CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Director

Mayor Timothy M. Keller

February 3, 2023

J. Graeme Means, P.E.
High Mesa Consulting Group
6010 B Midway Park Blvd NE
Albuquerque, NM 87109

RE: Arroyo del Oso ES Public Storm Drainage Channel
Drainage Plan
Engineer's Stamp Date: 01/25/23
Hydrology File: E18D007A

Dear Mr. Means:

Based upon the information provided in your submittal received 01/25/2023, the Drainage Plan is approved for Work Order and Grading Permit. Please place this stamp approved Grading & Drainage Plan to the Work Order set of construction drawings.

As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

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

Sincerely,

Renée C. Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: Arroyo del Oso ES Public Storm Drainage Channel Building Permit #: _____ Hydrology File #: E18 / D7A

DRB#: _____ EPC#: _____ Work Order#: 576281

Legal Description: Tract A, Academy Acres Subdivision, Unit 7 (Arroyo Del Oso Elementary School)

City Address: 6504 Harper Drive NE, Albuquerque NM 87109

Applicant: High Mesa Consulting Group Contact: Justin Schara, PE

Address: 6031 McKinney Dr NE, Albuquerque NM 87109

Phone#: 505-362-4401 Fax#: _____ E-mail: jschara@highmesacg.com

Other Contact: _____ Contact: _____

Address: _____

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

TYPE OF DEVELOPMENT: ____ PLAT (# of lots) ____ RESIDENCE ____ DRB SITE X ADMIN SITE

IS THIS A RESUBMITTAL? ____ Yes X No

DEPARTMENT ____ TRANSPORTATION X HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
____ CONCEPTUAL G & D PLAN
____ GRADING PLAN
X DRAINAGE REPORT
____ DRAINAGE MASTER PLAN
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ STREET LIGHT LAYOUT
____ OTHER (SPECIFY) _____
____ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL

____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
____ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
X WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: 01-23-2023 By: Justin Schara

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

SITE HYDROLOGIC CALCULATIONS (FOR INFORMATION ONLY)

I. SITE CHARACTERISTICS

A. PRECIPITATION ZONE = 3

B. $P_{100,\ 6\ HR}$ = P_{360} = 2.43 IN

C.

TOTAL PROJECT AREA (A_T) =	443,559 SF	
	10.18 AC	

D. LAND TREATMENTS

1.

EXISTING LAND TREATMENT				DEVELOPED LAND TREATMENT			
BASIN A	431,309 SF 9.90 AC			BASIN A	431,443 SF 9.90 AC		
LAND TREATMENT	AREA (SF/AC)		%	LAND TREATMENT	AREA (SF/AC)		%
A				A			
B	115,437 SF 2.65 AC		27%	B	112,635 SF 2.59 AC		26%
C	137,213 SF 3.15 AC		32%	C	82,080 SF 1.88 AC		19%
D	178,659 SF 4.10 AC		41%	D	236,728 SF 5.43 AC		55%
BASIN B	12,250 SF 0.28 AC			BASIN B	12,116 SF 0.28 AC		
LAND TREATMENT	AREA (SF/AC)		%	LAND TREATMENT	AREA (SF/AC)		%
A				A			
B				B			
C	12,250 SF 0.28 AC		100%	C	8,806 SF 0.20 AC		73%
D				D	3,310 SF 0.08 AC		27%
OFFSITE BASIN (PER 1994 MDP LAND TREATEMENT VALUES)	668,645 SF 15.35 AC			OFFSITE BASIN (PER 1994 MDP LAND TREATEMENT VALUES)	668,645 SF 15.35 AC		
LAND TREATMENT	AREA (SF/AC)		%	LAND TREATMENT	AREA (SF/AC)		%
A				A			
B	405,545 SF 9.31 AC		61%	B	405,545 SF 9.31 AC		61%
C				C			
D	263,100 SF 6.04 AC		39%	D	263,100 SF 6.04 AC		39%
				BASIN A (INTERIM)*	431,443 SF 9.90 AC		
				LAND TREATMENT	AREA (SF/AC)		%
				A			
				B	40,620 SF 0.93 AC		9%
				C	85,500 SF 1.96 AC		20%
				D	305,323 SF 7.01 AC		71%

