CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

April 26, 2016

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

RE: Hampton Inn (Holly Ave)
Grading Plan and Drainage Report
Engineer's Stamp Date – 4-22-2016
Hydrology File: C18D073B

Dear Mr. Soule:

Based upon the information provided in your submittal received 4-22-2016, the above referenced Grading Plan and Drainage Report is approved for Site Plan for Building Permit.

The above-referenced plan is also approved for Grading Permit and Building Permit.

Prior to Building Permit approval, Engineer Certification per the DPM checklist will be required.

This approval replaces the previous letter dated 1-14-2016.

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

Sincerely,

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

Orig: Drainage file

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Holly Hotel Building Permit #: _____ City Drainage #: C18D073B

DRB#. _____ EPC#. _____ Work Order#: _____

Legal Description: lots 12, 13 Tract B, Unit A, North Albuquerque Acres

City Address: 5900 Holly NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#. 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: Paseo Hospitality,llc Contact: _____

Address: 4505 Atherton Way nw 87120

Phone#: _____ **Fax#**: _____ **E-mail**: _____

Architect: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ **Fax#**: _____ **E-mail**: _____

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE
_____ TRAFFIC/ TRANSPORTATION
_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN
X GRADING PLAN
_____ DRAINAGE MASTER PLAN
_____ *DRAINAGE REPORT*
_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)
_____ TRAFFIC IMPACT STUDY (TIS)
_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

RECEIVED
APR 22 2016
LAND DEVELOPMENT SECTION

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY

_____ **PRELIMINARY PLAT APPROVAL**
_____ SITE PLAN FOR SUB'D APPROVAL
X SITE PLAN FOR BLDG. PERMIT APPROVAL
_____ FINAL PLAT APPROVAL
_____ SIA/ RELEASE OF FINANCIAL GUARANTEE
_____ FOUNDATION PERMIT APPROVAL
X GRADING PERMIT APPROVAL
_____ SO-19 APPROVAL
_____ PAVING PERMIT APPROVAL
_____ GRADING/ PAD CERTIFICATION
_____ WORK ORDER APPROVAL
_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING
_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?. X Yes _____ No

DATE SUBMITTED: 4/22/16 By: DAVID SOULE

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED ___

April 22, 2016

Ms Rita Harmon
Hydrology Section
Development Review Board
City of Albuquerque
600 2nd street NW
Albuquerque, NM 87102

RE: Holley hotel

Dear Ms. Harmon:

Rio Grande Engineering requests DRB approval for site plan for building permit. We have received your comments from the DRB and are intending to answer them in this resubmittal. A blanket cross lot drainage easement is being granted. The water harvest channel has capacity for onsite and upland flows, the flow to the east travel within the north parking lot and discharge to holly. This discharge is consistent with the SAD that the center was developed under

Should you have any questions regarding this matter, please do not hesitate to call me.

Sincerely,

David Soule, PE
RIO GRANDE ENGINEERING
PO Box 93924
ALBUQUERQUE, NM 87199
321-9099

Enclosures

8.42 from upland

NOTE: 8.42 c/o 6 FOR TOTAL BUILDOUT FOR LOTS 26 & 27

25' PUBLIC WATERLINE & SANITARY SEWER EASEMENT

NEW TEMPORARY ASPHALT CHANNEL (SEE DETAIL BELOW)

TBM C RIM 5212.09

ADJUST MH RIM TO 11.36

EXIST MH #2

Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
top	5	5	0.67	3.35	6.34	0.5283912	1	10.87	10.00	2.99
bottom	5	0	0.5	1.25	5.10	0.2451452	1	2.43	2.00	1.60
								13.31	11.86	

