CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

May 23, 2017

David Aube, P.E.
Design Group
120 Vassar SE, Suite 100
Albuquerque, NM, 87106

RE: **APS Family School**
Irving and Rainbow NW
Grading Plan Engineer's Stamp Date: 5/22/2017
Hydrology File: A09D004

Dear Mr. Aube:

Based upon the information provided in your submittal received 5/22/17, the Grading Plan is re-approved for Work Order. Include a copy of this Grading Plan in the Work Order set.

The Drainage Report stamped 7/8/16 will remain the guiding document for future development along the north side of Irving Blvd. If you have any questions, contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Orig: Drainage File

APS Family School North West Campus

I. PURPOSE AND SCOPE

The purpose of this drainage plan is to present the existing and proposed drainage management plans for the proposed Albuquerque Public Schools Family School Facility located at the NE Corner of Rainbow Boulevard NW and Irving Boulevard NW. The site is located in Zone Atlas Page A-09-Z. The site is currently vacant. The street frontage along Irving Boulevard NW is only constructed as a street half section on the southern side of the street.

II. SITE DESCRIPTION AND HISTORY

The site is currently undeveloped.

III. COMPUTATIONAL PROCEDURES

Hydrologic analysis was performed utilizing the design criteria found in the COA-DPM Section 22.2 released in June 1997.

IV. PRECIPITATION

The 100-yr. 6-hr duration storm was used as the design storm for this analysis. This site is within Zone 1 as identified in the DPM Section 22.2. Tables within the section were used to establish the 6-hr precipitation, excess precipitation and peak discharge.

V. EXISTING DRAINAGE CONDITIONS OVERVIEW

The existing site generally drains from the west towards the east. There is a ridge line that also diverts water toward the north and south. Water that passes through is limited by this natural ridge line and the off-site basins upstream of the site are fairly small. There are two off-site basins that are defined as Existing Offsite Basins #1 and #2 generate 2.31 cfs and 0.96 cfs respectively. A Fire Lane in Rainbow Boulevard will be constructed as part of this proposed development with a bar ditch on each side, will collect this offsite storm runoff and direct the water either north into the county and an established arroyo just north of the project site, or to the south into Irving Boulevard.

The Onsite basins have been divided up to follow the proposed boundaries wherever possible. There is a section of the site that will be utilized for the creation of drive lanes in Irving Boulevard (Onsite Basin #3). To allow for comparison of the onsite basins this strip has been identified separately.

There are three main On-Site Basins #1, #2 and #4. Onsite Basin #1 discharges along the eastern property line and has a peak discharge of 8.58 cfs. Basins #2 discharges to the north into the arroyo on the adjacent parcel and generate a peak runoff of 6.39 cfs. Basin #4 discharges into Irving Boulevard and generates 0.74 cfs.

VI. DRAINAGE MANAGEMENT PLAN

The proposed Family School site is approximately 7.5 acres of the 15 acre parcel. There is anticipation that a Pre-K Early Childhood Development Campus will be constructed on the remaining land in the future. Rainbow Boulevard will be constructed (at least the half street section) on the west side of the site that will divert off site flows away from the project site.

The proposed building will have a standing seam metal roof with a gutter system and downspouts. To minimize erosion and to protect the courtyards, the downspouts will be connected to an underground collection system that will convey the runoff to collection ponds. These ponds will be sized to contain the Water Quality Volume to comply with the EPA, Bernalillo County and MSSSS permit requirements, but will also be used for a retention and detention basins to restrict the excess runoff back to the historic rates.

The proposed site Drainage plan is shown on CD3. The first Onsite Basin #1 is within Rainbow Boulevard. This Onsite Basin #1 accepts runoff from the Offsite Basin #1. The combined flow rate from these basins will be 5.20 cfs. This has been designed assuming free discharge from this basin and the water collected from Offsite Basin #1 into the West Branch of the Calabacillas Arroyo. The Offsite is at historic Rates and the Public ROW should allow free discharge into the arroyo.

Onsite Basin #3 (1.59 cfs) and Offsite Basin #2 (2.01 cfs) are also either within the new roadway or offsite and create a peak discharge of 3.60 cfs into a swale that runs south along the eastern side of Rainbow. Eventually the water will flow into Irving Boulevard under a sidewalk culvert within the Irving ROW at the northeast corner of the intersection of Irving and Rainbow. The water will then continue eastward along Irving in the 8' wide and 1' deep swale that runs along the backside of the existing median curb of the eastern street section from west to east. This runoff will eventually pass through a curb opening into the existing half street section on the south side of the ROW onto Irving Boulevard.

