:\\vistadel.nor\table.2b

VILLA DEL NORTE UNIT 2 SUBDIVISION

TABLE 3 SUMMARY OF STREET CAPACITIES

LOCATION	CURB	CROWN	WIDTH ft.	SLOPE %	Q cfs	DEPTH ft	EG ft.
Villa Lila	mtb	yes	24	0.60	8.88	0.32	0.38
Villa Clavel	std	yes	24	0.60	22.13	0.50	0.64
Villa Corrales	std	yes	32	1.26	12.73	0.38	0.50
Villa Corrales	std	yes	32	1.26	4.73	0.28	0.36
Villa Margarita	std	yes	32	0.60	15.30	0.45	0.53

mtb = Mountable Curb
std = Standard Curb

F:\villadel.no2\strcap.tbl
10-24-00

****

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 Villa Del Norte ***Ph 2
SUBJECT Retention Volume Calcs.
BY _____ DATE _____
CHECKED _____ DATE _____
SHEET ____ OF ____

ZONE D/E-16
10 DAY STORM

$$V_{10\,DAY} = V_{360} + A_D\left(\frac{P_{10DAY} - P_{360}}{12}\right)$$

$P_{10} = 10 - (24.9/(P_{24hr})^{1.4})$
$10 - (24.9/2.6^{1.4}) = 3.47"$

$V_{360} = 0.631 + 0.151 + .095 + 0.313 + 0.204 + 0.099 = 1.493AF$

$A_D = 4.906(.60) + 1.132(.641) + .6336(.80) + 2.433(.60)$
$= 2.9436 + .7256 + .5069 + 1.4598$
$= 5.6359$ Acres

$V_{10\,DAY} = 1.493AF + 5.6359\left(\frac{3.47 - 2.6}{12}\right) = 1.90\,AF$
$= 82764$ cu.ft.

POND DIMENSIONS

Area (Top) = 110 x 190 = 20900 SF (Elev = 40.0')
Area (Pond top) = 95 x 175 = 16625 SF (Elev = 37.5)
Area (Pond Bottom = 50 x 130 = 6500 SF (Elev = 30.0')

$$\text{Design Volume} = \frac{1}{3}(8)(6500 + 16625 + \sqrt{6500(16625)})$$
$= 1.92\,AF$