*INTERIM BASIN A CONDITION BASED UPON 4-6 MONTH PERIOD WHEN NEW BUILDING CONSTRUCTION IS COMPLETE AND OLD BUILDING DEMOLISHED BEGINS, FOLLOWED BY NEW FIELD INSTALLATION

II. HYDROLOGY

A. EXISTING CONDITION 100 YEAR STORM

1. BASIN A

a. VOLUME 100-YR, 6-HR

$WT_E = (E_A \cdot A_A + E_B \cdot A_B + E_C \cdot A_C + E_D \cdot A_D)/A_T$

⇒ (0.67 • 0.00) + (0.86 • 2.65) + (1.09 • 3.15) + (2.58 • 4.10)/9.90 = **1.65 IN**

$V_{100,6\ HR} = (E_W/12) \cdot A_T$ ⇒ (1.65/12) • 9.90 = **1.3615 AC-FT** = **59,300 CF**

b. PEAK DISCHARGE 100-YR

$Q_{100} = Q_A \cdot A_A + Q_B \cdot A_B + Q_C \cdot A_C + Q_D \cdot A_D$

⇒ (1.84 • 0.00) + (2.49 • 2.65) + (3.17 • 3.15) + (4.49 • 4.10) = **35.0 CFS**

2. BASIN B

a. VOLUME 100-YR, 6-HR

$WT_E = (E_A \cdot A_A + E_B \cdot A_B + E_C \cdot A_C + E_D \cdot A_D)/A_T$

⇒ (0.67 • 0.00) + (0.86 • 0.00) + (1.09 • 0.28) + (2.58 • 0.00)/0.28 = **1.09 IN**

$V_{100,6\ HR} = (E_W/12) \cdot A_T$ ⇒ (1.09/12) • 0.28 = **0.0255 AC-FT** = **1,110 CF**

b. PEAK DISCHARGE 100-YR

$Q_{100} = Q_A \cdot A_A + Q_B \cdot A_B + Q_C \cdot A_C + Q_D \cdot A_D$

⇒ (1.84 • 0.00) + (2.49 • 0.00) + (3.17 • 0.28) + (4.49 • 0.00) = **0.9 CFS**

3. OFFSITE BASIN (PER 1994 MDP LAND TREATEMENT VALUES)

a. VOLUME 100-YR, 6-HR

$WT_E = (E_A \cdot A_A + E_B \cdot A_B + E_C \cdot A_C + E_D \cdot A_D)/A_T$

⇒ (0.67 • 0.00) + (0.86 • 9.31) + (1.09 • 0.00) + (2.58 • 6.04)/15.35 = **1.54 IN**

$V_{100,6\ HR} = (E_W/12) \cdot A_T$ ⇒ (1.54/12) • 15.35 = **1.9699 AC-FT** = **85,810 CF**

b. PEAK DISCHARGE 100-YR

$Q_{100} = Q_A \cdot A_A + Q_B \cdot A_B + Q_C \cdot A_C + Q_D \cdot A_D$

⇒ (1.84 • 0.00) + (2.49 • 9.31) + (3.17 • 0.00) + (4.49 • 6.04) = **50.3 CFS**

B. DEVELOPED CONDITION 100 YEAR STORM

1. BASIN A

a. VOLUME 100-YR, 6-HR

$WT_E = (E_A \cdot A_A + E_B \cdot A_B + E_C \cdot A_C + E_D \cdot A_D)/A_T$

⇒ (0.67 • 0.00) + (0.86 • 2.59) + (1.09 • 1.88) + (2.58 • 5.43)/9.90 = **1.85 IN**

$V_{100,6\ HR} = (E_W/12) \cdot A_T$ ⇒ (1.85/12) • 9.90 = **1.5270 AC-FT** = **66,510 CF**

b. PEAK DISCHARGE 100-YR

$Q_{100} = Q_A \cdot A_A + Q_B \cdot A_B + Q_C \cdot A_C + Q_D \cdot A_D$

⇒ (1.84 • 0.00) + (2.49 • 2.59) + (3.17 • 1.88) + (4.49 • 5.43) = **36.8 CFS**

2. BASIN B

a. VOLUME 100-YR, 6-HR

$WT_E = (E_A \cdot A_A + E_B \cdot A_B + E_C \cdot A_C + E_D \cdot A_D)/A_T$

⇒ (0.67 • 0.00) + (0.86 • 0.00) + (1.09 • 0.20) + (2.58 • 0.08)/0.28 = **1.50 IN**

$V_{100,6\ HR} = (E_W/12) \cdot A_T$ ⇒ (1.50/12) • 0.28 = **0.0348 AC-FT** = **1,510 CF**