The project site also contains a basin that will be within the Irving Boulevard ROW. Onsite Basin #8 generates a peak runoff of 3.19 cfs into the swale that runs along Irving west to east. The swale will be filled with gravel mulch to reduce erosion and flow velocity. This basin has already been designed for fully developed conditions and drains toward the Sump Condition Inlets in Irving. The combination of the historic runoff and the developed ROW portions generates a peak runoff rate at the eastern portion of the project site at teh eastern driveway into Irving of 6.15 CFS. The Irvig drainge basin as it moves east will add 0.62 cfs to make 6.67 cfs plus the drainage allowed from the retention/detention pond on site with the allowed discharge of 4.08 cfs. Combined 6.15+0.62+4.08=10.85 cfs treated as a historic discharge at the analysis point at the east end of the project site in Irving.

The remainder of the site has been divided into 6 basins. Onsite Basin #2 is the undeveloped portion of the site that will be used for the Pre-K Future Development. The peak runoff is slightly reduced due to the fact that the construction of Rainbow Boulevard has claimed some of the land. The peak runoff is reduced down to 5.17 cfs and we anticipate that as the northern portion of the site is developed that more water will be routed through the underground collection and conveyance system toward Irving. For the purpose of this Drainage Management Plan the 1.22 cfs reduction in this basin has been added to the Pond #3 allowable discharge.

VI. DRAINAGE MANAGEMENT PLAN (CONTINUED)

On-Site Basin #5 drain toward the eastern property line. This basin in from the natural ridge line toward the south and includes the Soccer Field. The soccer field will be synthetic turf and APS does not allow for any ponding or concentrated flows to pass over the synthetic turf.

The peak runoff from basin On-site #5 is 3.64 cfs. On site Basin #7 formerly was part of a basin that free discharged out to the east. The peak runoff from the pond is conbined with the free discharge from On-site #5 to give a combined total of 3.64+4.08=7.72. This is a reduction from the historic of 9.31 cfs and the 1.59 cfs has been added to the Pond #3 allowable discharge into Irving. Because of the natural ridge line passing through the site the 1.59 cfs would have drained into Irving eventually anyway.

Onsite Basin #4 is primarily the roof structure and courtyards. This basin is collected by underground storm runoff pipe and discharges into Pond #2. For a full 100 year 10 day retention the pond would need a volume of 9,945 cf and with a max depth of 18" the pond as shown has a capacity of 12,822 cf. A storm drain pipe has been extended from this Pond #2 to Pond #3 to allow for water in the future to be routed through as the northern part of the site is developed. The inlet for the storm piping in Pond #2 will be capped in this phase.

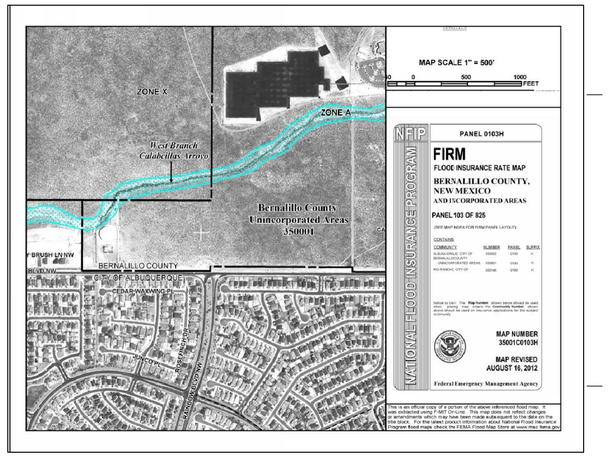
Onsite Basins #6 and #7 are the roof and parking lot areas of the campus. These basin are either piped or surface flow toward Pond #3. This Pond is a partial retention and detention pond area. This pond will be up to 3' deep and will accept a combined peak runoff rate of 14.47 cfs.

The allowable discharge from this pond into Irving will be limited to 2.72 cfs. This will create a ponding volume of 15,600 cf required to contain the 100 year 6 hour event. The Water Quality volume required is 3,870 cf and the available ponding volume before overtopping the weir into Irving is set to contain 15,801 cf.