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/23/2000
INPUT FILE = VISTAU24.DAT USER NO.= M_GOODWN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME= .00	
RAINFALL TYPE= 2										RAIN24= 2.600	
COMPUTE NM HYD	100.B1	-	1	.01403	26.90	.960	1.28284	1.500	2.996	PER IMP= 32.60	
COMPUTE NM HYD	100.B2	-	1	.00828	15.88	.567	1.28284	1.500	2.997	PER IMP= 32.60	
COMPUTE NM HYD	100.B3	-	1	.00972	18.64	.665	1.28284	1.500	2.996	PER IMP= 32.60	
COMPUTE NM HYD	100.B4	-	1	.00732	14.04	.501	1.28284	1.500	2.997	PER IMP= 32.60	
COMPUTE NM HYD	100.B5	-	1	.00231	4.44	.158	1.28284	1.500	3.004	PER IMP= 32.60	
COMPUTE NM HYD	100.B6	-	1	.00719	13.79	.492	1.28284	1.500	2.997	PER IMP= 32.60	
COMPUTE NM HYD	100.B7	-	1	.00446	8.56	.305	1.28284	1.500	2.999	PER IMP= 32.60	
COMPUTE NM HYD	100.C	-	1	.02372	55.04	2.165	1.71124	1.500	3.626	PER IMP= 59.20	
COMPUTE NM HYD	100.D	-	1	.06325	144.54	5.648	1.67420	1.500	3.571	PER IMP= 56.90	
COMPUTE NM HYD	100.E1	-	1	.00462	10.09	.385	1.56307	1.500	3.412	PER IMP= 50.00	
COMPUTE NM HYD	100.E2	-	1	.00519	11.33	.433	1.56307	1.500	3.411	PER IMP= 50.00	
COMPUTE NM HYD	100.E3	-	1	.00338	7.38	.282	1.56307	1.500	3.414	PER IMP= 50.00	
COMPUTE NM HYD	100.E4	-	1	.00246	5.38	.205	1.56307	1.500	3.416	PER IMP= 50.00	
COMPUTE NM HYD	100.E5	-	1	.00325	7.10	.271	1.56307	1.500	3.414	PER IMP= 50.00	
COMPUTE NM HYD	100.E6	-	1	.00511	11.16	.426	1.56307	1.500	3.411	PER IMP= 50.00	
COMPUTE NM HYD	100.E7	-	1	.00688	15.02	.574	1.56307	1.500	3.410	PER IMP= 50.00	
COMPUTE NM HYD	100.E8	-	1	.00505	11.03	.421	1.56307	1.500	3.411	PER IMP= 50.00	
COMPUTE NM HYD	100.E9	-	1	.00829	18.09	.691	1.56308	1.500	3.409	PER IMP= 50.00	
COMPUTE NM HYD	100.E10	-	1	.00449	9.81	.374	1.56307	1.500	3.412	PER IMP= 50.00	
COMPUTE NM HYD	100.E11	-	1	.00763	16.65	.636	1.56307	1.500	3.409	PER IMP= 50.00	
COMPUTE NM HYD	100.P1	-	1	.00624	8.88	.252	.75781	1.500	2.223	PER IMP= .00	
COMPUTE NM HYD	100.G	-	1	.02719	62.39	2.442	1.68386	1.500	3.585	PER IMP= 57.50	
COMPUTE NM HYD	100.T1	-	1	.01797	38.20	1.327	1.38451	1.500	3.322	PER IMP= 28.75	
COMPUTE NM HYD	100.1H1	-	1	.00766	17.88	.704	1.72413	1.500	3.647	PER IMP= 60.00	
COMPUTE NM HYD	100.1H2	-	1	.00177	4.25	.169	1.79016	1.500	3.756	PER IMP= 64.10	
COMPUTE NM HYD	100.1H3	-	1	.00099	2.61	.108	2.04623	1.500	4.142	PER IMP= 80.00	
COMPUTE NM HYD	100.1H4	-	1	.00380	8.88	.349	1.72413	1.500	3.650	PER IMP= 60.00	
COMPUTE NM HYD	100.1H5	-	1	.00346	6.80	.204	1.10462	1.500	3.070	PER IMP= .00	
COMPUTE NM HYD	100.1H6	-	1	.00168	3.31	.099	1.10462	1.500	3.074	PER IMP= .00	
COMPUTE NM HYD	100.2H	-	1	.02281	49.75	1.902	1.56307	1.500	3.408	PER IMP= 50.00	
COMPUTE NM HYD	100.N	-	1	.00911	25.41	1.072	2.20728	1.500	4.358	PER IMP= 90.00	
COMPUTE NM HYD	100.O	-	1	.01252	34.91	1.474	2.20728	1.500	4.357	PER IMP= 90.00	
COMPUTE NM HYD	100.P	-	1	.03498	97.52	4.118	2.20728	1.500	4.356	PER IMP= 90.00	
COMPUTE NM HYD	100.Q	-	1	.00534	14.90	.629	2.20728	1.500	4.360	PER IMP= 90.00	
COMPUTE NM HYD	100.R	-	1	.00633	17.66	.745	2.20728	1.500	4.359	PER IMP= 90.00	
COMPUTE NM HYD	100.S	-	1	.00086	2.41	.101	2.20728	1.500	4.382	PER IMP= 90.00	
COMPUTE NM HYD	100.T4	-	1	.03350	93.39	3.944	2.20728	1.500	4.356	PER IMP= 90.00	
COMPUTE NM HYD	100.VN1	-	1	.00158	3.70	.145	1.72413	1.500	3.659	PER IMP= 60.00	
COMPUTE NM HYD	100.VN2	-	1	.00278	6.50	.256	1.72413	1.500	3.652	PER IMP= 60.00	
COMPUTE NM HYD	100.VN3	-	1	.00670	15.64	.616	1.72413	1.500	3.647	PER IMP= 60.00	
COMPUTE NM HYD	100.LL1	-	1	.00739	19.43	.803	2.03657	1.500	4.107	PER IMP= 79.40	
COMPUTE NM HYD	100.VM1	-	1	.00307	7.97	.327	1.99791	1.500	4.055	PER IMP= 77.00	
COMPUTE NM HYD	100.VM2	-	1	.00043	1.13	.046	1.99791	1.500	4.104	PER IMP= 77.00	****
COMPUTE NM HYD	100.VM3	-	1	.00114	2.96	.121	1.99792	1.500	4.069	PER IMP= 77.00	
FINISH											