b. PEAK DISCHARGE 100-YR

$Q_{100} = Q_A \cdot A_A + Q_B \cdot A_B + Q_C \cdot A_C + Q_D \cdot A_D$

⇒ (1.84 • 0.00) + (2.49 • 0.00) + (3.17 • 0.20) + (4.49 • 0.08) = **1.0 CFS**

3. OFFSITE BASIN (PER 1994 MDP LAND TREATEMENT VALUES)

a. VOLUME 100-YR, 6-HR

$WT_E = (E_A \cdot A_A + E_B \cdot A_B + E_C \cdot A_C + E_D \cdot A_D)/A_T$

⇒ (0.67 • 0.00) + (0.86 • 9.31) + (1.09 • 0.00) + (2.58 • 6.04)/15.35 = **1.54 IN**

$V_{100,6\ HR} = (E_W/12) \cdot A_T$ ⇒ (1.54/12) • 15.35 = **1.9699 AC-FT** = **85,810 CF**

b. PEAK DISCHARGE 100-YR

$Q_{100} = Q_A \cdot A_A + Q_B \cdot A_B + Q_C \cdot A_C + Q_D \cdot A_D$

⇒ (1.84 • 0.00) + (2.49 • 9.31) + (3.17 • 0.00) + (4.49 • 6.04) = **50.3 CFS**

c. NEW PUBLIC STORM DRAIN CHANNEL CAPACITY (MANNING'S EQUATION FOR OPEN CHANNEL FLOW)

*USING MANNING'S EQUATION FOR 10' WIDE CHANNEL, 1.5' WALL HEIGHT (0.7' WATER FLOW DEPTH, 0.8' FREEBOARD), MIN. SLOPE = 1.2%

$Q_{CHANNEL\ CAP}$ = 1.49/n * A* R2/3 * S1/2 = (1.49/0.013) x (7 SF) x $(0.61)^{2/3}$ • $(0.012)^{1/2}$ = 63.3 CFS

$Q_{CHANNEL\ CAP}$ = **63.3 CFS > $Q_{OFFSITE\ DISCHARGE}$ = 50.3 CFS; OK**

4. BASIN A (INTERIM)*

a. VOLUME 100-YR, 6-HR

$WT_E = (E_A \cdot A_A + E_B \cdot A_B + E_C \cdot A_C + E_D \cdot A_D)/A_T$

⇒ (0.67 • 0.00) + (0.86 • 0.93) + (1.09 • 1.96) + (2.58 • 7.01)/9.90 = **2.12 IN**

$V_{100,6\ HR} = (E_W/12) \cdot A_T$ ⇒ (2.12/12) • 9.90 = **1.7498 AC-FT** = **76,220 CF**

b. PEAK DISCHARGE 100-YR

$Q_{100} = Q_A \cdot A_A + Q_B \cdot A_B + Q_C \cdot A_C + Q_D \cdot A_D$

⇒ (1.84 • 0.00) + (2.49 • 0.93) + (3.17 • 1.96) + (4.49 • 7.01) = **40.0 CFS**

C. COMPARISON 100 YEAR STORM

1. BASIN A

a. VOLUME 100-YR, 6-HR (GROSS)

$\Delta V_{100,\ 6\ HR}$ = 66510 - 59300 = **7,210 CF** (INCREASE)

b. PEAK DISCHARGE 100-YR

ΔQ_{100} = 36.8 - 35.0 = **1.8 CFS** (INCREASE)

c. SUBSURFACE INFILTRATION SYSTEM CAPACITY

$V_{INFILTRATION\ CAPACITY}$ = **14,593 CF**

$V_{DET.\ CAP} > \Delta V_{100,\ 6\ HR}$ = 14,593 CF > 7,210 CF; INCREASED RUNOFF MANAGED VIA INFILTRATION ONSITE

d. STORMWATER QUALITY VOLUME = 1,500 + 230 + 300 = **2,030 CF**

e. VOLUME 100-YR, 6 HR (NET)