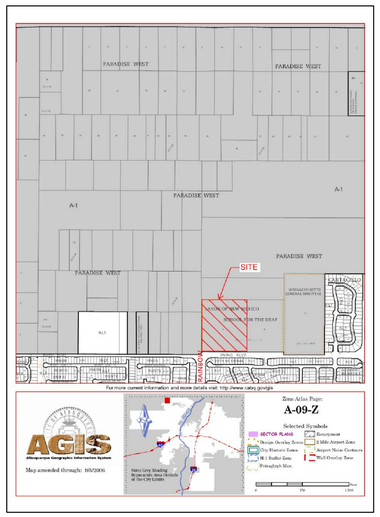
VII. CONCLUSIONS

This project has been designed for a full build out of the Family School Campus as well as a full half street section for Irving Boulevard NW. The interim conditions have not be used as they would reduce the flow rates. We would prefer to have the campus designed for the final built out without needing to rework the ponding areas of the drainage channels that convey the excess storm runoff to the street.

The project site has some portions being removed to allow for development of public roadways. These portions of the site have been treated as free discharge conditions.
The Onsite Drainage Management Plans contained here show that the peak runoff will not be increased to the adjacent properties from historic peak runoff rates. In addition the necessary Water Quality Volumes to comply with MSSSS have been fully contained on site in shallow retention areas.



C6 FLOOD ZONE MAP
SCALE: NOT TO SCALE



A6 ZONE ATLAS PAGE
SCALE: NOT TO SCALE

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DESIGN GROUP
ARCHITECTS · ENGINEERS · INTERIOR DESIGN
PLANNERS · URBAN DESIGNERS · LEED ®

120 VASSAR DRIVE SE SUITE 100
ALBUQUERQUE, NEW MEXICO 87106
PHONE: 505.242.6880 FAX: 505.242.6881

CONSULTANT

STAMP

DAVID A. AUGE
STATE OF NEW MEXICO
14321
REGISTERED PROFESSIONAL ENGINEER
5-22-17

PROJECT NAME

FAMILY SCHOOL NORTHWEST

7125 IRVING BOULEVARD NW
ALBUQUERQUE, NEW MEXICO 87114

REVISIONS		
NO.	DATE	DESCRIPTION
1	04/15/16	ADDENDUM 004
2	05/22/17	Road Geometry change

