CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

July 25, 2017

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. N.E
Albuquerque, NM, 87108

RE: McMahon Market Place
Amended Drainage Management Plan
Stamp Date: 7/21/17
Hydrology File: A11D011G

Dear Mr. Arfman:

Based upon the information provided in your resubmittal received 7/24/2017, the Amended Drainage Management Plan is approved for action by the DRB on the Site Plan for Building Permit and Site Plan for Subdivision.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Reneé C. Brissette

Reneé C. Brissette, P.E.
Senior Engineer, Hydrology
Planning Department

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

Orig: Drainage File

ISAACSON & ARFMAN, P.A. *Consulting Engineering Associates*
Thomas O. Isaacson, PE(RET.) & LS(RET.) . Fred C. Arfman, PE . Åsa Nilsson-Weber, PE

July 21, 2017

Reneé Brissette, P.E.
Senior Engineer, Hydrology
City of Albuquerque, Planning Dept.

RE: McMahon Market Place AMENDED DRAINAGE MANAGEMENT PLAN – DRB 1005280

Dear Ms. Brissette,

Included with this response is a copy of the revised Amended Drainage Management Plan for the above referenced project. Revisions were made based on your review comments dated July 20th as follows:

1. Duplicate information removed.
2. Duplicate information removed.
3. Information relocated on sheet.
4. First Flush Retention note revised.
5. Required detention equation corrected.
6. Drainage Concept updated to show required detention for Lots 5&6A and Lot 9.
7. Detention control will be achieved using at inlets using orifice control which will permit the asphalt parking areas to act as temporary ponding. See additional calculations on the following page.
8. See response to # 7.
9. See exhibit below.

As noted in your comments, the McMahon Marketplace DMP governs the entire 12.13 acre McMahon Marketplace. The DMP notes "The future development can either create a pond to restrict the flow to the 41.55 cfs or modify the amount of landscaping to reduce the amount of Land Treatment Type 'D' to reduce the runoff." As the overall property continues to develop, the 41.55 cfs maximum discharge rate will be revisited with each submittal.

The following discharge rates will be used as future lots develop:

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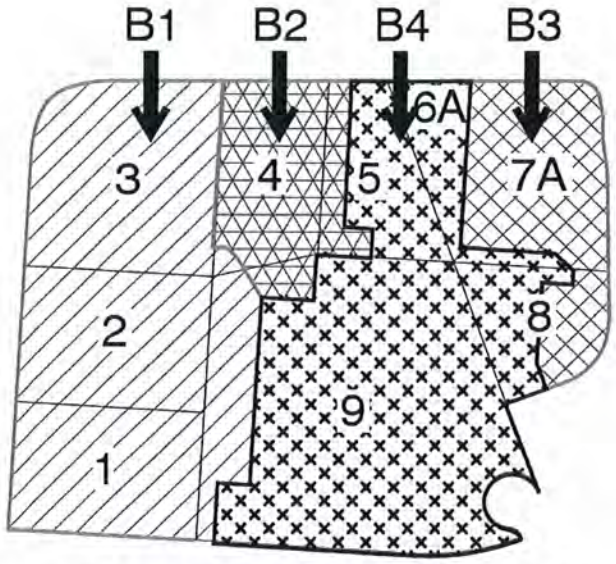


MCMAHON MARKETPLACE - OVERALL

BASIN B1: LOTS 1, 2, 3, PORTIONS OF LOTS 4 AND 9 (4.6 ACRE) = 19.1 CFS

B1	123	DESCRIPTION	Lots 1, 2 and 3 fully developed

Area of basin flows = 174497 SF = 4.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	0%
C =	15%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.82 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 26509 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 16.6 cfs

B1	4-Sep	DESCRIPTION	PORTIONS OF LOT 9&4 TO WEST SD

Area of basin flows = 26512 SF = 0.6 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.81 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 3992 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 2.5 cfs

BASIN B2: PORTIONS OF LOTS 4, 5 AND 9 (1.2 ACRE) = 4.8 CFS

B2	L4,5,9(PARTIAL	DESCRIPTION	LOT 4 (REMAINDER), PORTION OF LOTS 5 AND 9

Area of basin flows = 53905 SF = 1.2 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.67 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 7489 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 4.8 cfs