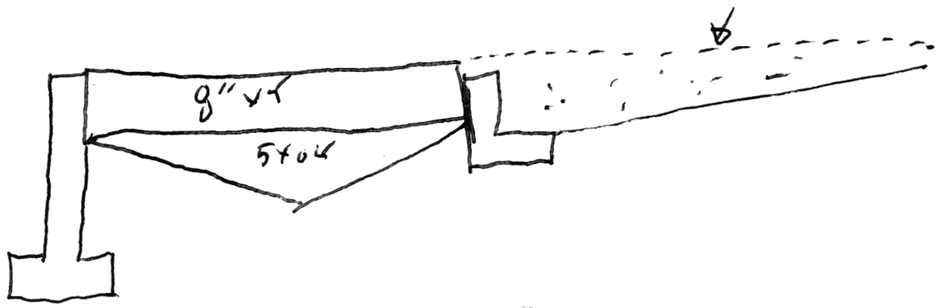
Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.03

The channel is irregular shaped so we calculated capacity in section. The top section does not have roughness on the bottoms so the capacity is greate show here

Additional capacity in parking lot not included but available.



227' LF OF RW

BW=5210.83

BW=5212.00

BW=5214.02

TW=5213.42

TW=5215.60

TW=5216.10

TW=5216.38

45' 1:1 MAX. SLOPE

END 2' SWALE
SEE DETAIL THIS SHEET

2' CURB CUT

4' CURB CUT

BUILD 3 STAIRS-
1' TREAD W/6" RISER

LIMITS OF SAWCUT

A.M.A.F.C.A.
DRAINAGE EASEMENT
(BK. 9911, PG. 5395 8/11/99)

BEGIN 2' SWALE
SEE DETAIL THIS SHEET

BASIN A
AREA=37,557 SF

BUILD 1-1' SW CULVERT
PER COA STD DWG #2236
INV IN=5216.75
INV OUT=5216.65

BUILD 7 STAIRS-
1' TREAD W/6" RISER

BUILD WATER HARVESTING POND
TOP=5216.00
BOTTOM=5214.67
PROPOSED VOLUME=74 CU. FT.

FF=5217.48
FP=5216.98

DAYLIGHT 12" HDPE
INV=5214.67

INSTALL 1-12' INLINE
NYLOPLAST GRATE
GRATE=5216.50
12" HDPE INV=5215.30

END 2' SWALE
SEE DETAIL THIS SHEET

BASIN B
AREA=2,264 SF

70' LF OF RW

COBB
NTS

BUILD 6 STAIRS-
1' TREAD W/6" RISER

BEGIN 2' SWALE
SEE DETAIL THIS SHEET

BUILD WATER HARVESTING POND
TOP=5216.18
BOTTOM=5215.18
PROPOSED VOLUME=50 CU. FT.

1' CURB CUT

LIMITS OF SAWCUT

BASIN C
AREA=37,399 SF

Weighted E Method

HOLLY HOTEL

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
#EXISTING ONSITE DISCHARGE	77220	1.773	0%	0	80.0%	1.418	0.0%	0	20%	0.355	1.208	0.178	5.47	0.226
ALLOWED PER SAD 224	77220	1.773	0%	0	10.0%	0.177	5.0%	0.08864	85%	1.507	2.163	0.319	8.33	0.520
BASIN A	37557	0.862	0%	0	11.0%	0.095	5.0%	0.04311	84%	0.724	2.148	0.154	4.03	0.251
BASIN B	2264	0.052	0%	0	20.0%	0.010	19.0%	0.00988	61%	0.032	1.869	0.008	0.22	0.012
BASIN C	37399	0.859	0%	0	11.0%	0.094	7.0%	0.0601	82%	0.704	2.127	0.152	3.99	0.246
OVERALLPROPSED	77220	1.773	0%	0	22.0%	0.200	6%	0.113	82%	1.460	2.130	0.315	8.24	0.509

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66 Qa= 1.87
Eb= 0.92 Qb= 2.6
Ec= 1.29 Qc= 3.45
Ed= 2.36 Qd= 5.02

Pond volume required

FIRST FLUSH REQUIRED		1801.89 cf
FIRST FLUSH PROVIDED		2004.00 cf
EXISTING ONSITE DISCHARGE	5.47 CFS	
PROPOSED ONSITE DISHCARGE	8.24 CFS	
ALLOWED ONSITE DISCHARGE	8.33 CFS	

