Drainage Plan
For
TRACT 1-A-1
Section 8, T. 9N, R. 3E

Prepared for

Dial Oil

Resource Technology, Inc.

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new

Source: Drainage Plan For Tract 1-A-1, Dial Oil
(Resource Technology, Inc., 2002)

Existing Conditions

The 13.9-acre site designated Tract 1-A-1 on MRGCD Map No. 50. is currently undeveloped and natural ground. This property is located in unshaded Zone X, and outside the 500-year flood area, according to the Flood Insurance Rate Map No. 35001C0344 D (See Figure 1). Topography presented in this report was personally inspected by Resource Technology Inc. engineers, and no grading, filling, or excavation has occurred since the preparation of the topography shown on these plans. At the time of this report, no paved access road exists to allow access to the Tract from Broadway Boulevard, however access may be gained through the unpaved road along the B.N & S.F. Railroad Right-Of-Way.

Two drainage swales cross the tract, delivering flows (via culvert under Broadway Avenue) to the South Diversion Channel. The roadside drainage swale along the west edge of Broadway Avenue also delivers local drainage to this culvert located at approximately the northern half of proposed Tract A.

The total drainage areas and flowpaths are shown in Figure 2. The two distinct swales through Tract 1-A-1 are labeled as North and South in this drainage report, and contributing Sub-Basins are labeled 1N-4N (1 North – 4 North) and 1S (1 South) (Figure 2).

Proposed Development

The proposed development at the time of this report is to subdivide Tract 1-A-1 into two tracts as displayed in Figure 3. The resulting two tracts, Tract A and Tract B, will each contain an existing flow path as well as roadside drainage along Broadway Avenue.

The proposed areas are: Tract A is 8.9138 acres and Tract B is 5.0 acres.

Hydrology and Hydraulics

The sub-basins were delineated according to hydrologic properties and topographical boundaries. The Development Process Manual for the City of Albuquerque was utilized to develop peak discharge from each sub-basin according to the "PEAK DISCHARGE RATE FOR SMALL WATERSHEDS" method. The project lies in Zone 2, which is between the Rio Grande and San Mateo Blvd. Table A-9, a copy of which is provided in the Appendix, was used to determine the runoff. Table 1A and 1B detail the process and results from this method.

TABLE 1.A
EXISTING CONDITIONS

SUBBASIN	AREA (acres)	HYDROLOGIC SOIL TYPE GROUP				10 YR. Q PEAK (cfs)	100 YR. Q PEAK (cfs)
		%A	%B	%C	%D		
1N	11.7	90		10		6.0	20.1
2N	35.8	100				13.6	46.2
3N	7.8	60			40	11.6	22.0
4N	24.7	50		50		25.8	58.0
1S	38.9	100				14.8	60.7

TABLE 1.B
DEVELOPED CONDITIONS

SUBBASIN	AREA (acres)	HYDROLOGIC SOIL TYPE GROUP				10 YR. Q PEAK (cfs)	100 YR. Q PEAK (cfs)
		%A	%B	%C	%D		
1N	11.7	40		30	30	18.8	34.8
2N	35.8	40		30	30	57.5	106.5
3N	7.8	40		20	40	13.7	24.4
4N	24.7	40		30	30	39.7	73.5
1S	38.9	40		30	30	62.5	115.8

The 100-Year peak flows were summed for the north swale and listed for the south swale resulting in the following:

		EXISTING CONDITIONS		DEVELOPED CONDITIONS	
SWALE	Total Contrib. Area (acre)	10 YR Peak (cfs)	100 YR Peak (cfs)	10 YR Peak (cfs)	100 YR Peak (cfs)
North (N)	80	57	146	130	239
South (S)	39	15	61	63	116

Cross sections were cut and Manning's equation then applied to calculate the energy grade line of flow through the swales. The swale in proposed Tract B becomes ill-defined as it approaches Broadway Boulevard, and the defined-channel flow transitions to sheet flow with a depth of 0.3 ft. or less. As the channel became ill-defined, it became impossible to calculate the energy grade line. The flow was estimated to transition to overland sheet flow at a divergent angle of 45° to the swale. The 100-Year developed conditions floodplain limits are presented in Figure 3.