DESIGNER:	DAA
CHECKED:	DAA
DATE:	03.15.2016
SCALE:	NOT TO SCALE
JOB NO.:	3042
CAD FILE:	3042_C201

SHEET TITLE:
SITE DRAINAGE PLAN

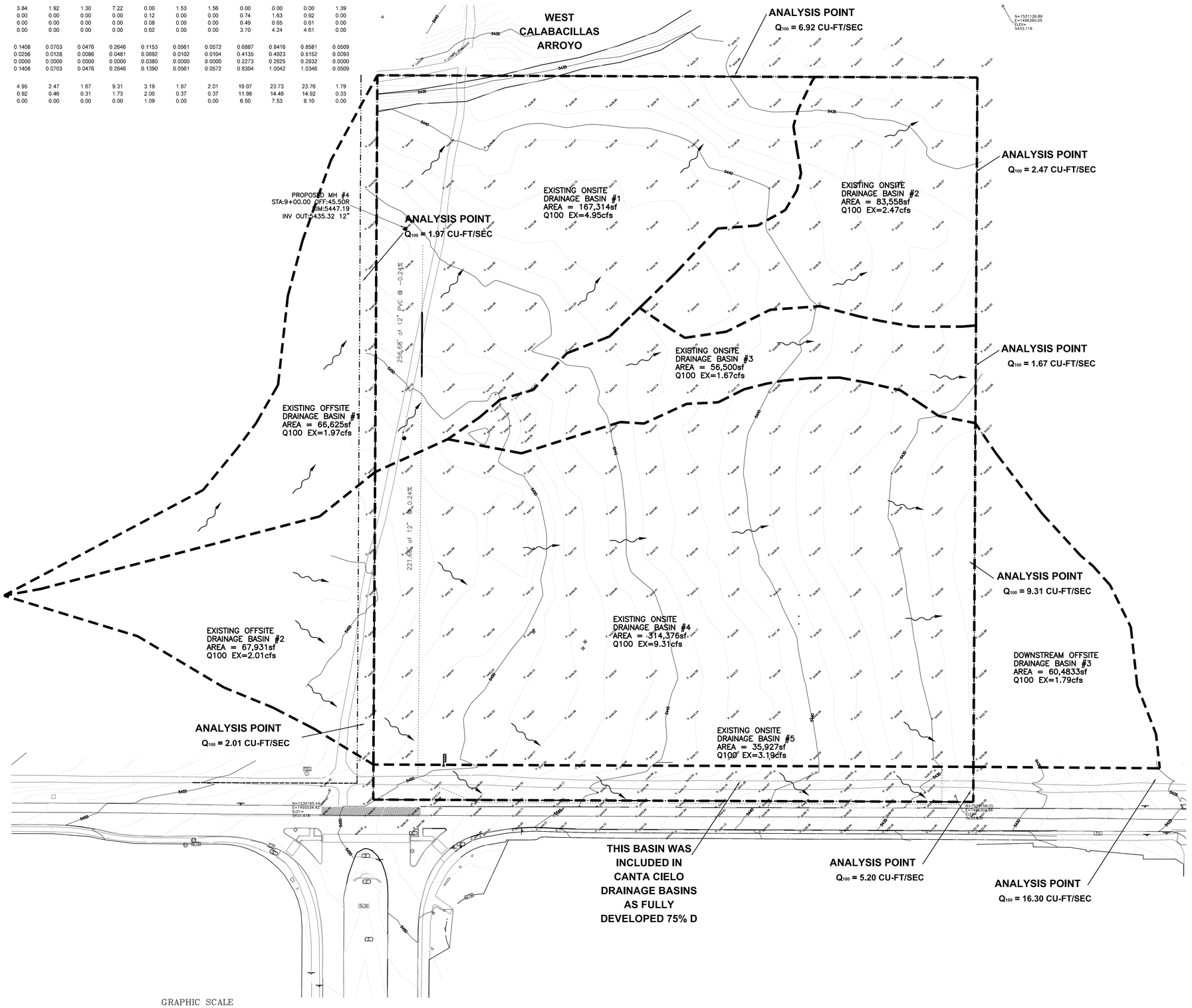
2

SHEET NUMBER:
CD1

Existing summary

Information from BHI Reports

Basin Name	EX 5	EX 2C	EX 1C	Ex 3B	Ex 7	EX OFF 1	EX OFF 2	Irving East	Rainbow T13	Irving West	School for Deaf Basin #3A
Area (sf)	167314	83558	56500	314376	35927	66625	67931				60483
Area (acres)	3.841	1.918	1.297	7.217	0.825	1.529	1.559	4.928	6.528	6.140	1.388
%A Land treatment	100	100	100	100	0	100	100	0	0	0	100
%B Land treatment	0	0	0	0	15	0	0	15	25	15	0
%C Land treatment	0	0	0	0	10	0	0	10	10	10	0
%D Land treatment	0	0	0	0	75	0	0	75	65	75	0
Soil Treatment (acres)											
Area "A"	3.84	1.92	1.30	7.22	0.00	1.53	1.56	0.00	0.00	0.00	1.39
Area "B"	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.74	1.63	0.92	0.00
Area "C"	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.49	0.65	0.61	0.00
Area "D"	0.00	0.00	0.00	0.00	0.62	0.00	0.00	3.70	4.24	4.61	0.00
Excess Runoff (acre-feet)											
100yr. 6hr.	0.1408	0.0703	0.0476	0.2646	0.1153	0.0561	0.0572	0.6887	0.8416	0.8581	0.0509
10yr. 6hr.	0.0256	0.0128	0.0086	0.0481	0.0692	0.0102	0.0104	0.4135	0.4923	0.5152	0.0093
2yr. 6hr.	0.0000	0.0000	0.0000	0.0000	0.0380	0.0000	0.0000	0.2273	0.2625	0.2832	0.0000
100yr. 24hr.	0.1408	0.0703	0.0476	0.2646	0.1390	0.0561	0.0572	0.8304	1.0042	1.0346	0.0509
Peak Discharge (cfs)											
100 yr.	4.95	2.47	1.67	9.31	3.19	1.97	2.01	19.07	23.73	23.76	1.79
10yr.	0.92	0.46	0.31	1.73	2.00	0.37	0.37	11.98	14.48	14.92	0.33
2yr.	0.00	0.00	0.00	0.00	1.09	0.00	0.00	6.50	7.53	8.10	0.00