LAND TREATMENT	
A =	0%
B =	15%
C =	11%
D =	74%

BASIN B3: LOT 7A, PORTION OF LOT 8 (1.5 ACRE) = DETAINED : 4.07 CFS

B3		DESCRIPTION	LOT 7, REMAINDER OF LOT 8 TO DETENTION A

Area of basin flows = 64178 SF = 1.5 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.81 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 9664 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 6.0 cfs

LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

BASIN B4: LOT 6A, PORTION OF LOTS 5, 8 AND 9 (4.8 AC) = LIMITED TO 13.55 CFS (DETENTION REQUIRED)

B4	10	DESCRIPTION	LOT 6A, REMAINDER OF LOTS 5, 8 AND 9

Area of basin flows = 209811 SF = 4.8 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.81 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 31594 CF

Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 19.8 cfs

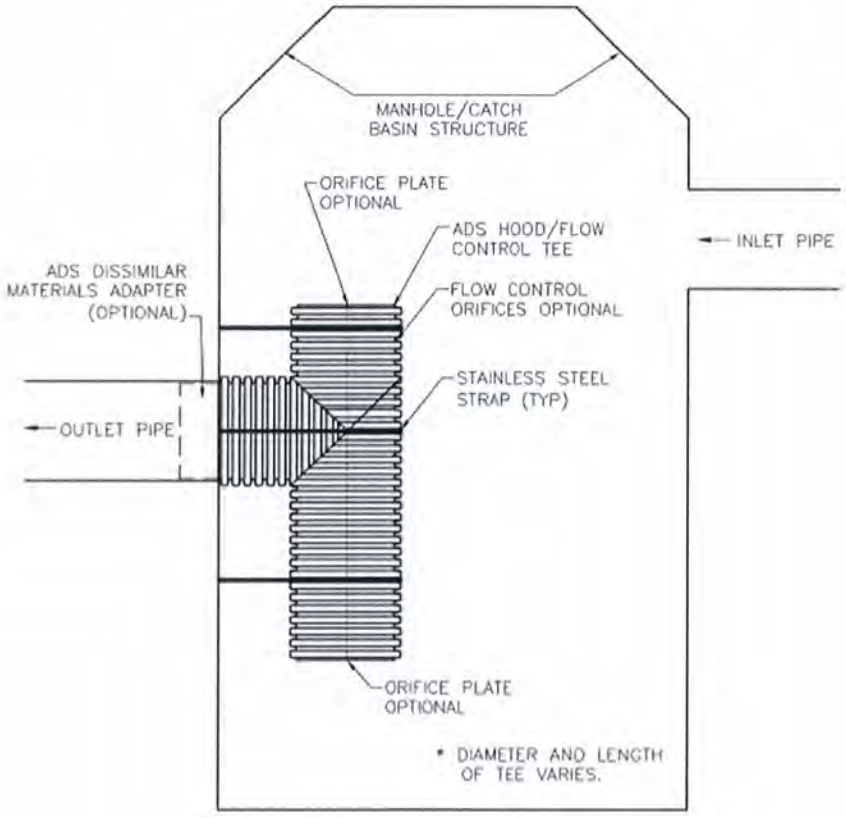
LAND TREATMENT	
A =	0%
B =	5%
C =	10%
D =	85%

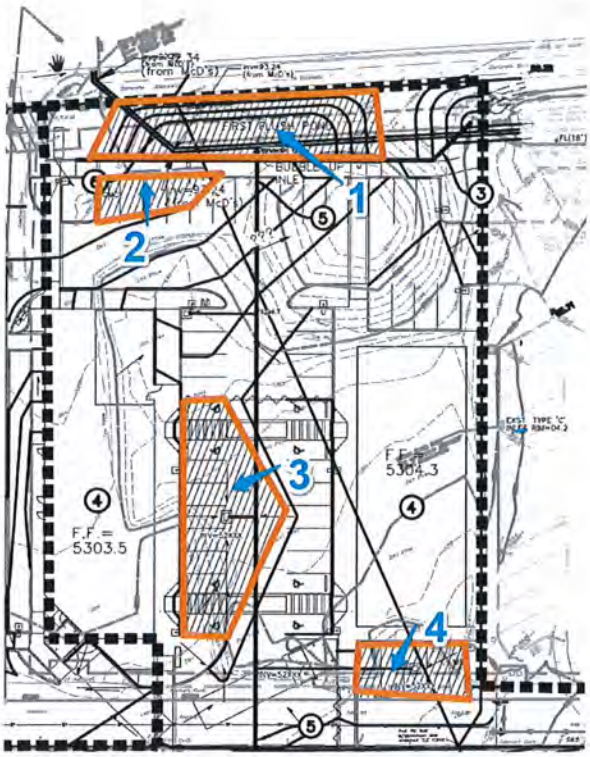
Lot 5 and 6A = 1.75 acres: Required detention = 30% of total = 1.9 cfs

