CITY OF ALBUQUERQUE



Richard J. Berry, Mayor

February 3, 2016

David Soule, PE Rio Grande Engineering P.O. Box 93924 Albuquerque, NM 87199

RE: Lot 11 – Ladera Business Park Existing Grading and Drainage Report DRB # 1001523 / H10D006A6 Engineer's Stamp Date – 1-11-16

Dear Mr. Soule:

Based upon the information provided in your submittal received 1-12-2016, the above referenced Drainage Report, which is a summary of the existing conditions of the site, is approved for Minor Preliminary/Final Plat action by the DRB. It is understood that the Owner of the property does not have immediate plans to develop the site. Approval of future plans will require a separate Grading and Drainage Plan submittal.

PO Box 1293 If you have any questions, you can contact me at 924-3986.

Albuquerque

New Mexico 87103

www.cabq.gov

Sincerety

Abiel Carrillo, P.E. Principal Engineer, Planning Dept. Development Review Services

Orig Drainage file



City of Albuquerque

Planning Department Development & Building Services Division DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: LOTS 11A AND 11B LADE	RA BUSINESS PARK	Building Permit #:	City Drainage #:
DRB#: 1001523	EPC#:		Work Order#:
Legal Description: LOT 11 LADERA BUSI	NESS PARK		
City Address: 7800 LA MORADA PLACE	NM		
Engineering Firm: RIO GRANDE ENGI	NEERING		Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQU	E, NM 87199		
Phone#: 505.321.9099	Fax#: 505.872.0999		E-mail: DAVID@RIOGRANDEENGINEERING.COM
Owner: UNSER/8 STREET PARNTER, L	LC		Contact:
Address: PO BOX 90548 ALB NM 87199			
Phone#:	Fax#:		E-mail:
Architect: none			Contact:
Address:			
Phone#:	Fax#:		E-mail:
Other Contact:			Contact:
Address:			
Phone#:	Fax#:		E-mail:

Check all that Apply:

DEPARTMENT:

DEPARTMENT: <u>×</u> HYDROLOGY/ DRAINAGE TRAFFIC/ TRANSPORTATION MS4/ EROSION & SEDIMENT CONTROL	(CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT: BUILDING PERMIT APPROVAL CERTIFICATE OF OCCUPANCY
TYPE OF SUBMITTAL: ENGINEER/ ARCHITECT CERTIFICATION	<u>)</u> 	PRELIMINARY PLAT APPROVAL SITE PLAN FOR SUB'D APPROVAL
X CONCEPTUAL G & D PLAN GRADING PLAN DRAINAGE MASTER PLAN DRAINAGE REPORT CLOMR/LOMR	- - -	SITE PLAN FOR BLDG. PERMIT APPROVAL FINAL PLAT APPROVAL SIA/ RELEASE OF FINANCIAL GUARANTEE FOUNDATION PERMIT APPROVAL GRADING PERMIT APPROVAL SO-19 APPROVAL
TRAFFIC CIRCULATION LAYOUT (TCL) TRAFFIC IMPACT STUDY (TIS) EROSION & SEDIMENT CONTROL PLAN (ESC)	- - -	PAVING PERMIT APPROVAL GRADING/ PAD CERTIFICATION WORK ORDER APPROVAL CLOMR/LOMR
OTHER (SPECIFY)		PRE-DESIGN MEETING OTHER (SPECIFY)
IS THIS A RESUBMITTAL?: Yes No DATE SUBMITTED:YesNo	By:	

ELECTRONIC SUBMITTAL RECEIVED: COA STAFF:

DRAINAGE REPORT

For

LOT 11-A and 11-B LADERA BUSINESS PARK Albuquerque, New Mexico

Prepared by

Rio Grande Engineering PO Box 93924 Albuquerque, New Mexico 87199

January 2016



David Soule P.E. No. 14522

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PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the subdivision and creation of two new lots located La Morada Place, Northwest. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the subdivision does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a portion of a larger 31.2-acre parcel of land located on the south side of La Morada Place, east of Unser. The legal description of this site is lots 11, Ladera Business Park. As shown on FIRM map35013C0326H, the entire portion of lots 11A and 11B are located within Flood Zone X.