Calculations of water surface elevation and energy are included in Appendix A.

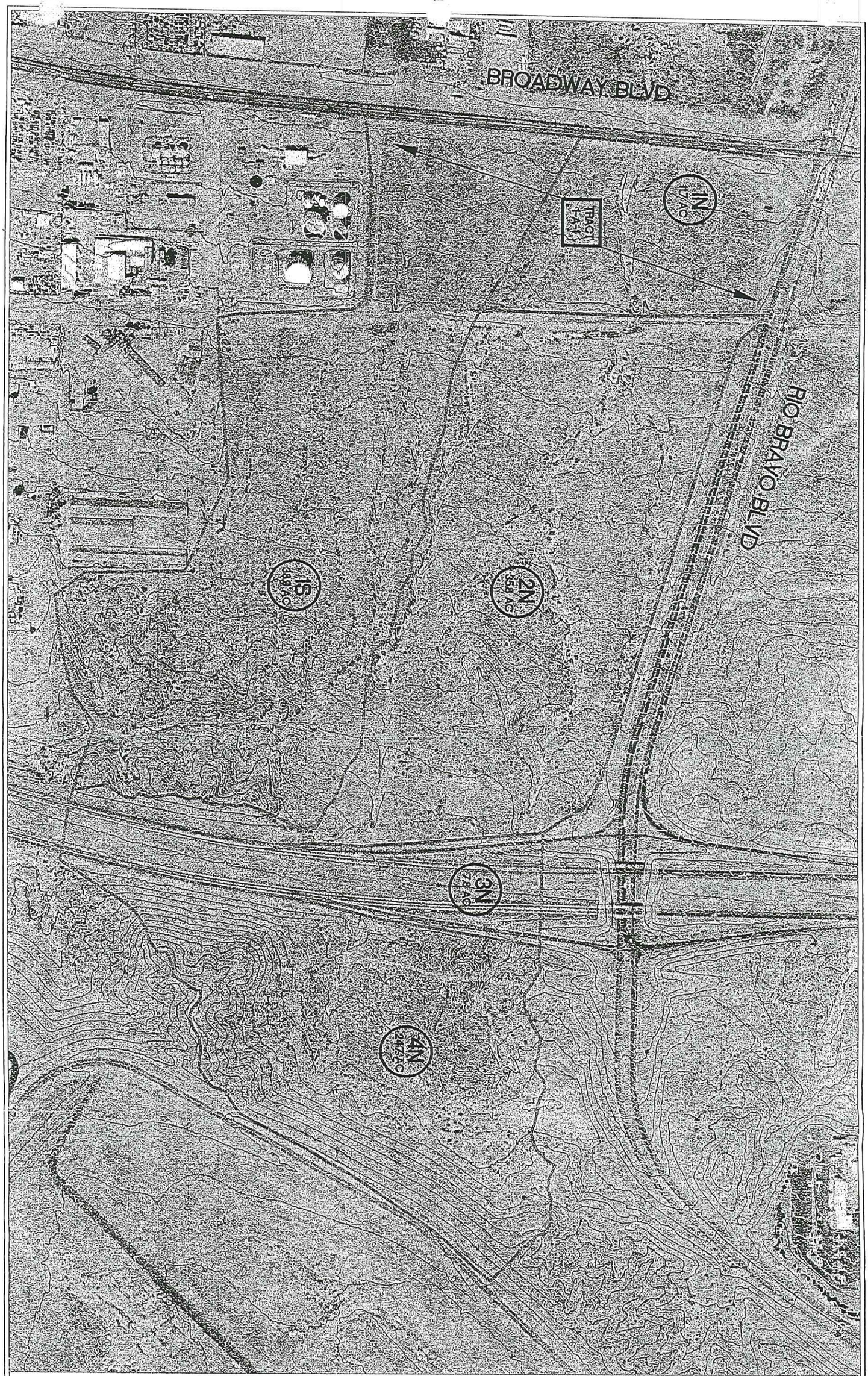

Figure 2

DIAL OIL GRADING AND DRAINAGE BASINS

N

300 0 300

150

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Water Resources
Environmental Sciences
Landscape Architecture
Planning