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

A1 **EXISTING DRAINAGE PLAN**
SCALE: 1" = 50'-0"

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PROJECT NAME

FAMILY SCHOOL NORTHWEST

7125 IRVING BOULEVARD NW
ALBUQUERQUE, NEW MEXICO 87114

REVISIONS

NO.	DATE	DESCRIPTION
1	04/15/16	ADDENDUM 004
2	07/07/16	DRAINAGE MODIFICATIONS
3	05/22/17	Road Geometry change

DESIGNER:	DAA
CHECKED:	DAA
DATE:	03.15.2016
SCALE:	1" = 50'-0"
JOB NO.:	3042
CAD FILE:	3042_C201

SHEET TITLE:
EXISTING DRAINAGE PLAN

3

SHEET NUMBER:
CD2

Proposed summary

Basin Name	Pro 1	Pro 9	Pro 3	Pro 4	Pro 2	Pro 6	Pro 7	Pro 8	Pro 5A	Pro 2C	Pro 1C
Area (sf)	46608	126658	19085	62617	58915	30053	133420	35927	17370	83558	39187
Area (acres)	1.070	2.908	0.438	1.437	1.353	0.690	3.063	0.825	0.399	1.918	0.900
%A Land treatment		100			10					100	100
%B Land treatment	45	0	25	20	20	20	0	15	0	0	0
%C Land treatment	20	0	10	40	60	45	30	10	65	0	0
%D Land treatment	35	0	65	40	10	35	70	75	35	0	0
Soil Treatment (acres)											
Area "A"	0.00	2.91	0.00	0.00	0.14	0.00	0.00	0.00	0.00	1.92	0.90
Area "B"	0.48	0.00	0.11	0.29	0.27	0.14	0.00	0.12	0.00	0.00	0.00
Area "C"	0.21	0.00	0.04	0.57	0.81	0.31	0.92	0.08	0.26	0.00	0.00
Area "D"	0.37	0.00	0.28	0.57	0.14	0.24	2.14	0.62	0.14	0.00	0.00
Excess Runoff (acre-feet)											
100yr. 6hr.	0.1060	0.1066	0.0565	0.1579	0.1092	0.0730	0.4278	0.1153	0.0443	0.0703	0.0330
10yr. 6hr.	0.0554	0.0194	0.0330	0.0858	0.0496	0.0389	0.2552	0.0692	0.0239	0.0128	0.0060
2yr. 6hr.	0.0250	0.0000	0.0176	0.0405	0.0165	0.0177	0.1378	0.0380	0.0110	0.0000	0.0000
100yr. 24hr.	0.1204	0.1066	0.0674	0.1799	0.1144	0.0822	0.5100	0.1390	0.0496	0.0703	0.0330
Peak Discharge (cfs)											
100 yr.	3.23	3.75	1.59	4.75	3.64	2.23	12.01	3.19	1.35	2.47	1.16
10yr.	1.77	0.70	0.97	2.74	1.84	1.27	7.57	2.00	0.79	0.46	0.22
2yr.	0.75	0.00	0.51	1.25	0.62	0.56	4.06	1.09	0.36	0.00	0.00
Impervious Areas	16313	0	12405	25047	5892	10519	93394	26945	6080	0	0
Water Quality Ponding Voulme (cf)	571	0	434	877	206	368	3269	943	213	0	0
Water Quality Acre Feet	0.0131	0.0000	0.0100	0.0201	0.0047	0.0085	0.0750	0.0217	0.0049	0.0000	0.0000

CP-413
N=1531113.43
E=1495599.48
ELEV=
5441.218

ANALYSIS POINT
Q_{100} = 5.20 CU-FT/SEC
INCREASE OF 2.03 CFS
DUE TO PUBLIC
ROADWAY

ANALYSIS POINT
Q_{100} = 3.85CU-FT/SEC
REDUCTION OF 1.10 CFS

N=1531126.89
E=1496360.05
ELEV=
5433.116

PROPOSED ONSITE
DRAINAGE BASIN #1
AREA = 46,608sf
Q100 = 3.23 cfs

PROPOSED ONSITE
DRAINAGE BASIN #9
AREA = 126,658sf
Q100 =3.75cfs

PROPOSED ONSITE
DRAINAGE BASIN #2C
AREA = 83,558sf
Q100 =2.47cfs

ANALYSIS POINT
Q_{100} = 2.47 CU-FT/SEC
MATCHES EXISTING
CONDITIONS

ANALYSIS POINT
Q_{100} = 1.97 CU-FT/SEC

POND #2
DEPTH = 18" MAX
Q in = 4.75 CU-FT/SEC
Q out = 0.5 CU-FF/SEC
V required= 5,908 CF
V wtr qual = 877 CF
V available= 12,823 CF