EXISTING CONDITIONS

The site is currently undeveloped, yet part of an overall business park. The site currently does not have upland flow due to a diversion and inlet upstream to the Mirehaven Channel on lot 12. The site currently drains from west to east entering an asphalt swale on lot 10. A small berm has been added at this discharge point in the interim to eliminate sediment transport onto the developed parcels. A copy of the area contours is located in Appendix A. This flow is conveyed down stream within asphalt swale parking areas to a conduit discharging to the Mirehaven channel. This site is part of a master drainage plan prepared by Mark Goodwin and Associates 11/21/02.



PROPOSED CONDITIONS

There are no proposed improvements. There will be no grading performed on this site. As shown in appendix B, the site is located within Basin 10 of the master drainage plan. Excerpts from this report are located within appendix B. As described within the report this is sub basin of 11 area 2. The flows generated by lots 11 thru 8 are to be conveyed within an asphalt swale (drive isle) along the southerly portion of lots 11-8 discharging to an outfall to the Ladera dam 14. As discussed within the report temporary berms do not allow lot 11 to discharge into lot 10 until lot 11 is developed. This was allowed within the master plan as an interim measure to reduce sediment from undeveloped parcels. This berm will remain until the lots are developed.

As shown in the AHYMO model, Basin 11 is anticipated to be developed as 80% D and 20%B. For the scope of this report this site will remain 100% A, and no grading will occur. A cross lot drainage easement will be granted by the plat to allow the implementation of the master drainage plan upon development of each tract. Upon development of either lot an asphalt swale must connect to the existing swale located on lot 10 or the berm removed.

SUMMARY AND RECOMMENDATIONS

1

This project is a subdivision with no development of two lots within a master planned business park. The site is an identified developed basin within the master drainage plan. Cross lot drainage easements will be granted to allow for the sites to be developed independent of each other with the requirement the temporary berm be removed and the asphalt swale be continued as proposed within the master plan. The site will require grading plans upon developed which shall be designed in accordance with the Ladera Business Park Master drainage plan. Since the effected area site encompasses and area greater than 3/4 acres, a NPDES permit and Erosion and Sediment Control plan will be required prior to any construction activity.



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MASTER DRAINAGE REPORT for LADERA BUSINESS PARK

Prepared for:

Unser - 98th Street Partnership 8900 Washington, NE Albuquerque, NM 87113

Prepared by:

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



April 5, 2002

Revised May 24, 2002

Revised November 21, 2002

- D. MARK GOODWIN & ASSOCIATES -

Area II will be combined and carried in a 60" RCP to the Mirehaven Channel. A maintenance drive/emergency overflow channel extending from the cul-de-sac to the Mirehaven Channel will be built to provide for channel maintenance on the Mirehaven and maintenance of sanitary sewer manhole near the channel. The maintenance drive will also serve as an emergency overflow for the cul-de-sac should the capacity of the cul-de-sac inlets be exceeded. A pole gate will be built at the driveway entrance to restrict public access.

Tracts within **Area I** discharging directly to streets at various locations are Lot 1 (LIC), Tract 1, Tracts 4 - 6, 24 and 25. Tracts 20, and 27 – 29 are to discharge into the paved private swale along the north side of Tract 25. Tracts 2, 3 and 26 discharge into subsurface storm drain stub outs designed specifically for those lots.

Each of the tracts within **Area II** (8-11) will freely-discharge to a new private paved swale along the south side of Tracts 8 – 10. The swale is designed to discharge into a new NMSHTD median inlet just SW of the La Morada cul-de-sac. Another 36" storm drain collects and conveys this runoff into the 60" storm drain described above. The **Area II** runoff includes Tract 7, which is east of the La Morada cul-de-sac. Tract 7 will free-discharge directly east to the Ladera Dam No. 14. A site specific outfall design must be designed and approved by the City Hydrology Division and AMAFCA in conjunction with the site development of Tract 7.

Area III covers smaller lots fronting on Vista Oeste and the west end of La Morada Place. Runoff from Tracts 15–19 is to be accepted by Vista Oeste and then turned east in La Morada to a series of in-street drop inlets at the west boundary of Tract 12. Tracts 21–23 will discharge east into a private paved swale located along their east boundary. This private paved swale flows south and discharges into a double "D" drop inlet that is combined with the flow identified above. The street flow from Tracts 15–19 is combined with Tract 21-23 flow and then carried in a 36" storm drain along the east boundary of Tract 12 to the SE corner of Tract 12. Private runoff from Tracts 12–14 is conveyed in another paved swale along the west boundary of Tract 12 and then directed south into another double "D" inlet at the SE corner of Tract 12. At this point all **Area III** flows are combined before outfalling into the Mirehaven Channel in a 42" storm drain.