NOTE: Lot 5 and 6A will provide more than 1.9 cfs if possible to reduce the requirement for Lot 9 (same owner). Detention volume required ≈3,200 cf.

Detention will be provided using orifice control at drain inlets and at the connection to the existing private storm sewer connection to the public McMahon Blvd. system.

HOOD/FLOW CONTROL TEE INSTALLATION





POND 1			
Contour	Area	Volume	
5302.80	2787		
5302.00	0	1115	CF
TOTAL VOL.		**1115**	CF

POND 2			
Contour	Area	Volume	
5298.70	491		
5298.00	0	172	CF
TOTAL VOL.		**172**	CF

POND 3			
Contour	Area	Volume	
5297.00	2750		
5294.00	1200	5925	CF
TOTAL VOL.		**5925**	CF

POND 4			
Contour	Area	Volume	
5303.60	956		
5303.00	0	287	CF
TOTAL VOL.		**287**	CF

Total volume available = 7,500 cf. Pond 1 will utilize approx. 1250 cf for first flush with the remainder available for detention.

Lot 9 = 3.98 acres:	Required detention = 70%	4.35 cfs

(may be reduced depending on the detention provided by Lots 5/6A.)

Similar to Lot 5/6A, detention will be provided within landscaping and pavement sumps (max. depth = 8") using pipe diameter orifice control. Detention volume required ≈7270 cf.

Please don't hesitate to call me or Fred Arfman with any questions.