PROPOSED ONSITE
DRAINAGE BASIN #1C
AREA = 39187sf
Q100 =1.16cfs

ANALYSIS POINT
Q_{100} = 1.16 CU-FT/SEC
REDUCTION OF 0.51 CFS

256.68' of 12" PVC @ 0.21%

PROPOSED ONSITE
DRAINAGE BASIN #5A
AREA = 17,370sf
Q100 =1.35cfs

POND #1
DEPTH = 8" MAX
Q in = 1.35 CU-FT/SEC
Q out = 0.10 CU-FT/SEC
V required = 2,675 CF
V wtr qual = 213 CF
V available = 3,578 CF

ANALYSIS POINT OUT
Q_{100} = 0.50 CU-FT/SEC

ANALYSIS POINT IN
Q_{100} = 4.75 CU-FT/SEC

PROPOSED ONSITE
DRAINAGE BASIN #6
AREA = 33,053sf
Q100 =2.23cfs

PROPOSED ONSITE
DRAINAGE BASIN #4
AREA = 62,604sf
Q100 = 4.75cfs

PROPOSED ONSITE
DRAINAGE BASIN #5
AREA = 58,915sf
Q100 =3.64cfs

ANALYSIS POINT
Q_{100} = 3.64 CU-FT/SEC

EXISTING OFFSITE
DRAINAGE BASIN #1
AREA = 66,625sf
Q100 EX=1.97cfs

121.66' of 12" @ 0.43%

ANALYSIS POINT
Q_{100} = 2.23 CU-FT/SEC

SWALE SLOPE 0.7%

SWALE

EXISTING OFFSITE
DRAINAGE BASIN #2
AREA = 67,931sf
Q100 EX=2.01cfs

ANALYSIS POINT
Q_{100} = 14.97 CU-FT/SEC

POND #3
DEPTH = 36" MAX
Q in = 14.97 CU-FT/SEC
Q out = 4.08 CU-FF/SEC
V required= 15,146 CF
Vwtr qual = 4,297 CF
V Available = 15,801 CF

PROPOSED ONSITE
DRAINAGE BASIN #3
AREA = 19,085sf
Q100 = 1.59cfs

PROPOSED ONSITE
DRAINAGE BASIN #7
AREA = 133,420sf
Q100 = 12.24cfs

ANALYSIS POINT
Q_{100} = 4.08 CU-FT/SEC

ANALYSIS POINT
Q_{100} = 10.85 CU-FT/SEC

ANALYSIS POINT
Q_{100} = 2.01 CU-FT/SEC

CP-410
N=1530165.44
E=1495534.42
ELEV=
5451.418

CP-411
N=1530158.05
E=1496307.86
ELEV=
5433.615

I R V I N G B O U L E V A R D N W

A I N B O W L V D N W

ANALYSIS POINT
Q_{100} = 3.60 CU-FT/SEC

ANALYSIS POINT
Q_{100} =5.01 CU-FT/SEC

PROPOSED ONSITE
DRAINAGE BASIN #8
AREA = 35,927sf
Q100 = 3.19cfs

ANALYSIS POINT
Q_{100} =1.14 CU-FT/SEC

ANALYSIS POINT
Q_{100} = 4.70 CU-FT/SEC
THIS INCLUDES THE
0.62 CFS FROM PUBLIC
ROADWAY THAT WAS
INCLUDED IN IRVING
EAST BASIN

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

A1 SITE DRAINAGE PLAN
SCALE: 1" = 40'-0"

THE HARTMAN + MAJEWSKI
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CONSULTANT

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STATE OF NEW MEXICO
14221
REGISTERED PROFESSIONAL ENGINEER
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CAD FILE:	3042_C201

SHEET TITLE:
SITE
DRAINAGE
PLAN

3
SHEET NUMBER:
CD3