Both of the Mirehaven Channel outfalls are underlain by a below-grade pad consisting of type M rip-rap. Native fill is to be placed over the pad to the existing FL grade of the channel.

The hydrologic analysis utilizing AHYMO is provided in Appendix A. Nomographs and drainage calculations for street, swale, and catch basin capacities, including the storm drain's hydraulic analysis, are provided in Appendix B.

V. STREET INLETS AND STORM DRAIN SUMMARY

Vista Orienta Street

On Vista Oriente at **AP-2**, the flow is 60 cfs with a grade of 2.25%. At first set of drop inlets, with the street generating an additional 2 cfs, 13 cfs will be collected in each of the two inlets (26 cfs total), resulting in a bypass of 36 cfs reaching Vista Oriente's intersection with La Morada at **AP-11**. The 36" storm drain in lower Vista Oriente accepts 26 cfs from the inlets, 15 cfs directly from the pipe stubbed-out to Tract 2 and 11 cfs from the pipe stubbed-out to Tract 26 (52 cfs total).

La Morada Street

On La Morada Street just before its intersection with Vista Oriente (AP-10), there is 62 cfs of flow. With the 4 inlets on La Morada, each receiving 12.5 cfs, there remains 12 cfs in the street bypassing to AP-11. Combined with the 36 cfs of bypass from Vista Oriente, and the 1.6 cfs generated within the R/W (Basin AHYMO ID=29), there remains 49.6 cfs flowing in La Morada just east of the Vista Oriente intersection (AP-12). The 36" storm drain at this location now carries the 50 cfs just collected from the La Morada inlets and the 52 cfs caried by the 36" pipe in Vista Oriente (102 cfs total – see storm drain's hydraulic analysis in

-3-

- D. MARK GOODWIN & ASSOCIATES



AREA II LADERA BP (SUMMARY @ THE END)

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) = 06/20/2002 START TIME (HR:MIN:SEC) = 10:48:32 USER NO.= M_GOODWN.IO1 INPUT FILE = LADBP2RE.TXT

STARTTIME=0.0***** LADERA BUSINESS PARK - AREA II AHYMO\LADERATWO.DAT***** MARCH 19, 2002 (REVISED 6/20/02)RAINFALLTYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.87 IN RAIN SIX=2.19 IN
RAIN DAY=2.62 IN DT=0.0333 HR

AT 1.40 HR.

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK

DT = .	033300 H	OURS	END T	IME =	5.9940	00 HOURS
.0000	.0015	.0031	.0047	.0063	.0080	.0097
.0114	.0132	.0151	.0169	.0189	.0209	.0229
.0250	.0271	.0294	.0317	.0340	.0365	.0390
.0417	.0444	.0473	.0502	.0533	.0566	.0600
.0636	-0673	.0713	.0765	.0820	.0879	.1000
.1280	.1711	.2330	.3177	.4291	.5713	.7484
.9647	1.1723	1.2575	1.3292	1.3929	1.4508	1.5041
1.5535	1.5997	1.6430	1.6838	1.7222	1.7586	1.7929
1.8255	1.8564	1.8857	1.9135	1.9399	1.9471	1.9528
1.9582	1.9633	1.9682	1.9729	1.9774	1.9818	1.9859
1.9900	1.9939	1.9977	2.0013	2.0049	2.0083	2.0117
2.0150	2.0182	2.0213	2.0243	2.0273	2.0302	2.0331
2.0359	2.0386	2.0413	2.0439	2.0465	2.0490	2.0515
2.0539	2.0563	2.0587	2.0610	2.0633	2.0656	2.0678
2.0699	2.0721	2.0742	2.0763	2.0784	2.0804	2.0824
2.0844	2.0863	2.0883	2.0902	2.0921	2.0939	2.0958
2.0976	2.0994	2.1012	2.1029	2.1046	2.1064	2.1081
2.1097	2.1114	2.1131	2.1147	2.1163	2.1179	2.1195
2.1211	2.1226	2.1242	2.1257	2.1272	2.1287	2.1302
2.1316	2.1331	2.1346	2.1360	2.1374	2.1388	2.1402
2.1416	2.1430	2.1444	2.1457	2.1471	2.1484	2.1497
2.1510	2.1523	2.1536	2.1549	2.1562	2.1575	2.1587
2.1600	2.1612	2.1625	2.1637	2.1649	2.1661	2.1673
2.1685	2.1697	2.1709	2.1720	2.1732	2.1743	2.1755
2.1766	2.1778	2.1789	2.1800	2.1811	2.1822	2.1833
2.1844	2.1855	2.1866	2.1877	2.1887	2.1898	