FIRST FLUSH REQUIREMENT
1801.9 CUBIC FEET
2004 CUBIC FEET PROVIDED

DESIGN FLOW RATES

LANDSCAPE SWALE-BASIN B+C+3.99*	8.20 CFS
CURB OPENING AT MAIN POND=A	4.03 CFS
STORM DRAIN	0.22 CFS

NARRATIVE

THIS SITE IS AN NEW DEVELOPMENT OF AN SITE LOCATED WITH SAD 224. THIS SITE CURRENTLY FREE DISCHARGES 5.47 CFS. THE PROPOSED IMPROVEMENTS REDUCE THE DISCH, 8.24 CFS, WHICH IS LESS THAN THE 8.33 ALLOWED. THE FIRST FLUSH VOLUME OF1802 CUBIC FEET IS CAPTURED ON SITE

DEVELOPMENT REVIEW BOARD
HYDROLOGY SECTION

DRB Project Number: 1010357 Hearing Date: **4/20/2016**

Project: Hampton Hotel Agenda Item No: **3**

TYPE OF REQUEST:

☐ Sketch Plat	☒ Minor Preliminary / Final Plat	☐ Preliminary Plat	☐ Final Plat
☐ Temp Sidewalk Deferral	☐ Sidewalk Waiver/Variance	☒ Site Plan for Building Permit	☐ Site Plan for Subdivision
☐ SIA Extension (2yr)	☐ SIA Extension - Sidewalk	☐ Vacation of Public Easement	☐ Vacation of Public Right of Way

ENGINEERING COMMENTS:

- Hydrology has an approved grading plan, and drainage report (stamp date 11-18-15), for *Site Plan approval.*
- The drainage report states that this site receives upland flows. A private cross lot drainage easement may be needed. We are adding blanket cross lot drainage
- Tract A was to discharge thru a shared access drive along the eastern edge, but it appears from the grading that it now discharges thru this site. Provide supplement to drainage report showing how much flow will be entering from Tract A, and how it will discharge. Flows are accepted, passed thru north drive isle onto holly
- Lots 21 and B1 both discharge thru this site. Was swale was sized to accommodate these flows? Report needs supplement information addressing offsite flows.

We have added channel section calculations

RESOLUTION/COMMENTS:

Parks & Rec:

Water:

Transportation:

Planning:

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LAND DEVELOPMENT SECTION

APPROVED __; DELEGATED__ TO: (TRANS) (HYD) (WUA) (PRKS) (PLNG)

SIGNED-OFF: ___ (I.L.) (SPSD) (SPBP) (FINAL PLAT) (OTHER_____)

DEFERRED __DATE_____ ; DENIED __;

SIGNED: Rita Harmon, P.E., Senior Engineer, City Engineer Designee
Hydrology Section; 505-924-3695
rharmon@cabq.gov

CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

January 14, 2016

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

RE: Hampton Inn (Holly Ave)
Grading Plan and Drainage Report
Engineer's Stamp Date – 11-16-15
Hydrology File: C18D073B

Dear Mr. Soule:

Based upon the information provided in your submittal received 11-18-15, the above referenced Grading Plan and Drainage Report is approved for Site Plan for Building Permit.

The above-referenced plan is also approved for Grading Permit and Building Permit.

Prior to Building Permit approval, Engineer Certification per the DPM checklist will be required.

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

Sincerely,

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

Orig: Drainage file

PO Box 1293
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New Mexico 87103
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City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Holly Hotel Building Permit #: _____ City Drainage #: C18D073B

DRB#: _____ EPC#. _____ Work Order#: _____

Legal Description: lots 12, 13 Tract B, Unit A, North Albuquerque Acres

City Address: 5900 Holly NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone# 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: Paseo Hospitality,llc Contact: _____

Address: 4505 Atherton Way nw 87120

Phone#: _____ Fax#: _____ E-mail: _____

Architect: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply

DEPARTMENT:

X HYDROLOGY/ DRAINAGE
___ TRAFFIC/ TRANSPORTATION
___ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

___ ENGINEER/ ARCHITECT CERTIFICATION

___ CONCEPTUAL G & D PLAN
X GRADING PLAN
___ DRAINAGE MASTER PLAN
___ *DRAINAGE REPORT*
___ CLOMR/LOMR

___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ TRAFFIC IMPACT STUDY (TIS)
___ EROSION & SEDIMENT CONTROL PLAN (ESC)

___ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY

___ PRELIMINARY PLAT APPROVAL
___ SITE PLAN FOR SUB'D APPROVAL
X SITE PLAN FOR BLDG. PERMIT APPROVAL
___ FINAL PLAT APPROVAL
___ SIA/ RELEASE OF FINANCIAL GUARANTEE
___ FOUNDATION PERMIT APPROVAL
X GRADING PERMIT APPROVAL $ 50.00
___ SO-19 APPROVAL
___ PAVING PERMIT APPROVAL
___ GRADING/ PAD CERTIFICATION
___ WORK ORDER APPROVAL
___ CLOMR/LOMR

___ PRE-DESIGN MEETING
___ OTHER (SPECIFY) _____

RECEIVED
NOV 18 2015
LAND DEVELOPMENT SECTION

IS THIS A RESUBMITTAL? ___ Yes X No

DATE SUBMITTED: 11/15/15 By: DAVID SOULE

COA STAFF ELECTRONIC SUBMITTAL RECEIVED ___

DRAINAGE REPORT

For

HOLLY HOTEL

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

NOVEMBER 2015

David Soule P.E. No. 14522

TABLE OF CONTENTS

PURPOSE

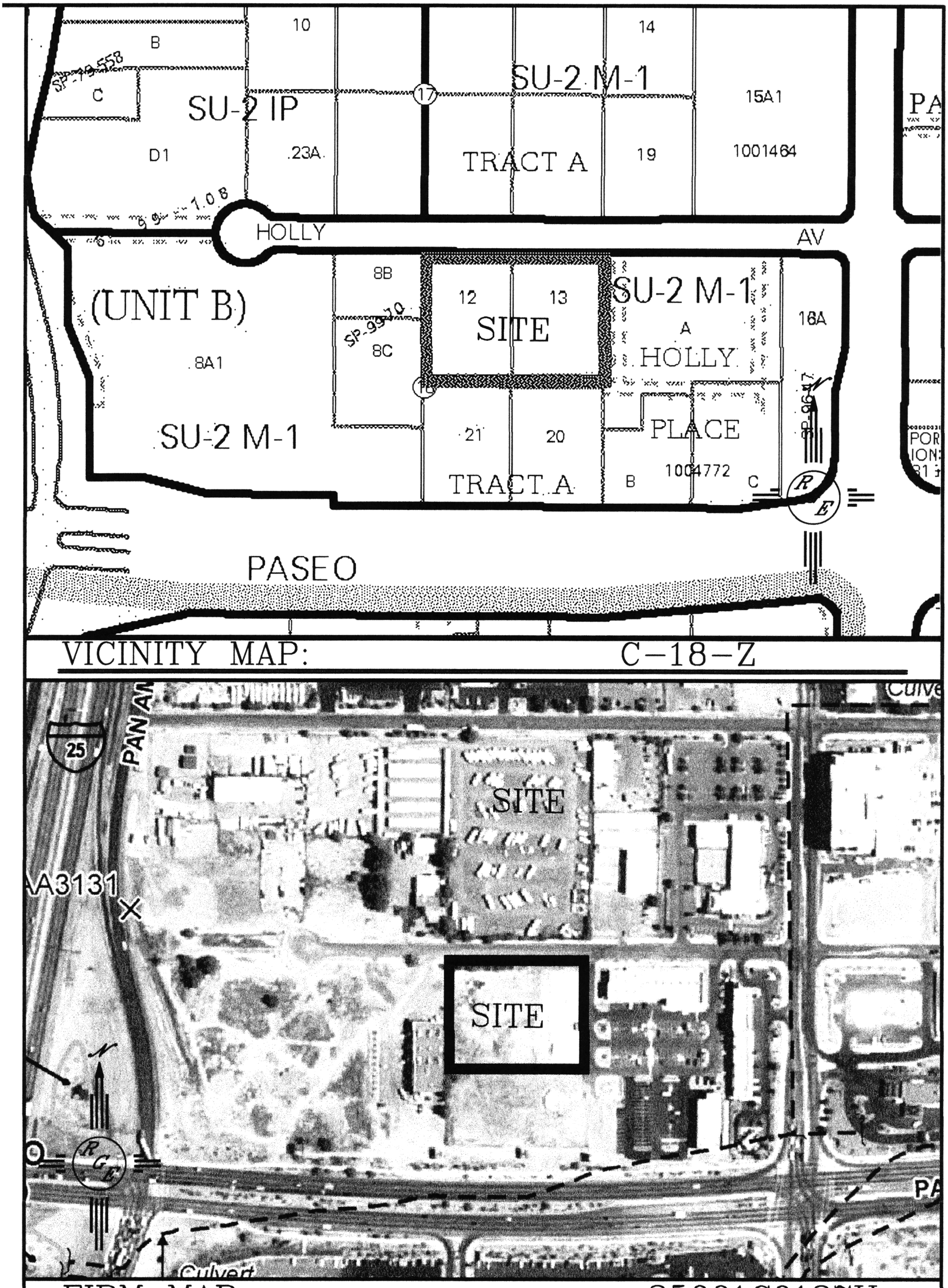
The purpose of this report is to provide the Drainage Management Plan for the development of a 1.77 acre hotels site located at 5900 Holly. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the grading 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 1.7-acre parcel of land located on the south side of Holly between Interstate 25 and San Pedro Northeast. The legal description of this site is lots 12 and 13, Tract B, Unit A, North Albuquerque Acres. As shown on FIRM map35013C0137H, the entire site is located within Flood Zone X. The site has been graded in the past; it contains large stock piles of material and paved access across the site. The site is impacted by upland flow. The site is a part of a drainage master plan for SAD 224 and pervious drainage reports (C18-073, and C18-077). The site is surrounded by fully developed sites on all sides The site currently free discharges as sheet flow to the holly via the existing access road and driveway at the north west corner of the site The development of the site will require the site to discharge at a rate equal to or less than the developed condition assumptions for the SAD 224 (0%A, 10%B, 5%C, 85%D) and retain the first flush water quality volume onsite.