$\Delta V_{100,\ 6\ HR}$ = 7,210 - 14,593 - 2,030 = **-9,413 CF** (DECREASE)

2. BASIN B

a. VOLUME 100-YR, 6-HR

$\Delta V_{100,\ 6\ HR}$ = 1510 - 1110 = **400 CF** (INCREASE)

b. PEAK DISCHARGE 100-YR

ΔQ_{100} = 1.0 - 0.9 = **0.1 CFS** (INCREASE)

3. BASIN A (INTERIM)*

a. VOLUME 100-YR, 6-HR (GROSS)

$\Delta V_{100,\ 6\ HR}$ = 76220 - 59300 = **16,920 CF** (INCREASE)

b. PEAK DISCHARGE 100-YR

ΔQ_{100} = 40.0 - 35.0 = **5.0 CFS** (INCREASE)

c. SUBSURFACE INFILTRATION SYSTEM CAPACITY

$V_{INFILTRATION\ CAPACITY}$ = **14,593 CF**

$V_{CAP} < \Delta V_{100,\ 6\ HR}$ = 14,593 CF < 16,920 CF; 86% INCREASED RUNOFF MANAGED VIA INFILTRATION ONSITE

d. STORMWATER QUALITY VOLUME = 1,500 + 230 + 300 = **2,030 CF**

e. VOLUME 100-YR, 6 HR (NET)

$\Delta V_{100,\ 6\ HR\ (NET)}$ = 16,920 - 14,593 - 2,030 = **297 CF** (INCREASE)

$V_{CAP} \approx \Delta V_{100,\ 6\ HR\ (GROSS)}$ ⇒ 14,593 CF + 2,030 CF = 16,920 CF; 99% INCREASED RUNOFF MANAGED VIA INFILTRATION & SURFACE STORM WATER QUALITY ONSITE

D. STORM WATER QUALITY AND LEED CALCULATIONS

THE MEASURES ASSOCIATED WITH THIS PROJECT ARE INTENDED TO EXCEED THOSE REQUIRED FOR THE CITY OF ALBUQUERQUE STORMWATER QUALITY ORDINANCE AND ALSO THOSE FOR LEED BD&C: NEW CONSTRUCTION V4.1 SUSTAINABLE SITES RAINWATER MANAGEMENT CREDIT OPTION 1 - 3 CREDITS FOR MANAGING THE 90TH PERCENTILE EVENT. THE ASSOCIATED FINAL CONDITION VOLUME REQUIRED OF 8,400 CF HAS BEEN DETERMINED USING THE CITY OF ALBUQUERQUE METHODOLOGY AS FOLLOWS:

LEED BOUNDARY AREA = 443,559 SF (10.18 AC); IMPERVIOUS AREA = 5.51 AC

90^{TH} PERCENTILE RUNOFF DEPTH = 0.42"

PER COA DPM ARTICLE 6-12 (STORMWATER QUALITY AND LOW IMPACT DEVELOPMENT), THE IMPERVIOUS AREA SHALL BE MULTIPLIED BY THE 0.42" STORM EVENT FROM THE 90TH PERCENTILE STORM EVENT.

$V_{90TH} = (E_{W\ 90TH})/12 \cdot A_T$

⇒ (0.42 / 12) 5.51 = 0.42/12 * 5.51 = 0.1929 AC-FT = **8,400 CF**

IN RECOGNITION THAT THERE WILL BE AN INTERIM CONDITION WHEREBY THE NEW CONSTRUCTION IS COMPLETE PRIOR TO DEMOLITION OF THE EXISTING SCHOOL, THE FOLLOWING CALCULATIONS ARE FOR THE INTERIM WORST CASE TEMPORARY CONDITION:

LEED BOUNDARY AREA = 443,559 SF (10.18 AC); IMPERVIOUS AREA = 7.09 AC

90^{TH} PERCENTILE RUNOFF DEPTH = 0.42"

$V_{90TH} = (E_{W\ 90TH})/12 \cdot A_T$

⇒ (0.42 / 12) 7.09 = 0.42/12 * 7.09 = 0.2482 AC-FT = **10,810 CF**

DRAINAGE PLAN

THIS PLAN IS SUBMITTED FOR WORK ORDER APPROVAL. THIS APS SITE BUILDING PERMIT APPROVAL WILL BE THROUGH C.I.D., AND THEREFORE THIS IS NOT A REQUEST FOR COA BUILDING PERMIT APPROVAL. CALCULATIONS AND PORTIONS OF THIS DRAINAGE PLAN ARE PROVIDED FOR INFORMATION ONLY AND TO DEMONSTRATE COMPLIANCE WITH C.O.A. APPROVED MASTER PLAN REQUIREMENTS.