****** TRACTS 7-11 - FLOW TO MIREHAVEN CHANNEL ****** LOT AREAS EXCLUDE DRAINAGE EASEMENTS

****** DEVELOPED CONDITIONS -- **TRACT 11** - 6.18 ACRES COMPUTE NM HYD ID=1 HYD NO=100.1 AREA=0.0097 SQ MI PER A=0 PER B=20 PER C=0 PER D=80 TP=0.1333 HR MASS RAINFALL=-1

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 .0 HRS CFS CFS .000 1.998 5.6 3.996 .1 5.994 .2 .5 .666 .0 2.664 4.662 .1 6.660 .0 1.332 6.6 3.330 .2 5.328 .1 RUNOFF VOLUME = 1.69760 INCHES = .8782 ACRE-FEET

PEAK DISCHARGE RATE = 24.20 CFS AT 1.499 HOURS BASIN AREA = .0097 SQ. MI.

****** DEVELOPED ONSITE AREA OF TRACT 10 (4.33 ACS.) COMPUTE NM HYD ID=3 HYD NO=100.3 AREA=0.0068 SQ MI PER A=0 PER B=20 PER C=0 PER D=80 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420 UNIT PEAK = 21.477 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700 AREA = .005440 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

PRINT HYD ID=3 CODE=24

PARTIAL HYDROGRAPH 100.30

	TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW			
	HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS			

5.994	.000	. 0	1.998	4.0	3.996	.1	
6 660	. 666	.0	2.664	. 4	4.662	.1	
0.000	1.332	4.6	3.330	.1	5.328	.1	
	RUNOFF VO	LUME =	1.69760 INCHES	-	.6157 AC	RE-FEET	
SQ. MI.	PEAK DISC	HARGE RATE	= 16.97 CFS	AT	1.499 HOURS	BASIN AREA =	.0068

****** COMBINE HYDROGRAPHS BASINS 10 & 11 ADD HYD ID=1 HYD NO=101.1 ID=1 ID=3 PRINT HYD ID=1 CODE=24

PARTIAL HYDROGRAPH 101.10

TIME	TIME FLOW	FLOW TIME	TIME FLOW	FLOW	TIME	FLOW
HRS	HRS CFS	CFS HRS	HRS CFS	CFS	HRS	CFS
5 994	.000	. 0	1.998	9.6	3.996	.2
5.554	. 666	.0	2.664	. 9	4,662	.2
0.000	1.332	11.2	3.330	.3	5.328	. 2

		RUNOFF VOLUME =	1.69756 INCHES		1.4938 ACRE-FEET	
		PEAK DISCHARGE RATE	= 41.17 CFS	AT	1.499 HOURS BASIN AREA =	.0165
SQ.	MI.					

****** DEVELOPED CONDITIONS - TRACT 9 - 7.25 ACRESCOMPUTE NM HYDID=5 HYD NO=100.5 AREA=0.0113 SQ MIPER A=0 PER B=20 PER C=0 PER D=80.TP=0.1333 HR MASS RAINFALL=-1

 $\begin{array}{rcl} {\sf K} = & .072649 {\sf HR} & {\sf TP} = & .133300 {\sf HR} & {\sf K}/{\sf TP} \; {\sf RATIO} = & .545000 & {\sf SHAPE} \\ {\sf CONSTANT, N} = & 7.106420 & & & \\ {\sf UNIT PEAK} = & 35.690 & {\sf CFS} & {\sf UNIT VOLUME} = & .9990 & {\sf B} = & 526.28 \\ {\sf P60} = 1.8700 & & & \\ {\sf AREA} = & .009040 \; {\sf SQ} \; {\sf MI} & {\sf IA} = & .10000 \; {\sf INCHES} & {\sf INF} = & .04000 \; {\sf INCHES} \\ {\sf PER HOUR} & & & \\ {\sf RUNOFF \; COMPUTED \; {\sf BY \; INITIAL \; ABSTRACTION/INFILTRATION \; NUMBER \; {\sf METHOD} - {\sf DT} = } \\ .033300 & & & \\ \end{array}$