Sincerely,
Isaacson & Arfman, PA

Bryan J. Bobrick
Project Manager

FRED C. ARFMAN NEW MEXICO 7322 PROFESSIONAL ENGINEER

Fred C. Arfman, PE
Principal Engineer

07.21.17

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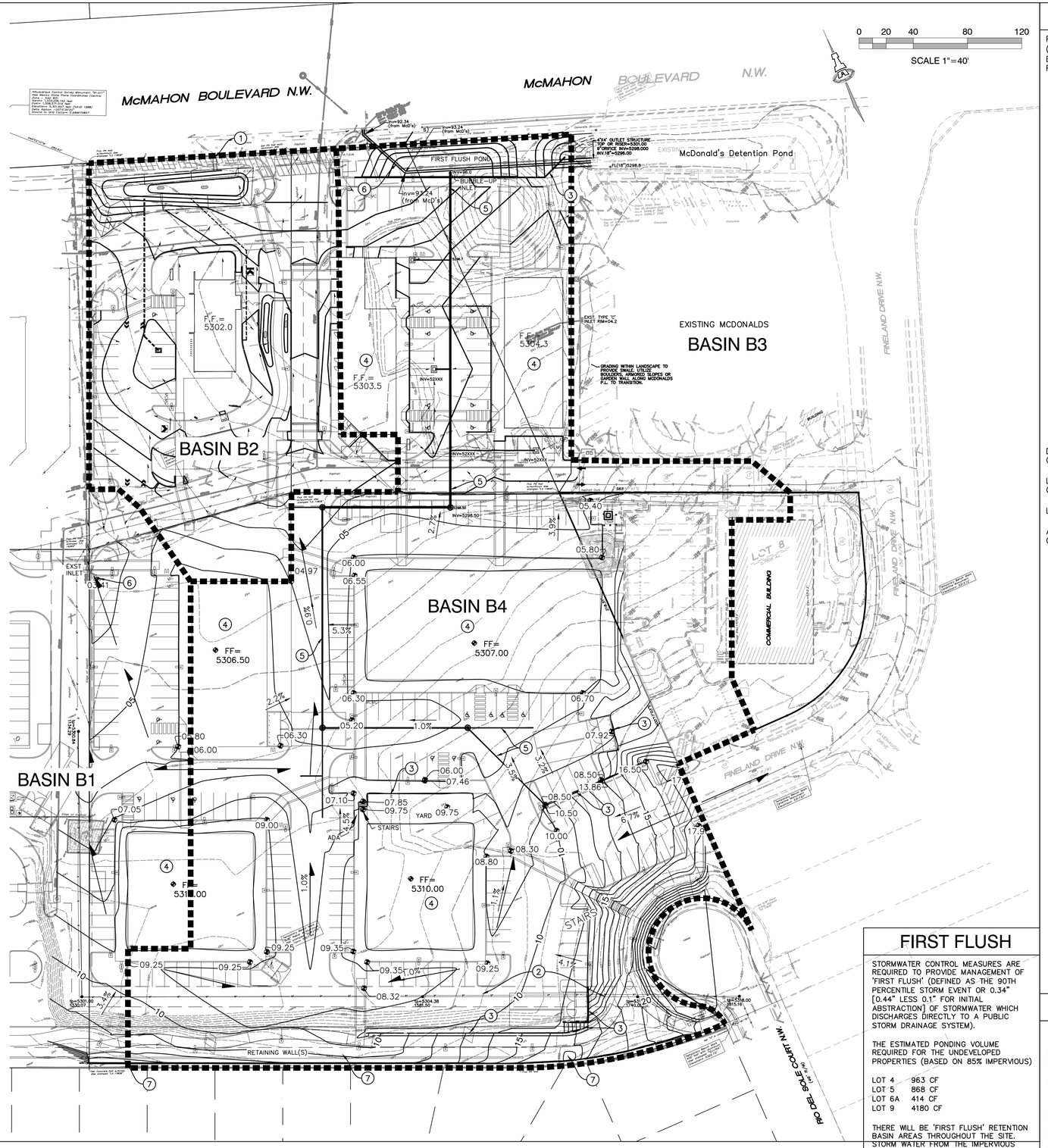


DRAINAGE CONCEPT

PER THE APPROVED MCMAHON DRAINAGE MANAGEMENT PLAN (DMP) BY BOHANNAN HUSTON INC. DATED MAY 7, 2010, THE ENTIRE 12.13 ACRE MCMAHON MARKETPLACE (PROPERTY) IS PERMITTED TOTAL DISCHARGE OF 41.55 CFS.

BASIN B1 (4.6 ACRE):

LOTS 1, 2, 3 (4.0 ACRE)
FREE DISCHARGE @ LAND TREATMENT RATIO 0:5:10:85
DISCHARGE = 16.6 CFS.

PORTION OF LOTS 9 AND 4 (0.6 ACRE)
FREE DISCHARGE @ LAND TREATMENT RATIO 0:5:10:85
DISCHARGE = 2.5 CFS

BASIN WILL CONTINUE TO DRAIN TO THE WEST PRIVATE STORM DRAIN SYSTEM. THE DISCHARGE FROM THESE PROPERTIES = 19.1 CFS TO ENTER THE PUBLIC STORM DRAIN SYSTEM.

BASIN B2: PORTIONS OF LOT 4 (STARBUCKS) 9 AND 5 = 1.2 AC. WILL FREE DISCHARGE 4.8 CFS TO MCMAHON BLVD. BASED ON AN APPROVED LAND TREATMENT RATIO OF 0:15:11:74.

BASIN B3: LOT 7A (MCDONALDS) AND A PORTION OF LOT 8 (1.5 ACRES) HAVE BEEN CONSTRUCTED WITH A DETENTION POND LIMITING THE DISCHARGE TO 4.07 CFS.

BASINS B1+B2+B3 (= 19.1 CFS + 4.8 CFS + 4.07 CFS = 28.0 CFS. THIS LEAVES 41.55–28.0 = 13.55 CFS FOR BASIN B4 ALLOWABLE DISCHARGE.

THE REMAINDER OF THE PROPERTY, CONSISTING OF THE REMAINDER OF LOTS 5, 8 AND 9 AND ALL OF LOT 6A = 4.8 ACRES. IF THESE LOTS FOLLOW THE TYPICAL RATIO OF 0:5:10:85, DISCHARGE = 19.8 CFS.