THE SCHOOL SITE GENERALLY SLOPES FROM NORTHEAST TO SOUTHWEST WITH APPROXIMATELY 15' FEET OF FALL, CONSISTING OF SLOPES RANGING FROM 3 TO 5%. EXISTING STORMWATER RUNOFF GENERATED BY THE SITE IS 100% SURFACE SHEET FLOW THAT ULTIMATELY DRAINS TO A 10' PAVED PUBLIC RUNDOWN IN A DEDICATED PEDESTRIAN AND DRAINAGE RIGHT-OF-WAY BETWEEN 2 RESIDENTIAL PROPERTIES NEAR THE SOUTHWEST CORNER OF THE SITE. PER THE 1999 SITE MASTER DRAINAGE PLAN FOR THE SITE PREPARED BY SCOTT MCGEE, AND SUBSEQUENT 2000 CERTIFIED RECORD DRAWINGS (E18–D7A), THE SITE HAS LIMITED, CONTROLLED DISCHARGE THROUGH THIS 10' PUBLIC DRAINAGE RUNDOWN TO ROSALIND DRIVE NE, A FULLY DEVELOPED PUBLIC STREET.

PROPOSED SITE IMPROVEMENTS WILL INCLUDE SURFACE DRAINAGE IMPROVEMENTS, PRIVATE SUBSURFACE STORM DRAIN IMPROVEMENTS AND ON–SITE STORMWATER INFILTRATION WATER QUALITY AREAS (BOTH SURFACE AND SUB–SURFACE) THAT WILL MANAGE THE DEVELOPED STORMWATER GENERATED TO MORE THAN TWICE THE CITY–REQUIRED LEVEL FOR NEW DEVELOPMENT. THE ONSITE SURFACE WATER QUALITY AREAS AND SUB–SURFACE STORMWATER INFILTRATION SYSTEM ARE SIZED TO MANAGE THE INCREASED STORMWATER GENERATION RESULTING FROM THE DEVELOPED SITE. DEVELOPED STORMWATER RUNOFF FROM THE SCHOOL SITE WILL CONTINUE TO DISCHARGE THROUGH THE SW CORNER PUBLIC DRAINAGE RUNDOWN TO ROSALIND DRIVE NE PER THE 1999 MDP APPROVED, CONTROLLED DISCHARGE RATE, MAINTAINING THE EXISTING APPROVED STORM DRAINAGE PATTERN FOR THE SITE.

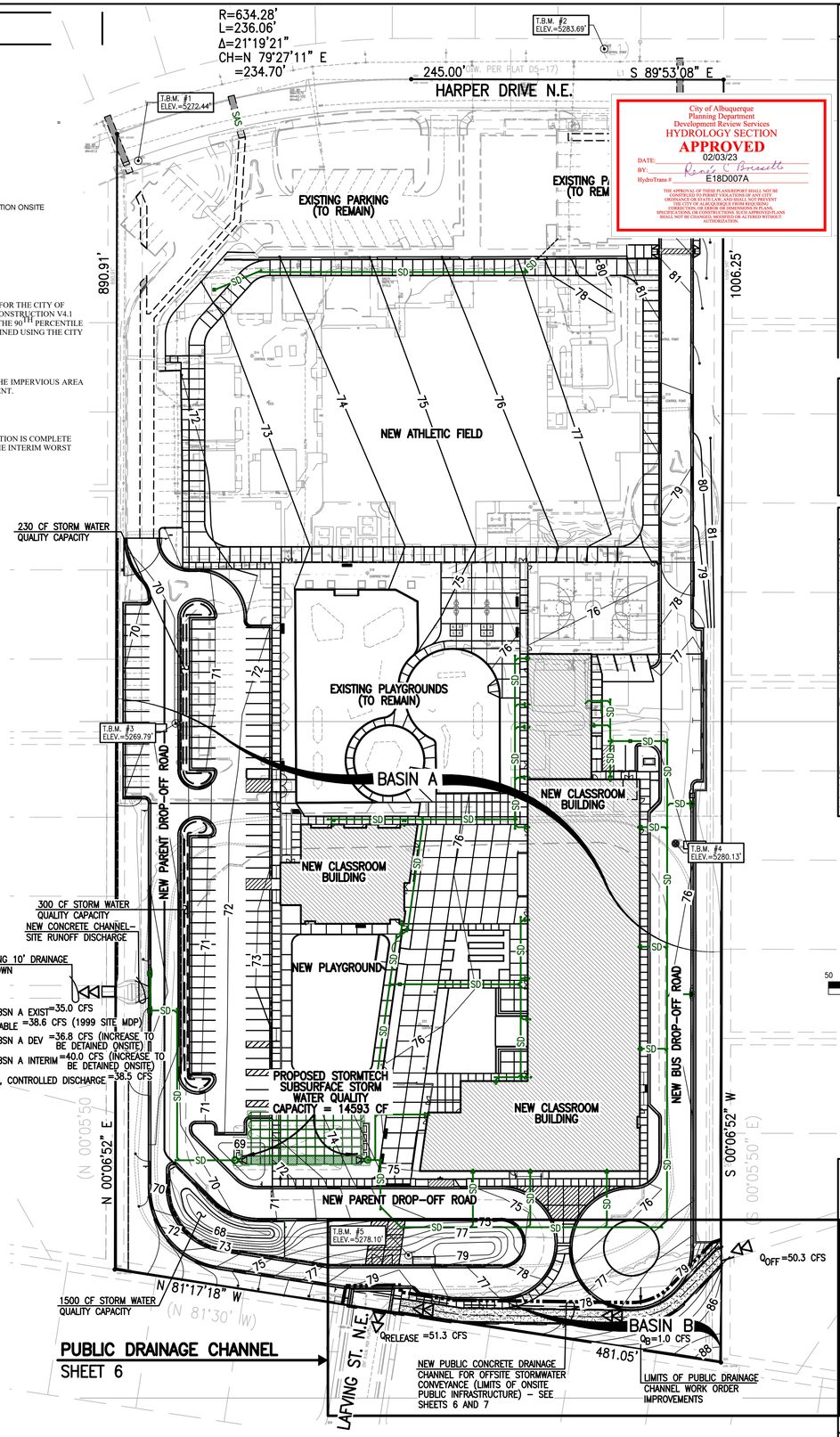
ADDITIONALLY, THERE IS AN EXISTING OFFSITE PUBLIC STORMWATER DRAINAGE RUNDOWN NEAR THE SOUTHEAST CORNER OF THE SITE THAT RELEASES A PEAK 100–YEAR DISCHARGE OF 54 CFS (1999 MDP) OF PUBLIC RUNOFF ONTO BASIN B OF THE SITE FROM THE DEVELOPED RESIDENTIAL AREA EAST OF THE SCHOOL SITE. RECORD DRAWINGS FROM 1994 & 1999, ALONG WITH THE 1999 ARROYO DEL OSO ELEMENTARY SCHOOL MASTER DRAINAGE PLAN DESIGNATE THAT THE OFFSITE RUNOFF MUST BE ACCEPTED AND CONVEYED THROUGH THE SE CORNER (BASIN B) OF THE SITE AND DISCHARGE SOUTH INTO LAFVING STREET. EXISTING CONDITION SITE OBSERVATIONS IN 2022 HAVE NOTED THE OFFSITE RUNOFF IS NOT CURRENTLY DRAINING TO LAFVING STREET DUE TO EROSION OF THE 1999 CONSTRUCTED EARTHWORK BERM THAT WAS DESIGNED TO CHANNEL THE OFFSITE RUNOFF TO LAFVING STREET. OFFSITE RUNOFF CURRENTLY DRAINS EAST TO WEST THROUGH THE SCHOOL SITE TO RELEASE TO THE PUBLIC DRAINAGE RUNDOWN OUTLET AT THE SOUTH WEST CORNER OF THE SCHOOL SITE.