(2) EXISTING 36" CMP CULVERTS

DEVELOPED CONDITIONS 100 YEAR EVENT PEAK Q=204 cfs

B.N. & S.F. RAILROAD RIGHT-OF-WAY
100' RIGHT-OF-WAY

EXISTING 48" RCP CULVERT

DEVELOPED CONDITIONS 100 YEAR EVENT PEAK Q=94cfs

N1

N2

N3

S1

S2

S2A

S3

S3

TRACT A
8.9138 ACS.

TRACT I-A-1
M.R.G.C.D. MAP NO. 50
13.9138 ACS.
Vacant

TRACT B
5.0000 ACS.

Sheet Flow
W/Depth < 0.3'

DEVELOPED CONDITIONS 100 YEAR EVENT PEAK Q=116cfs

DEVELOPED CONDITIONS 100 YEAR EVENT PEAK Q=239cfs

EXISTING 42" CMP CULVERT

DEVELOPED CONDITIONS 100 YEAR EVENT PEAK Q=354cfs

B2

B1

B3

BROADWAY BOULEVARD SE
PUBLICLY DEDICATED RIGHT-OF-WAY VARIES (200'±)

EDGE OF PAVEMENT

BASIS OF ELEVATIONS
ACS BENCHMARK 6-P14
ELEV. = 4987.661

HATCHED AREAS ARE "RESERVATION AREA FOR EXISTING 100-YEAR FLOW PATH. NO GRADING OR BUILDING ALLOWED IN THIS AREA WITHOUT PRIOR WRITTEN APROVAL FROM BERNALILLO COUNTY".

LEGEND

DEVELOPED CONDITIONS 100-YR EVENT FLOWPATH

DEVELOPED CONDITIONS 100-YR EVENT SHEET FLOW W/DEPTH < 0.3'

DIRECTION OF FLOW

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Planning

N

100 0 50 100

DIAL OIL GRADING AND DRAINAGE
FLOODPLAINS

FIGURE 3

Mark Goodwin & Associates, PA
Subasin boundaries and hydrology
calculations by Diane Hoelzer, PE

SUMMARY OF HYDROLOGY

SUBASIN 1 Q=12.57 CFS
(500'x350' = 175,000 SF = 4.0174 AC = 0.006277 SQM

SUBASIN 2 Q= 15.08 CFS
(600'x350' = 210,000 SF = 4.8209 AC = 0.007533 SQM

SUBASIN 3 Q = 15.62 CFS
(720'x265' = 190,800 SF = 4.38 AC = 0.006844 SQMI)
IMPERVIOUS AREA = 29%
(80'x700' = 56,000 SF)

SUBASIN 4 Q = 11.13 CFS
(600'x220' = 132,000 SF = 3.03 AC = 0.004735 SQMI)
IMPERVIOUS AREA = 36%
(80'x600' = 48,000 SF)

SUBASIN 5 Q = 7.85 CFS

SUBASIN 6 Q = 8.07 CFS

Note: Exhibit 6 from Preliminary Drainage Plan for University Blvd. Extension Project topo and proposed layout used for information only.