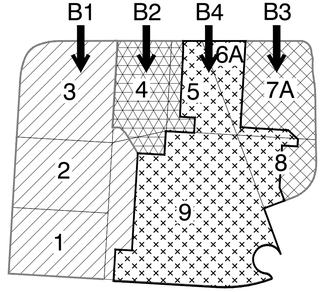
THEREFORE, THE REQUIRED DETENTION WILL BE 19.8 – 13.55 = 6.25 CFS.

DETENTION WILL BE PROVIDED BASED ON THE PERCENTAGE OF OVERALL AREA:

LOT 5 + 6A = 1.75 AC. = 30% OF THE TOTAL. RETENTION = 6.25 CFS * 30% = 1.9 CFS.

LOT 9 = 3.98 AC = 70% OF THE TOTAL. RETENTION = 4.35 CFS.

ACTUAL LAND TREATMENTS AND DETENTION REQUIREMENTS WILL BE CALCULATED AS EACH LOT DEVELOPS.



MCMAHON MARKETPLACE - OVERALL

FIRST FLUSH

STORMWATER CONTROL MEASURES ARE REQUIRED TO PROVIDE MANAGEMENT OF 'FIRST FLUSH' (DEFINED AS THE 90TH PERCENTILE STORM EVENT OR 0.34" [0.44" LESS 0.1" FOR INITIAL ABSTRACTION] OF STORMWATER WHICH DISCHARGES DIRECTLY TO A PUBLIC STORM DRAINAGE SYSTEM).

THE ESTIMATED PONDING VOLUME REQUIRED FOR THE UNDEVELOPED PROPERTIES (BASED ON 85% IMPERVIOUS)

LOT 4	963 CF
LOT 5	868 CF
LOT 6A	414 CF
LOT 9	4180 CF

THERE WILL BE 'FIRST FLUSH' RETENTION BASIN AREAS THROUGHOUT THE SITE. STORM WATER FROM THE IMPERVIOUS AREAS SHALL BE DIRECTED TO THESE BASINS VIA CURB OPENINGS AND ON–SITE STORM DRAIN.

THE 'FIRST FLUSH' BASIN VOLUMES SHALL BE ANALYZED AND SIZED AS PART OF THE BUILDING PERMIT PLANS SUBMITTAL. CURB OPENING LOCATIONS WILL BE LOCATED AND SIZED WITH FINAL DESIGN.

FUTURE DEVELOPMENT

THE REMAINING LOTS WILL DEVELOP IN THE FOLLOWING ORDER:

LOT 4 STARBUCKS – (APPROVED FOR CONSTRUCTION) WILL FREE DISCHARGE COMPLETING CONSTRUCTION IN BASINS B1, B2 AND B3. TOTAL DISCHARGE = 28.0 CFS (DEVELOPED) + THE UNDEVELOPED PROPERTY (4.8 ACRE) @ 11.8 CFS FOR A TOTAL DISCHARGE OF 39.8 CFS.

A 1 ACRE PORTION OF LOT 9 SOUTH PAVEMENT (APPROVED FOR CONSTRUCTION) BETWEEN TACO BELL AND FINELAND DRIVE WILL BE CONSTRUCTED TO PROVIDE ACCESS INTO PROPERTY FROM RIO DEL SOLE COURT. THE DEVELOPED DISCHARGE FROM THIS PORTION WILL BE 3.8 CFS. THE REMAINING UNDEVELOPED LOTS (5, 6A, REMAINDER OF LOT 9) WILL GENERATE 9.4 CFS FOR A TOTAL DISCHARGE OF 41.2 CFS.

LOTS 5 & 6A WILL DEVELOP AND WILL PROVIDE DETENTION WITHIN THE OPEN SPACE ADJACENT TO MCMAHON BLVD. TO LIMIT DISCHARGE TO 41.55 CFS.

THE REMAINDER OF LOT 9 WILL BE DEVELOPED IN PHASES WITH ADDITIONAL DETENTION PROVIDED TO ENSURE TOTAL DISCHARGE DOES NOT EXCEED ALLOWABLE.

VICINITY MAP

PROJECT DATA

LEGAL: MCMAHON MARKETPLACE LOTS 4, 5, 6A, 7 AND 9, CITY OF ALBUQUERQUE, NEW MEXICO.