A NEW 10' PUBLIC CONCRETE STORMWATER DRAINAGE CHANNEL IS PROPOSED TO BE CONSTRUCTED AT THE SE CORNER OF THE SITE IN BASIN B; THE PROPOSED CHANNEL WILL CONVEY THE OFFSITE STORMWATER FROM THE EAST PROPERTY EDGE SOUTHWEST TO DISCHARGE INTO LAFVING STREET AS DESIGNATED IN THE EXISTING MASTER DRAINAGE PLAN. THERE DOES NOT APPEAR TO BE ANY EXISTING EASEMENT OR OTHER DOCUMENT SUPPORTING THE PUBLIC STORM DRAINAGE ACROSS APS PROPERTY; A NEW 12' PUBLIC DRAINAGE ACCESS AND MAINTENANCE EASEMENT IS PROPOSED TO ADDRESS THIS ISSUE.

CALCULATIONS FOR THIS SITE WERE PREPARED BASED UPON THE 100–YEAR, 6 HOUR RAINFALL EVENT. THE PROCEDURE FOR 40 ACRE AND SMALLER BASINS, AS SET FORTH IN SECTION 22.2, HYDROLOGY OF THE CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL, VOLUME 2 (UPDATED JUNE 2020) HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF FOR THE ONSITE FLOWS GENERATED AND THE OFFSITE FLOWS IMPACTING THIS SITE. IT SHOULD BE NOTED THAT THESE CALCULATIONS BASED UPON THE CURRENT METHODOLOGY DEMONSTRATE A REDUCED GENERATED PEAK VOLUME AND RATE OF DISCHARGE FOR THE OFFSITE RUNOFF IMPACTING THE SITE (50.3 CFS BY 2020 DPM VS 54 CFS BY 1999 MDP CALCULATIONS). THE PROPOSED IMPROVEMENTS ARE ALL SIZED BASED UPON THE 2020 DPM METHODOLOGY CALCULATIONS.

MANNING'S EQUATION CALCULATION FOR THE PROPOSED 10' DRAINAGE CHANNEL DEMONSTRATES THAT THE CHANNEL HAS A CAPACITY OF 63.3 CFS WHILE MAINTAINING 0.8' OF FREEBOARD. THIS CAPACITY IS MORE THAN SUFFICIENT TO CONVEY THE Q100 OFFSITE DISCHARGE OF 50.3 CFS.

THIS PROPOSED ONSITE STORM WATER QUALITY CAPACITY GREATLY EXCEEDS CITY OF ALBUQUERQUE STORM WATER QUALITY VOLUME REQUIREMENTS FOR THE SCHOOL. HYDROLOGIC CALCULATIONS FOR THE SITE INCLUDE THE COA STORM WATER QUALITY VOLUME CALCULATIONS FOR A NEW DEVELOPED SITE BASED UPON THE CITY DPM; THESE CALCULATIONS DEMONSTRATE THE SITE REQUIRES 8400 CF PER THE CITY OF ALBUQUERQUE ORDINANCE, WHICH IS SIGNIFICANTLY LESS THAN THE TOTAL SITE VOLUME (14593 CFS SUBSURFACE, 2030 CF SURFACE).



City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
02/03/23
DATE:
BY: Renée C. Brissette
HydroTrans #: E18D007A
THE APPROVAL OF THESE PLANS/REPORT SHALL NOT BE CONSTRUED TO PERMIT ANY VIOLATIONS OF ANY CODE OR ORDINANCE OF THE CITY, NOR SHALL IT CONSTITUTE THE CITY OF ALBUQUERQUE FROM REQUIRING CORRECTION, OR ERROR OR OMISSIONS IN PLANS, SPECIFICATIONS OR CONSTRUCTION. APPROVAL OF PLANS SHALL NOT BE CHANGED, MODIFIED OR ALTERED WITHOUT AUTHORIZATION.