EXISTING CONDITIONS

The site is currently disturbed yet undeveloped and is impacted by upland flows. The site is located in flood zone x. The site currently generates 5.47 cfs as sheet flow to Holly via an existing drives way. The site passes the flow from the upland site thru the paved drive and driveway. All downstream improvements are in place and maintained by the city of Albuquerque.



VICINITY MAP: C-18-Z

FIRM MAP: 35001C0137H

PROPOSED CONDITIONS

The proposed improvements consist of a new multi-story Hotel. A drainage sub basin map and hydraulic spread sheet is included in appendix A. The proposed development will drain from east to west, passing thru landscape areas and small ponds located within the landscape areas before discharging north to Holly via the existing driveway. The entire site will generate 8.24 cfs which is less than the 8.33 cfs allowed within the governing master plan C18-D0073/77. Basin B will be conveyed between landscape areas via a 12" underground storm drain @.5%. As shown in appendix B, the storm drain has been sized to convey the contributing flow. The swale and curb openings have been sized to pass the upland flows the outfall contains a first flush pond that when filled to the curb flow line will then spill out the driveway. The onsite ponds contain 2004 cubic feet, exceeding the first flush requirement of 1802 cubic feet

SUMMARY AND RECOMMENDATIONS

This project is a development of multistory hotels within a larger development. This site has been designed to discharge less than the developed condition assumptions of the master drainage plan. The development of this site will retain the first flush volume onsite. The pond entrance acts as the overflow once the first flush volume is captured. The drainage structures have been adequately sized. The development of this site will not negatively impact the upstream nor down stream facilities. Since this site exceed 1 acre, an erosion and sediment Control Plan will be required, a NPDES permit will also be required prior to any construction activity.