 $K = .130992HR \quad TP = .133300HR \quad K/TP RATIO = .982685 \quad SHAPE$ CONSTANT, N = 3.593448
UNIT PEAK = 5.5455 CFS UNIT VOLUME = .9979 B = 327.09
P60 = 1.8700
AREA = .002260 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES
PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

PRINT HYD ID=5 CODE=24

PARTIAL HYDROGRAPH 100.50

TTYP	TIME	FLOW	TIME	FLOW	TIME	FLOW	
 	HRS	CFS	HRS	CFS	HRS	CFS	
	.000	.0	1.998	6.6	3.996	.1	
2. 554 2. 550	. 666	. 0	2.664	.6	4.662	.1	
्च- 000	1.332	7.7	3.330	.2	5.328	. 2	

RUNOFF VOLUME = 1.69760 INCHES = 1.0231 ACRE-FEET PEAK DISCHARGE RATE = 28.19 CFS AT 1.499 HOURS BASIN AREA = .0113 SQ. MI.

****** COMBINE HYDROGRAPHS BASINS 9 & 10/11 ADD HYD ID=1 HYD NO=101.2 ID=1 ID=5 PRINT HYD ID=1 CODE=24

PARTIAL HYDROGRAPH 101.20 FLOW TIME TIME FLOW TIME FLOW TIME TIME FLOW FLOW HRS CFS HRS HRS CFS HRS HRS CFS CFS .000 . 0 1.998 16.2 3.996 .3 5.994 . 4 .666 2.664 .0 1.4 4.662 .3 6.660 .0 1.332 18.9 3.330 .5 5.328 . 4

RUNOFF VOLUME = 1.69757 INCHES = 2.5169 ACRE-FEET PEAK DISCHARGE RATE = 69.36 CFS AT 1.499 HOURS BASIN AREA = .0278 SQ. MI.

****** DEVELOPED CONDITIONS - TRACT 8 - 5.40 ACRES COMPUTE NM HYD ID=9 HYD NO=100.6 AREA=0.0084 SQ MI PER A=0 PER B=20 PER C=0 PER D=80 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 CONSTANT, N = 7.106420 SHAPE UNIT PEAK = 26.531 CFS UNIT VOLUME = .9989 B = 526.28P60 = 1.8700.006720 SQ MI IA = .10000 INCHES INF = .04000 INCHES AREA = PER HOUR RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448 UNIT PEAK = 4.1223 CFS UNIT VOLUME = .9970 B = ' 327.09 P60 = 1.8700

AREA = .001680 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

PRI	NT HYD	ID=9	CODE=24				
			•	PARTIAL HY	DROGRAPH 100.	60	
TIME	TIME FLOW	FLOW TIME	TIME FLOW	FLOW	TIME	FLOW	
	HRS	CFS	HRS	CFS	HRS	CFS	
HRS	CFS .000	HRS .0	CFS 1,998	4.9	3,996	1	
5.994	.1		21550		3.550	• •	
6.660	.666 .0	.0	2.664	. 4	4.662	.1	
	1.332	5.7	3.330	.1	5.328	.1	
	RUNOFF V	OLUME = 1	L.69760 INC	HES =	.7605 AC	RE-FEET	
SQ. MI.	PEAK DIS	CHARGE RATE =	= 20.9	6 CFS AT	1.499 HOURS	BASIN AREA =	.0084

****** COMBINE HYDROGRAPHS BASINS 8 & 9/10/11 ADD HYD ID=1 HYD NO=101.7 ID=1 ID=9 PRINT HYD ID=1 CODE=24

PARTIAL HYDROGRAPH 101.70

TIME	TIME FLOW	FLOW TIME	TIME FLOW	FLOW	TIME	FLOW
	HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS			
	.000	.0	1.998	21.0	3.996	.5
5.994	. 6					
	.666	.0	2.664	1.9	4.662	. 4
6.660	.0					
	1.332	24.7	3.330	.6	5.328	.5

RUNOFF VOLUME = 1.69757 INCHES = 3.2774 ACRE-FEET PEAK DISCHARGE RATE = 90.33 CFS AT 1.499 HOURS BASIN AREA = .0362 SQ. MI.

L COMBINED TRACTS 8-11 TO LA MORADA CUL-DE-SAC

****** DEVELOPED CONDITION - TRACT 7 - 4.49 ACRES

COMPUTE NM HYD ID=10 HYD NO=100.10 AREA=0.0070 SQ MI PER A=0 PER B=20 PER C=00 PER D=80 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420 UNIT PEAK = 22.109 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700 AREA = .005600 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR