Tierra West Development
Management Services

January 14, 1997

Ms. Lisa Ann Manwill
City of Albuquerque
Hydrology Department
Post Office Box 1293
Albuquerque, NM 87103

RE: TRACT 9 OF RENAISSANCE CENTER - PHASE I (F16-D5I). APPROVAL ON THE GRADE CHANGES

Dear Ms. Manwill:

A building consisting of 6,000 sf (Phase III) was added within Tract 9-B. Due to this addition the grades around the northern building were modified. The basin layout and drainage management plan stayed the same. We are requesting grading, final plat, site plan, site plan for building permit, and building permit approval based on these latest changes. Additional copies are provided for SO-19 in order to build the sidewalk culvert.

Please contact me if there are any questions or concerns regarding this submittal.

Sincerely yours,

Shahab Biazar

Job No. 960038
sb

4421 McLeod Rd. NE, Suite D • Albuquerque, NM 87109 • (505) 883-7592

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

27 January, 1999

Ronald R. Bohannan
Tierra West, LLC
4421 McLeod NE Suite D
Albuquerque, NM 87109

RE: ENGINEERING CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL, RYDER TRUCK (F16/D15)
Certification Dated 12/18/98

Dear Mr. Bohannan:

Based upon the information contained in your 12-18-98 submittal, the referenced project is approved for Certification of Occupancy.

If I can be of further assistance, please feel free to contact me at 924-3986.

Sincerely,

Scott Davis
PWD, Hydrology Div.

c: Andrew Garcia
file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

CITY OF ALBUQUERQUE

PUBLIC WORKS DEPARTMENT

February 19, 1998

INTEROFFICE CORRESPONDENCE HYDROLOGY DIVISION

TO: Desiderio Salas, Street Maintenance Division

FROM: Lisa Ann Manwill, P.E. Engineering Associate, PWD LAM

SUBJECT: **PRIVATE DRAINAGE FACILITIES WITHIN PUBLIC RIGHT-OF-WAY DRAINAGE FILE NUMBER F16-D15.**

Transmitted herewith, is a copy of the approved drainage plan for the referenced project incorporating the SO #19 design.

This plan is being submitted to you for permitting and inspection. Please provide this section with a signed-off copy per the signature block upon construction and acceptance by your office.

As you are aware, the signed off SO #19 is required by this office for Certificate of Occupancy release; therefore your expeditious processing of this plan would be greatly appreciated and would avoid any unnecessary delay in the release of the Certificate of Occupancy.

Thank you for your cooperation and if you should have any questions and/or comments, please feel free to call me at 924-3984.

Attachment

File

DRAINAGE REPORT
FOR

TRACT 10A OF RENAISSANCE CENTER

RYDER TRUCK

Prepared by:

Tierra West, LLC
4421 McLeod Rd., NE, Suite D
Albuquerque, New Mexico 87109

January 23, 1998

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the state of New Mexico in good standing.

RONALD RAY BOHANNAN NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

Ronald R. Bohannan
PE NO. 7868
1-23-98

RECEIVED
JAN 23 1998
HYDROLOGY SECTION

Job No 970087

Location

Tract 10A of the Renaissance Center is located at the southwest corner of Culture Drive and Mission Avenue, NE. See attached Zone Atlas page number F-16 for location. We are proposing to build a Ryder Truck maintenance and refueling facility on this site.

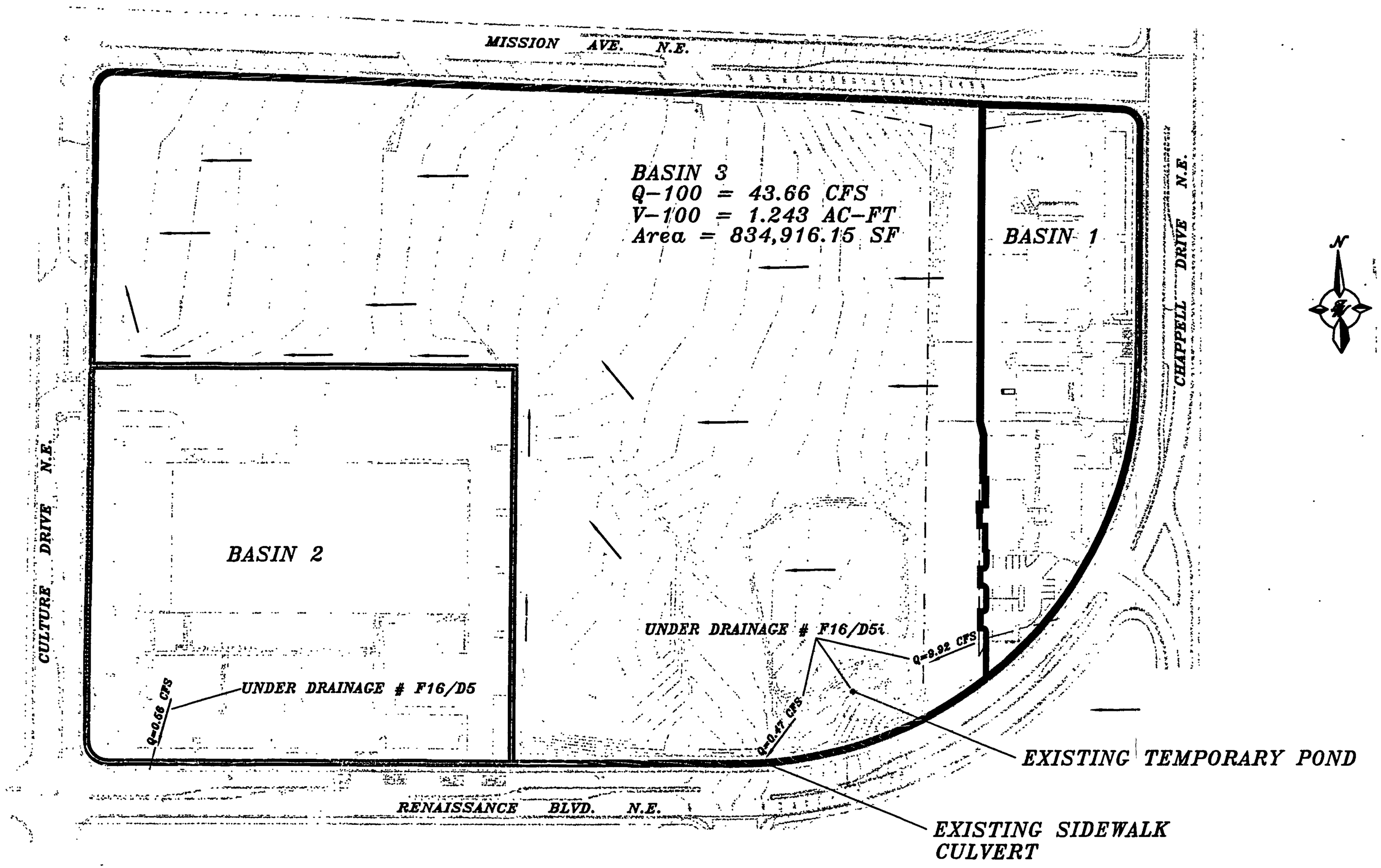
Purpose

The purpose of this drainage report is to present a grading and drainage solution for this proposed site. We are requesting rough grading approval and site development plan for building permit with this submittal.

Existing Drainage Conditions

The site falls within the approved Renaissance Drainage Master Plan, and it is currently undeveloped. That plan allows a controlled release runoff from each Tract of 0.10 cfs per acre. The existing conditions for Tracts 10A were analyzed using the criteria contained in Drainage report on file under F16/D5 and F16/D5i.

The existing basins were indentified and have been shown on the attached Existing Basin Layout Exhibit. The entire site (Tracts 9 and 10) has been divided into three



EXISTING BASIN LAYOUT

basins. Basin 1 (under City Drainage number F16/D5i) via a storm sewer pipe drains to a detention pond located on Basin 3, and from there the runoff drains to a sidewalk culvert (in Renaissance Boulevard) at a confined runoff rate of 0.47 cfs. Basin 2 (under City Drainage Number F16/D5) is collected within the parking lot and then, via a storm sewer pipe, drains to a drop inlet (in Renaissance Boulevard) at a confined flow rate of 0.56 cfs. Basin 3 is the undeveloped balance of Tracts 9 and 10 that drain at an undeveloped flow rate of 43.66 cfs north and then west to Culture Drive.

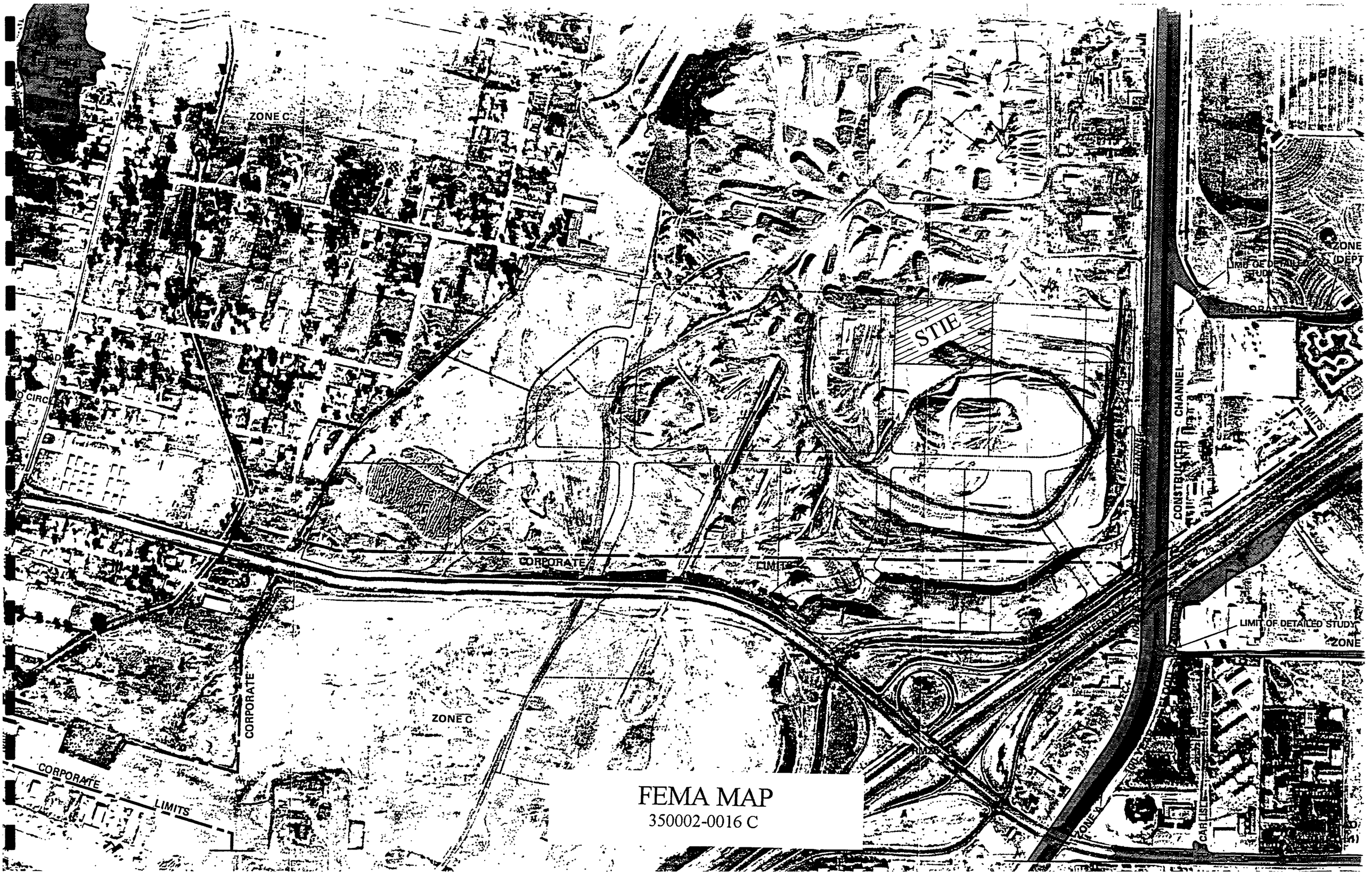
Flood Plain and Soil Condition

The site is located on FEMA Map No. 350002 panel 16 as shown on the attached excerpt. The map shows that the site does not lie within any 100 year flood plains.

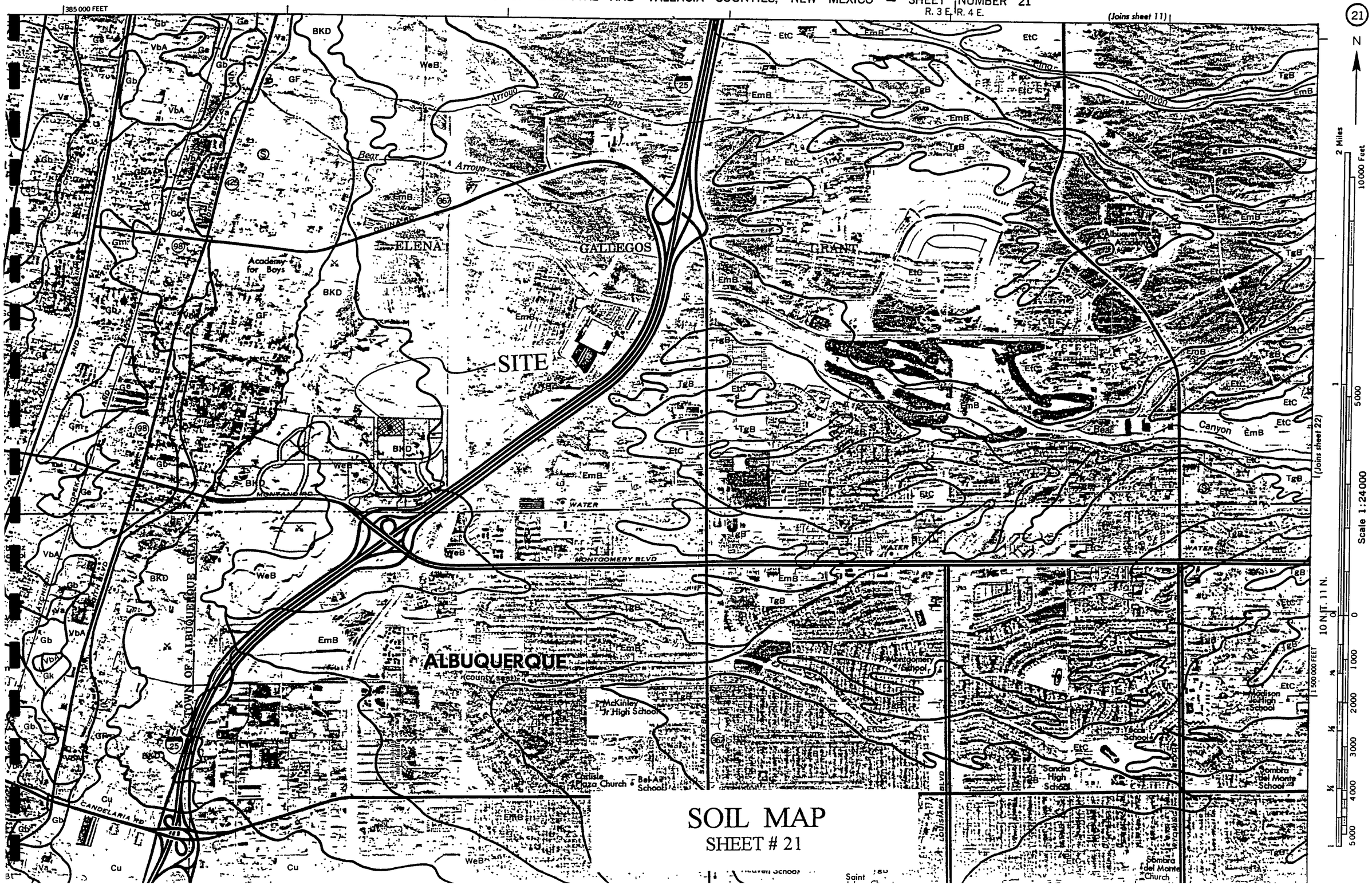
The site contains one soil type. As indicated on the Soil Map (sheet # 21) from the Soil Conservation Service Survey of Bernalillo County the soil type is Bluepoint-Kokan (BKD). The Bluepoint-Kokan association is a Bluepoint loamy fine sand that has slow runoff, rapid permeability, and moderate to severe hazard of water erosion.

Proposed Conditions and On-Site Drainage Management Plan

The Ryder Truck facility will be developed under one project. The balance of the Tract 9 will be developed in the future. The enclosed grading plan, in the map pocket, shows the detail grading and drainage of the site.

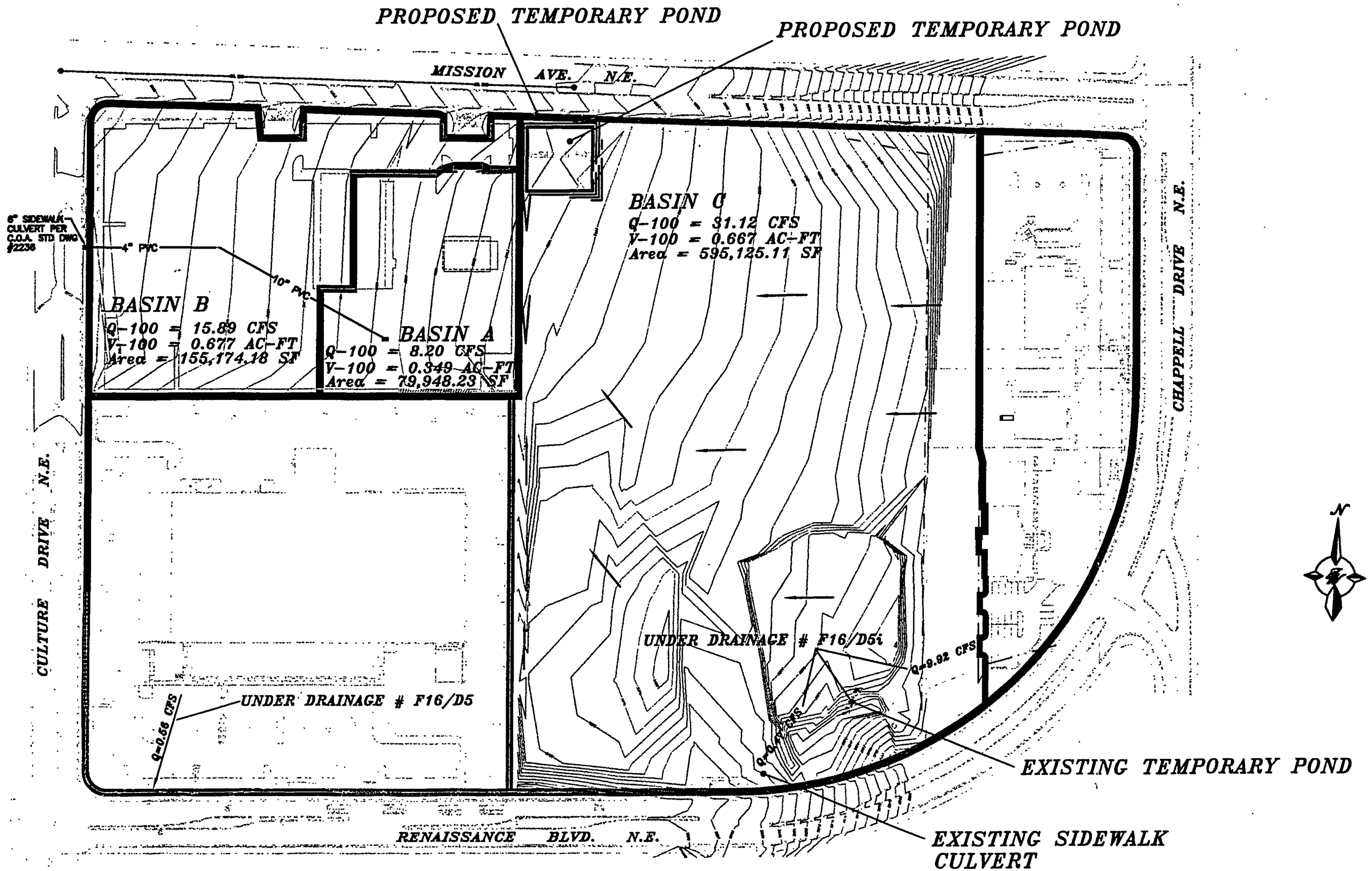


FEMA MAP
350002-0016 C



SOIL MAP

SHEET # 21



PROPOSED BASIN LAYOUT

Drainage Management

The site runoff will drain, per the Renaissance Master Drainage Plan, at a 0.1 cfs/acre discharge rate. Therefore, the allowable discharge rate for the this site is (5.50 ac) is 0.55 cfs.

The on-site drainage is divided into two Basins, A and B. The offsite runoff is analyzed under Basin C. Basin A, with a developed flow rate of 8.20 cfs, will be ponded within the parking area and then discharge a confined flow rate of 4.37 cfs to Basin B via a 10" PVC. Basin B, with a developed flow rate of 15.89 cfs, along with the runoff from Basin A will be ponded within the parking lot. The runoff is then discharged to a sidewalk culvert at a confined flow rate of 0.45 cfs (controlled by a 3" orifice plate) via a 4" PVC to Culture Drive. The discharge of 0.45 cfs is less than the allowable discharge of 0.55 cfs. Basin C, with an undeveloped flow rate of 31.12 cfs, will drain to a proposed desilting pond located on the northwest end of the basin and from there to Mission Avenue. Once an actual layout for Basin C is obtained a separate drainage design will prepared and submitted to City of Albuquerque for review and approval. A small swale along the east property line of Ryder Truck and FedEx will ensure all the flows in Basin C enter the desilting pond.

Emergency Spillway Overflow

In the case of an event larger than 100-year flow or a clogged pie the runoff will overflow the parking ponding to the entrance on the north and will continue north to Mission Avenue.

Summary

The site will be built in a single phase. The runoff on site will be ponded in the parking area and discharged at a confined flow rate of 0.45 cfs which is less than the allowable discharge of 0.55 cfs. The offsite runoff will drain to a desilting pond and then drain to Mission Avenue.

Calculations

The City of Albuquerque's Development Process Manuel, Section 22.2, Hydrology Section, revised January, 1993, was used for runoff calculations. See section II of this report for the Summary Table of runoff results. See Sections IV, V, and VI of this report for AHYMO input and output files for runoff and ponding calculations.

Infrastructure List

All work will be performed under building permit outside of any public right of way, except the median modification on Mission Avenue. A copy of the infrastructure list is attached in section VII of this report.

RUNOFF CALCULATIONS

The site is @ Zone 2

LAND TREATMENT

Proposed
D = 90.00 %
B = 10.00 %

Existing
B = 100 %

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 2.01 inches

P_{360} = 2.35 inches

P_{1440} = 2.75 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 2.01 x 0.667
= 1.34 inches

P_{360} = 1.57

P_{1440} = 1.83

See the summary output from AHYMO calculations.

Also see the following summary tables.

RUNOFF SUMMARY TABLE

PROPOSED
DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
A	155174.18	3.5623	0.005566
B	79948.23	1.8354	0.002868
C	595125.11	13.6622	0.021347

EXISTING
DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
3	834916.15	19.1670	0.029948

RUNOFF CALCULATION RESULTS
UNDER PROPOSED CONDITIONS

BASIN	Q-100 CFS	V-100 AC-FT	Q-10 CFS	V-10 AC-FT
A	8.20	0.349	5.31	0.218
B	15.89	0.677	10.29	0.423
C	31.12	0.886	12.77	0.317

RUNOFF CALCULATION RESULTS
UNDER EXISTING CONDITIONS

BASIN	Q-100 CFS	V-100 AC-FT	Q-10 CFS	V-10 AC-FT
3	43.66	1.243	17.92	0.444

POND #A

Volume = 6.94 * D (from bottom of the inlet to the top of inlet)

Inlet Depth =1.97'

Ab - Bottom Of The Pond Surface Area (Top of the inlet)
At - Top Of The Pond Surface Area
D - Water Depth (From top of inlet)
Dt - Total Pond Depth (From top of inlet to maximum water detph)
C - Change In Surface Area / Water Depth

Volume = $Ab * D + 0.5 * C * D^2$

C = (At - Ab) / Dt

Ab =	6.94	SF	
At =	4,625.18	SF	
Dt =	1.50	FT	(Ponding depth from top of the inlet to maximum ponding depth)
Dia =	10	IN	
Radius =	5	IN	
C =	3078.83	FT / LF-DEPTH	

H (FT)	D (FT)	VOLUME (AC-FT)	Q (CFS)	FULL ELEV.
0.00	0.00	0.00000	0.00	5052.53
1.00	1.00	0.00016	2.01	5053.53
1.97	1.97	0.00031	3.27	5054.50
2.17	0.20	0.00176	3.48	5054.70
2.37	0.40	0.00603	3.67	5054.90
2.57	0.60	0.01313	3.85	5055.10
2.77	0.80	0.02306	4.03	5055.30
2.97	1.00	0.03581	4.20	5055.50
3.17	1.20	0.05139	4.36	5055.70
3.37	1.40	0.06980	4.51	5055.90
3.47	1.50	0.08007	4.59	5056.00

POND #B

Volume = 6.94 * D (from bottom of the inlet to the top of inlet)

Inlet Depth =2.66'

Ab - Bottom Of The Pond Surface Area (Top of the inlet)
At - Top Of The Pond Surface Area
D - Water Depth (From top of inlet)
Dt - Total Pond Depth (From top of inlet to maximum water detph)
C - Change In Surface Area / Water Depth

Volume = $Ab * D + 0.5 * C * D^2$

C = (At - Ab) / Dt

Ab =	6.94	SF	
At =	92,166.21	SF	
Dt =	1.50	FT	(Ponding depth from top of the inlet to maximum
Dia =	3	IN	
Radius =	1.5	IN	
C =	61439.51	FT / LF-DEPTH	

H (FT)	D (FT)	VOLUME (AC-FT)	Q (CFS)	FULL ELEV.
0.00	0.00	0.00000	0.00	5050.84
1.25	1.25	0.00020	0.25	5052.09
2.66	2.66	0.00042	0.38	5053.50
2.86	0.20	0.02866	0.39	5053.70
3.06	0.40	0.11332	0.40	5053.90
3.26	0.60	0.25440	0.42	5054.10
3.46	0.80	0.45190	0.43	5054.30
3.66	1.00	0.70581	0.44	5054.50
3.86	1.20	1.01614	0.46	5054.70
3.96	1.40	1.38289	0.46	5054.80
4.16	1.50	1.58743	0.47	5055.00

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =01/06/1998

INPUT FILE = 9787EXST USER NO.= R_BOHANN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 2										RAIN24=	2.750
COMPUTE NM HYD	101.10	-	1	.02995	43.66	1.243	.77821	1.533	2.278	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 2										RAIN24=	1.830
COMPUTE NM HYD	101.10	-	1	.02995	17.92	.444	.27828	1.533	.935	PER IMP=	.00
FINISH											