APPENDIX A

SITE HYDROLOGY

BASIN A
AREA=37,557 SF
BASIN B
AREA=2,264 SF
BASIN C
AREA=37,399 SF
A.M.A.F.C.A.
DRAINAGE EASEMENT
(BK. 9911, PG. 5395 8/11/99)
227' LF OF RW
70' LF OF RW
45° 1:1 MAX. SLOPE
COBB
NTS
LIMITS OF SAWCUT
BEGIN 2' SWALE
SEE DETAIL THIS SHEET
END 2' SWALE
SEE DETAIL THIS SHEET
2' CURB CUT
4' CURB CUT
1' CURB CUT
BUILD 3 STAIRS-
1' TREAD W/6" RISER
BUILD 7 STAIRS-
1' TREAD W/6" RISER
BUILD 1-1' SW CULVERT
PER COA STD DWG #2236
INV IN=5216.75
INV OUT=5216.65
INSTALL 1-12" INLINE
NYLOPLAST GRATE
GRATE=5216.50
12" HDPE INV=5215.30
FF=5217.48
FP=5216.98
BUILD WATER HARVESTING POND
BOTTOM=5214.67
PROPOSED VOLUME=74 CU. FT.
DAYLIGHT 12" HDPE
INV=5214.67
BUILD WATER HARVESTING POND
TOP=5216.18
BOTTOM=5215.18
PROPOSED VOLUME=50 CU. FT.
=5209.00
=5208.00
CU. FT.
FL=5216.00

Weighted E Method

HOLLY HOTEL

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
#EXISTING ONSITE DISCHARGE	77220	1.773	0%	0	80.0%	1.418	0.0%	0	20%	0.355	1.208	0.178	5.47	0.226
ALLOWED PER SAD 224	77220	1.773	0%	0	10.0%	0.177	5.0%	0.08864	85%	1.507	2.163	0.319	8.33	0.520
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BASIN B	2264	0.052	0%	0	20.0%	0.010	19.0%	0.00988	61%	0.032	1.869	0.008	0.22	0.012
BASIN C	37399	0.859	0%	0	11.0%	0.094	7.0%	0.0601	82%	0.704	2.127	0.152	3.99	0.246
OVERALLPROPSED	77220	1.773	0%	0	22.0%	0.200	6%	0.113	82%	1.460	2.130	0.315	8.24	0.509

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

%D = 1.460 acres

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66 Qa= 1.87
Eb= 0.92 Qb= 2.6
Ec= 1.29 Qc= 3.45
Ed= 2.36 Qd= 5.02

FIRST FLUSH REQUIREMENT
1801.9 CUBIC FEET
2004 CUBIC FEET PROVIDED

DESIGN FLOW RATES

LANDSCAPE SWALE-BASIN B+C+3.99*	8.20 CFS
CURB OPENING AT MAIN POND=A	4.03 CFS
STORM DRAIN	0.22 CFS

Pond volume required

FIRST FLUSH REQUIRED		1801.89 cf
FIRST FLUSH PROVIDED		2004.00 cf
EXISTING ONSITE DISCHARGE	5.47 CFS	
PROPOSED ONSITE DISHCARGE	8.24 CFS	
ALLOWED ONSITE DISCHARGE	8.33 CFS	

NARRATIVE

THIS SITE IS AN NEW DEVELOPMENT OF AN SITE LOCATED WITH SAD 224. THIS SITE CURRENTLY FREE DISCHARGES 5.47 CFS. THE PROPOSED IMPROVEMENTS REDUCE THE DISCH/ 8.24 CFS, WHICH IS LESS THAN THE 8.33 ALLOWED. THE FIRST FLUSH VOLUME OF1802 CUBIC FEET IS CAPTURED ON SITE

APPENDIX B

HYDRAULIC CALCULATIONS

Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
Beginning	6	0.25	1	3.13	6.34	0.4930657	1	9.69	8.22	2.63

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area

R = D/4

S = Slope

n = 0.03

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
12HDPE	12	0.5	0.79	0.25	2.05	0.22	0.28

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.016

OPENINGS

Weir Equation:

$$Q = CLH^{3/2}$$

Q= 1.52 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

2' CURB OPENING/ 2' CURB CUT

Q=2.95X2X0.5X1.5=2.10 CFS