BENCHMARK: VERTICAL DATUM IS BASED UPON THE ALBUQUERQUE CONTROL SURVEY MONUMENT "9–A11", ELEVATION = 5301.647 (NAVD 1988)

FLOOD HAZARD: PROPERTY IS LOCATED WITHIN ZONE X, DESIGNATING AREAS DETERMINED TO BE OUTSIDE THE 100–YEAR FLOOD PLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP, BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS MAP NO. 35001C0104H, MAP REVISED AUGUST 16, 2012.

STORMWATER CONTROL MEASURES ARE REQUIRED TO PROVIDE MANAGEMENT OF 'FIRST FLUSH' DEFINED AS THE 90TH PERCENTILE STORM EVENT OR 0.34" [0.44" LESS 0.1" FOR INITIAL ABSTRACTION] OF STORMWATER WHICH DISCHARGES DIRECTLY TO A PUBLIC STORM DRAINAGE SYSTEM.

FIRST FLUSH RETENTION PONDS WILL BE CONSTRUCTED WITHIN THE INDIVIDUAL LOTS LANDSCAPING AND WITHIN THE LANDSCAPE AREAS ALONG MCMAHON BLVD. STORM WATER FROM THE IMPERVIOUS AREAS SHALL BE DIRECTED TO THESE PONDS.

OFF–SITE: NO OFF–SITE DRAINAGE WILL IMPACT THE MCMAHON MARKETPLACE PROPERTY.

KEYED NOTES

1. NEW COVERED SIDEWALK CULVERT TO PASS FLOW IN EXCESS OF FIRST FLUSH VOLUME.
2. EXISTING WATER LINE AND ASSOCIATED EASEMENT THIS AREA TO BE RELOCATED (VERTICAL AND HORIZONTAL) TO ACCOMMODATE UPDATED GRADES & SITE LAYOUT.
3. NEW SITE RETAINING WALL TO ACHIEVE GRADE TRANSITIONS SHOWN. MAX. 8' HIGH WALL.
4. BUILDING RETAINING/EXTENDED STEMWALLS AS REQUIRED.
5. PROPOSED PRIVATE STORM DRAIN.
6. NEW CONNECTION TO EXISTING STORM DRAIN MAIN TO ACCEPT ALLOWABLE DISCHARGE.

GENERAL NOTES

A. GRADES SHOWN REFLECT OVERALL GRADING SCHEME. ADA PARKING WILL BE COORDINATED WITH ARCHITECT TO BE ADA COMPLIANT. MAX. 2% SLOPE IN ANY DIRECTION.

B. LANDSCAPING TO BE DEPRESSED TO HARVEST STORMWATER EXCEPT WITHIN 10' OF A BUILDING OR STRUCTURE.

C. CURB OPENINGS WILL BE PROVIDED WHERE POSSIBLE TO ACCEPT STORMWATER INTO DEPRESSED LANDSCAPING.

D. ROCK EROSION PROTECTION WILL BE REQUIRED AT CURB OPENINGS, ON SLOPES > 4:1 AND WITHIN SWALES CARRYING CONCENTRATED FLOW (TYPICAL).

E. 'FIRST FLUSH' RETENTION PONDING WILL BE PROVIDED WITHIN AVAILABLE LANDSCAPE AREAS THROUGHOUT.

F. STEPS AND RAMPS AS REQUIRED TO ACHIEVE GRADE TRANSITIONS WILL BE DESIGNED AS EACH PROPERTY DEVELOPS.

LEGEND

×4958.63	EXISTING SPOT ELEVATION
4958	EXISTING CONTOUR
06	PROPOSED CONTOUR (1' INCREMENT)
◆06.2	PROPOSED SPOT ELEVATION
	FLOW ARROW
FF = 5107.0	FINISH FLOOR ELEVATION
	PROPOSED GRADE BREAK

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2190 CG–101.dwg Jul 21,2017

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McMAHON MARKET PLACE
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AMENDED DRAINAGE MANAGEMENT PLAN

FRED C. ARFMAN NEW MEXICO 7322 LICENSED PROFESSIONAL ENGINEER 07.21.17

DATE: 12 JULY 2017
DRAWN BY: BJB
CHECKED BY: FCA
VERIFIED BY:

REVISIONS

SHEET NO: CG1

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