CALCULATIONS FOR SUMP INLETS
for
Villa Del Norte Unit 2

Capacity is measured by the weir equation at the lip of the gutter assuming an allowable ponding elevation equal to the lowest adjacent right of way elevation. The length of the double grate facing the street is 6.5' and the maximum depth is 0.725' at the lip of the gutter. The sides are each 2' long and the average depth is 0.892'. These depths assume an 8" curb with right of way 9' behind the curb for an additional depth of 0.18' above the top of curb. From the weir equation:

*Front Q cap = (3.0) x (6.5') x (0.725) **1.5 = 12.04 cfs*

*Sides Q cap = (3.0) x (4.0') x (0.892) **1.5 = 10.11 cfs*

Total Q cap = 12.04 cfs + 10.11 cfs = 22.15 cfs

The 100 year flow to the sump inlets in Villa Clavel is 22.13 cfs. Since there is no overflow to Vista Del Norte Drive, the sump inlets are designed to intercept at least 2 times the peak 100 year flow rate or 44.26 cfs.

The 100 year flow to the sump inlet in Villa Lila is 8.88 cfs. Since there is no overflow to Vista Del Norte Drive, the sump inlet is designed to intercept at least 2 times the peak 100 year flow rate or 22.15 cfs.

10-19-00

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 16, 2002

Diane Hoelzer, P.E.
Mark Goodwin & Assoc.
P.O. Box 90606
Albuquerque, New Mexico 87199

RE: **VILLA DEL NORTE UNIT 2** **(D-16/D6A)**
Engineers Certification For Release of Financial Guaranty
Engineers Stamp dated 10/25/2000 Rev. 12/6/2000
Engineer's Certification dated 1/11/2002

Dear Ms. Hoelzer:

Based upon the information provided in your submittal dated 1/11/2002, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirements for release of financial guaranty for the above mentioned project.

If you have any questions, please call me at 924-3981.

Sincerely,

Teresa A. Martin

Teresa A. Martin
Hydrology Plan Checker
Public Works Department

BLB

C: Arlene Portillo, PWD – #658381
File

DRAINAGE INFORMATION SHEET

(REV.11/01/2001)

PROJECT TITLE: Villa del Norte Unit 2 ZONE ATLAS#: D16/D6A

DRB#: 1000533 EPC# ____ WORKORDER#: 658381

LEGAL DESCRIPTION: Villa del Norte Unit 2

CITY ADDRESS: ____

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Diane Hoelzer, PE
ADDRESS:	PO Box 90606, ABQ, NM 87199	PHONE:	828-2200
OWNER:	Brown & Associates, Inc.	CONTACT:	Ron Brown
ADDRESS:	PO Box 3671 ABQ, NM 87190	PHONE:	883-1674
ARCHITECT:		CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	ALS	CONTACT:	Tim Aldrich
ADDRESS:	4109 Montgomery Blvd. NE, ABQ, NM 87107	PHONE:	884-1990
CONTRACTOR:	Hydro-Systems, Inc.	CONTACT:	
ADDRESS:	PO Box 92195, ABQ, NM 87199-3635	PHONE:	344-3840

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
X ENGINEER'S CERTIFICATION (HYDROLOGY)
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ ENGINEER'S CERTIFICATION (TCL)
____ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
____ OTHER

PRE-DESIGN MEETING:

____ YES
____ NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

X SIA / FINANCIAL GUARANTY RELEASE
____ PRELIMINARY PLAT APRROVAL
____ S. DEV. PLAN FOR SUB'D APPROVAL
____ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY (PERM)
____ CERTIFICATE OF OCCUPANCY (TEMP)
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ WORK ORDER APPROVAL
____ OTHER (SPECIFY)

RECEIVED
JAN 11 2002
HYDROLOGY SECTION

DATE SUBMITTED: Januart 11,2002

BY: Diane Hoelzer

Diane Hoelzer, 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 to 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).
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5).
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

f:\\forms\drainf.tbl