BENCHMARKS

TEMPORARY BENCHMARK (T.B.M. #1)

A MAG NAIL W/WASHER, SET IN THE CONCRETE BACK OF CURB NEAR THE NORTHWEST PORTION OF THE SURVEY, AS SHOWN ON THIS SHEET.
ELEVATION = 5272.44 FEET (NAVD 1988)

TEMPORARY BENCHMARK (T.B.M. #2)

A MAG NAIL W/WASHER, SET IN THE CONCRETE BACK OF CURB NEAR THE NORTHEAST PORTION OF THE SURVEY ON THE NORTH SIDE OF HARPER DRIVE N.E., AS SHOWN ON THIS SHEET.
ELEVATION = 5283.69 FEET (NAVD 1988)

TEMPORARY BENCHMARK (T.B.M. #3)

A MAG NAIL W/WASHER, SET IN THE ASPHALT PARKING LOT NEAR THE WEST CENTRAL PORTION OF THE SURVEY, AS SHOWN ON THIS SHEET.
ELEVATION = 5269.79 FEET (NAVD 1988)

TEMPORARY BENCHMARK (T.B.M. #4)

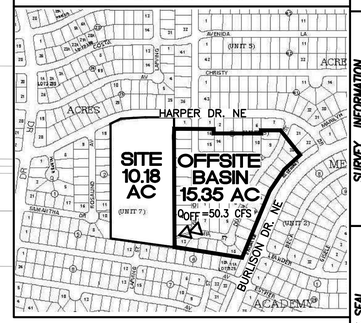
A #5 REBAR W/CAP STAMPED "HMCG CONTROL NMPS 11184", SET IN DIRT, NEAR THE NORTHEASTERN PORTION OF A DIRT TRACK, AS SHOWN ON THIS SHEET.
ELEVATION = 5280.13 FEET (NAVD 1988)

TEMPORARY BENCHMARK (T.B.M. #5)

A #5 REBAR W/CAP STAMPED "HMCG CONTROL NMPS 11184", SET IN DIRT, NEAR THE SOUTH CENTRAL PORTION OF A DIRT TRACK, AS SHOWN ON THIS SHEET.
ELEVATION = 5278.10 FEET (NAVD 1988)

NOTE:
THIS IS NOT A BOUNDARY SURVEY; DATA IS SHOWN FOR ORIENTATION ONLY. THE BOUNDARY INFORMATION DEPICTED BY THIS PLAN IS BASED UPON AN UNRECORDED BOUNDARY SURVEY PREPARED BY HIGH MESA CONSULTING GROUP, NMPS 11184, DATED 10/04/2017 (2016.183.3). THE TOPOGRAPHIC INFORMATION DEPICTED HEREON IS BASED UPON THE "BOUNDARY, TOPOGRAPHIC AND UTILITY SURVEY" PREPARED BY HIGH MESA CONSULTING GROUP, NMPS NO. 11184, DATED 10/04/2017 (2016.183.3).

OFFSITE BASIN MAP



SCALE: 1" = 50'

50 0 100
25 50

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

HIGH MESA Consulting Group
Engineers, Surveyors & Subsurface Utility Consultants
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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: **ARROYO DEL OSO ELEMENTARY SCHOOL INFRASTRUCTURE IMPROVEMENTS OVERALL PLAN**

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No.	Zone Map No.	Sheet	Of
576281	E–18	5	7

2022.181.5

AS BUILT INFORMATION

CONTRACTOR
WORK STARTED BY: DATE
FINAL INSPECTION & ACCEPTANCE BY: DATE
FIELD VERIFICATION BY: DATE
DRAWINGS CORRECTED BY: DATE

MICRO–FILM INFORMATION

RECORDED BY: DATE
NO.

BENCH MARKS

AN AGRS 3 1/4" ALUMINUM SURVEY CONTROL CAP SET IN A CONCRETE POST, FLUSH WITH THE GROUND, STAMPED "SMW–12, 2005", LOCATED IN THE NORTHWEST QUADRANT OF SISTER CITIES PARK WHICH IS WEST OF THE INTERSECTION OF HARPER DRIVE AND McKINNEY DRIVE N.E.
ELEVATION = 5242.36 FEET (NAVD 1988)

SURVEY INFORMATION

NO.	DATE	BY
2016.183.3	10/04/2017	HMCG

FIELD NOTES

ENGINEER'S SEAL

J. GRAEME MEANS
NEW MEXICO
13676
REGISTERED PROFESSIONAL ENGINEER
01–25–2023

NO.	DATE	REMARKS	BY
		Revisions	
		DESIGN	
		Designed By	J.D.S.
		Drawn By	J.Y.R.
		Checked By	G.M.
		Date	01–2023
		Date	01–2023
		Date	01–2023

File Name: P:\data\2022 APS\2022.181.5\ENG\221815_DesignBase dwg - SH_5 Plot Date: 1/25/23 Plot Time: 08:14