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =01/06/1998

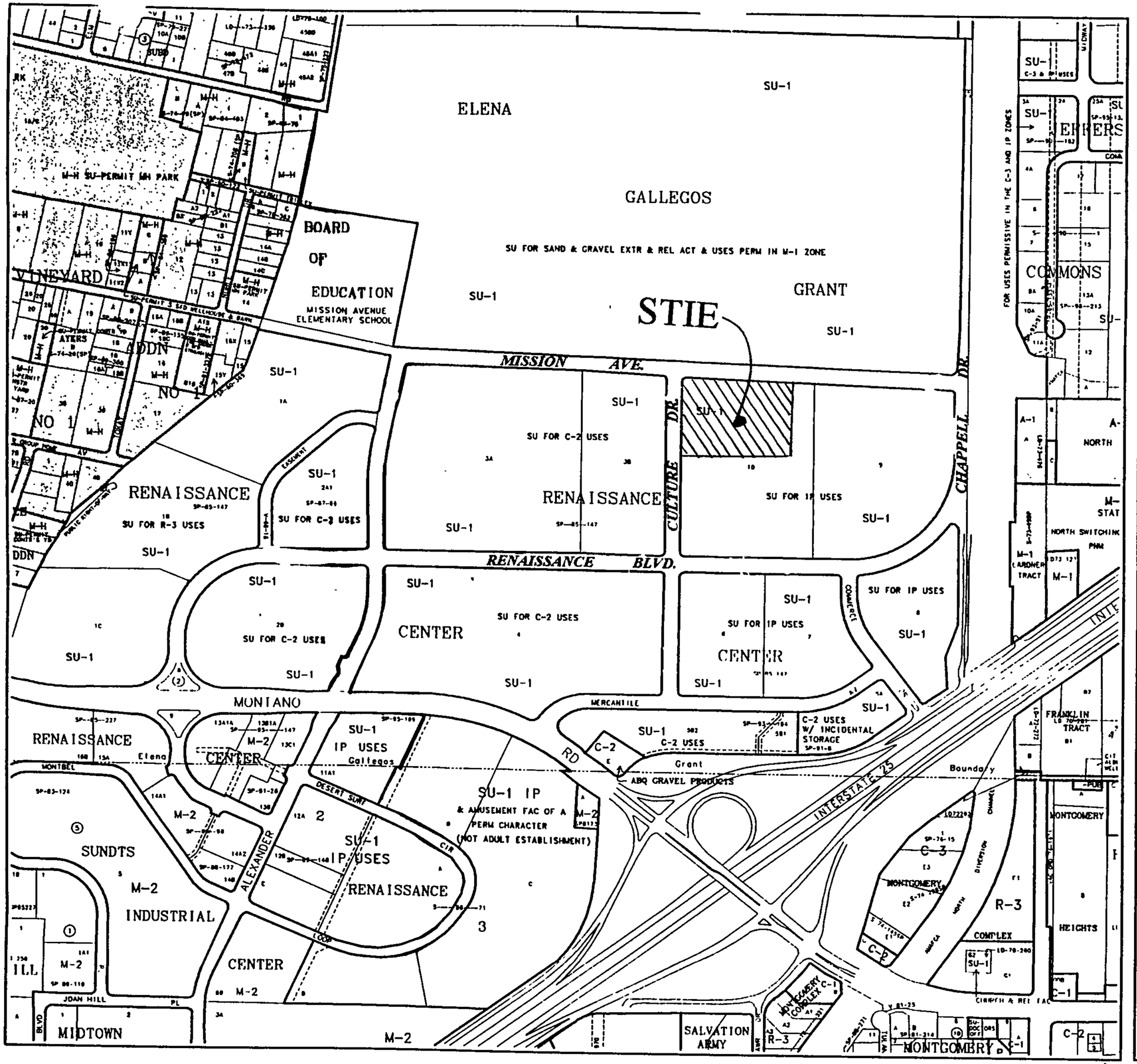
INPUT FILE = 9787PROP USER NO.= R_BOHANN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.750
COMPUTE NM HYD	101.10	-	1	.00287	8.20	.349	2.27929	1.500	4.467	PER IMP= 90.00
COMPUTE NM HYD	102.10	-	1	.00557	15.89	.677	2.27928	1.500	4.462	PER IMP= 90.00
COMPUTE NM HYD	103.10	-	1	.02135	31.12	.886	.77821	1.533	2.278	PER IMP= .00
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 1.830
COMPUTE NM HYD	101.10	-	1	.00287	5.31	.218	1.42510	1.500	2.891	PER IMP= 90.00
COMPUTE NM HYD	102.10	-	1	.00557	10.29	.423	1.42509	1.500	2.889	PER IMP= 90.00
COMPUTE NM HYD	103.10	-	1	.02135	12.77	.317	.27828	1.533	.935	PER IMP= .00
FINISH										

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =01/06/1998

INPUT FILE = 9787 USER NO.= R_BOHANN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.750
COMPUTE NM HYD	101.10	-	1	.00287	8.20	.349	2.27929	1.500	4.467	PER IMP= 90.00
ROUTE RESERVOIR	501.10	1	2	.00287	4.37	.349	2.27979	1.667	2.383	AC-FT= .053
COMPUTE NM HYD	102.10	-	1	.00557	15.89	.677	2.27928	1.500	4.462	PER IMP= 90.00
ADD HYD	102.20	1& 2	3	.00843	19.97	1.025	2.27945	1.500	3.699	
ROUTE RESERVOIR	502.10	3	1	.00843	.45	.675	1.50098	2.733	.083	AC-FT= .790
FINISH										



GRAPHIC SCALE IN FEET

250 0 500 1000

CITY OF Albuquerque

A Albuquerque G Geographic I Information S System

PLANNING DEPARTMENT

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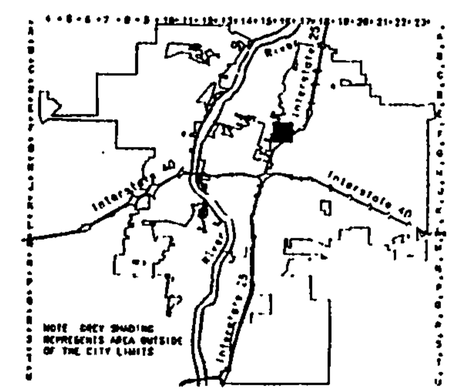
Map Amended through November 06, 1995



LEGAL DESCRIPTION

T11N

R3E

SEC 34

UNIFORM PROPERTY CODE

1-016-061

F-16-Z