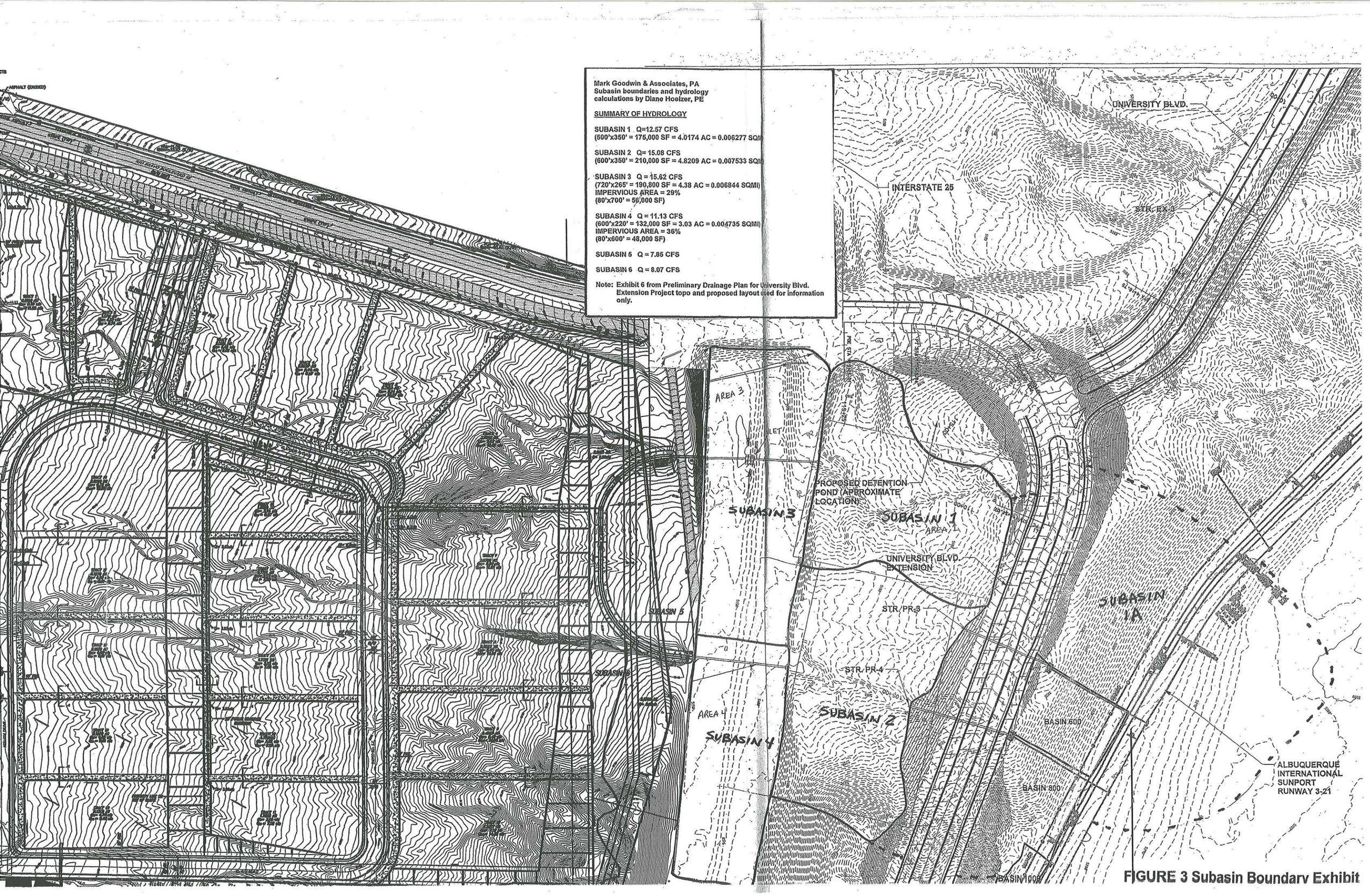
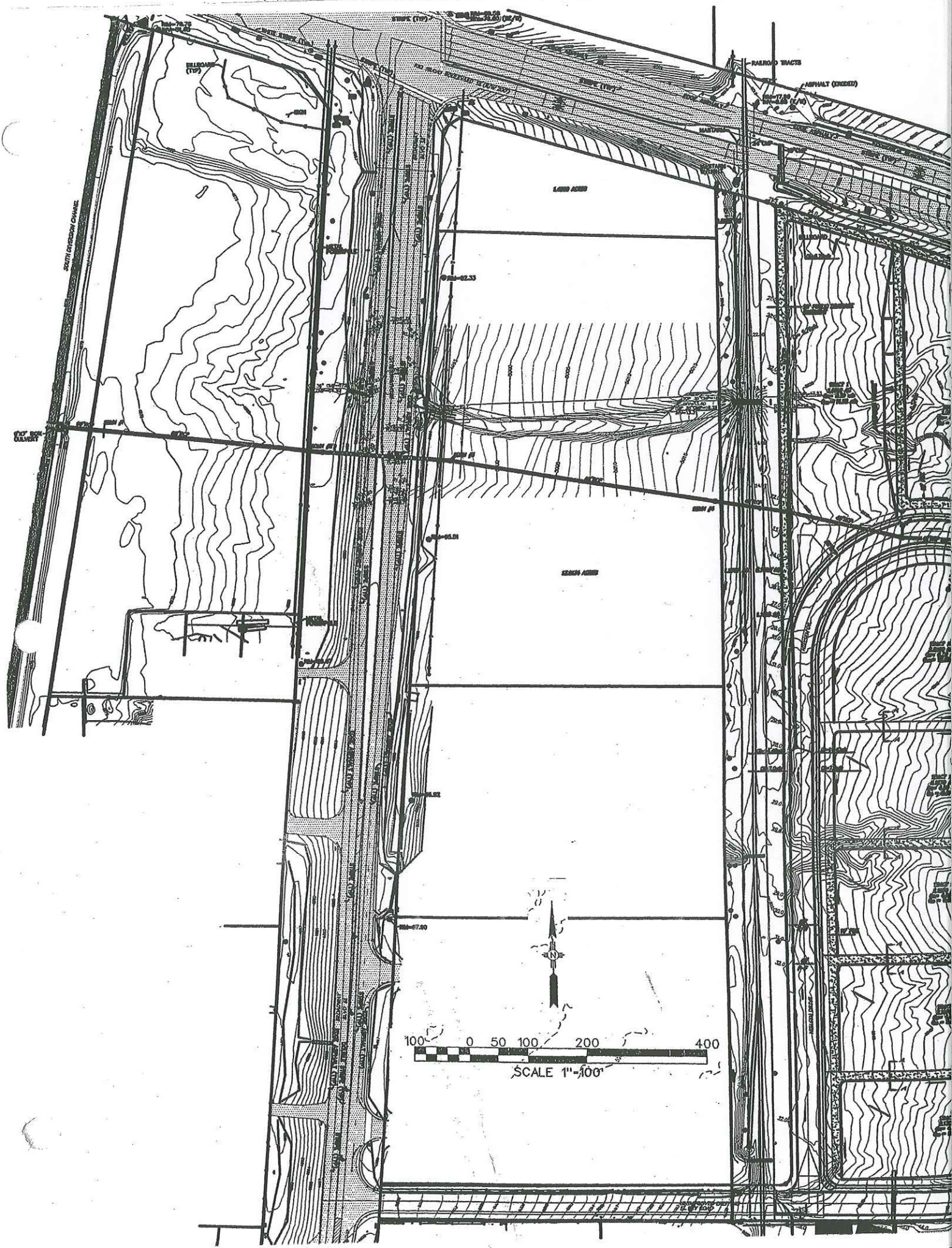


FIGURE 3 Subasin Boundary Exhibit


RAILROAD TRACTS
ASPHALT (UNDER)
SOUTH DIVERSION CHANNEL
100 0 50 100 200 400
SCALE 1"=100'

D. Mark Goodwin and Associates, P.A.
Consulting Engineers
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LETTER OF TRANSMITTAL

TO: Adam Thompson or Matt
Cameron Swinerton
Construction Trailer
242-1643

DATE: February 27, 2007
RE: Sandia Science Office Bldg

We are sending:

Copies	Date	Description
4	2-27-07	Revised G&D Plan

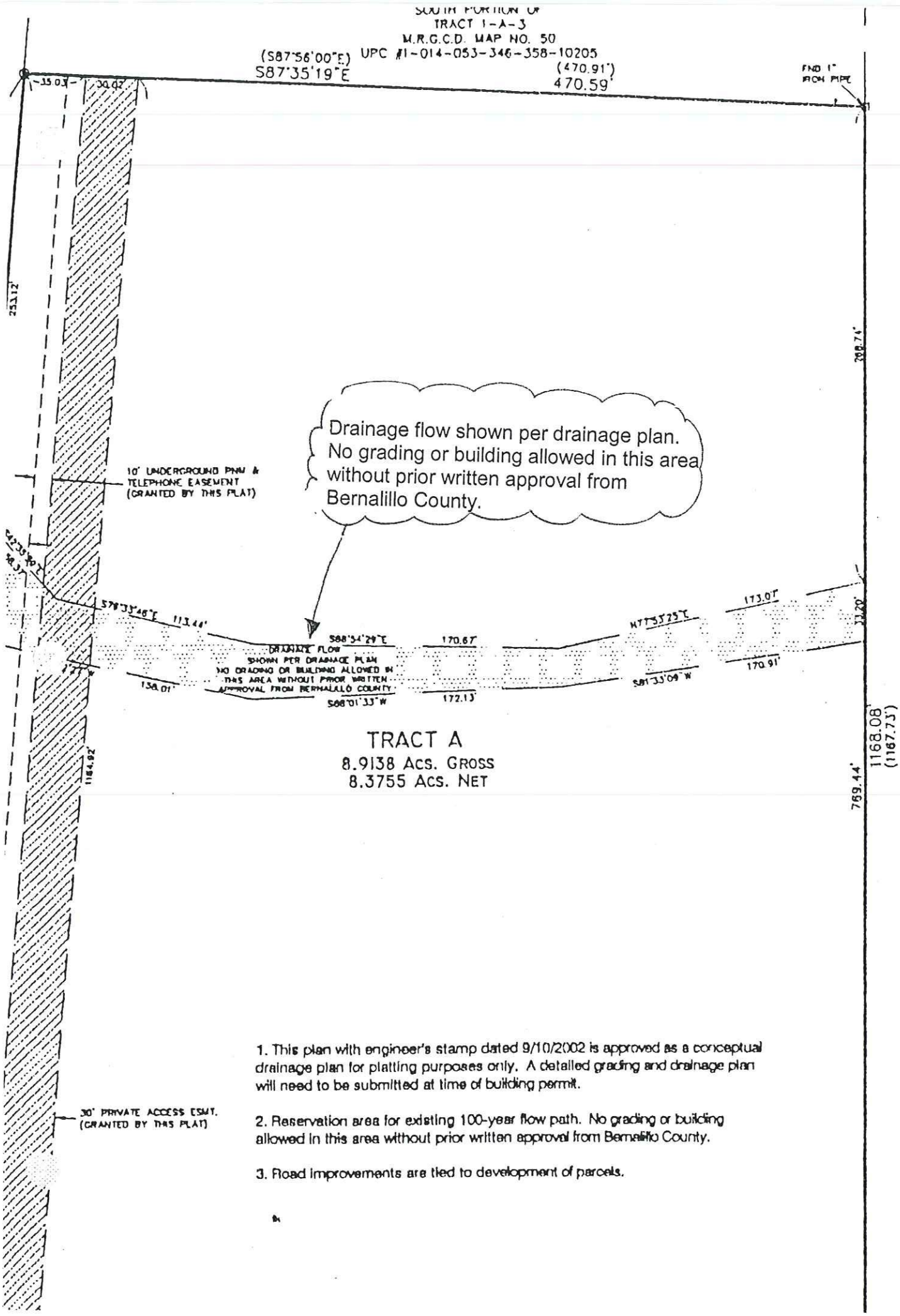
_X_ For your use

___ City surveyor signature

___ For your review and signature

NOTES: As requested

*Project Engineer*_____
Diane Hoelzer, PE



1. This plan with engineer's stamp dated 9/10/2002 is approved as a conceptual drainage plan for platting purposes only. A detailed grading and drainage plan will need to be submitted at time of building permit.

2. Reservation area for existing 100-year flow path. No grading or building allowed in this area without prior written approval from Bernalillo County.

3. Road improvements are tied to development of parcels.