

R E V I S E D

Johnson Plaza South

Master Drainage Report

November 1983

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COLORADO SPRINGS, COLO.

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Prepared For:
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Prepared By:
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GROWTH TECHNOLOGIES CORPORATION
Planners, Consultants, Engineers

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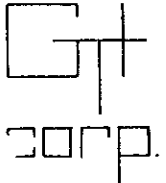
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Master Drainage Report

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Planners, Consultants, Engineers

July 26, 1983

City Of Colorado Springs
Department of Public Works
Engineering Division
30 South Nevada
Colorado Springs, CO 80901

Attn: Mr. Gary Haynes

Mr. Haynes:

Transmitted herewith is the Master Drainage Report and
Plan for Johnson Plaza.

If you have any questions or if we can be of any
service, please contact our office.

Sincerely,
G.T.I. CORPORATION

Laura Lea Battles

Laura Lea Battles
Engineering Department

LLB/dje

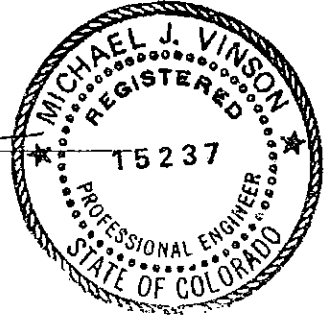
DRAINAGE REPORT

CERTIFICATIONS AND APPROVALS

REGISTERED ENGINEER:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City for drainage reports and said report is in general conformity with the Master Plan of the drainage basin. I accept responsibility for any liability caused by negligent acts, errors, or omissions on my part in preparing this report.

Michael J. Vinson
MICHAEL J. VINSON
Colorado P.E. No. 15237



OWNER OR DEVELOPER OF SITE:

The developer has read and will comply with all of the requirements specified in this drainage report and plan.

BY: Wayne Johnson
TITLE: owner

Filed in accordance with Section 15-3-906 of the Code of the City of Colorado Springs, 1980, as amended.

Gary R. Haynes
City Engineer

12/14/83
Date

MASTER DRAINAGE REPORT

FOR JOHNSON PLAZA

1. SCOPE:

This report is a master study of the Johnson Plaza parcel and includes adjacent areas contributing to Monument Creek. It is the intent of this report to show the proposed plan for routing storm runoff and its effects on proposed and existing structures.

2. LOCATION

Johnson Plaza is located in that portion of the Northeast quarter of Section 19, Township 13 South, Range 66 West of the 6th P.M., El Paso County, Colorado and contains 15.713 acres, more or less.

The property is bounded on the west by Nevada Ave., on the North by Austin Bluffs Parkway and unplatted land, on the east by Cragmor Height Subdivision Addition No. 2, and on the South by Johnson Food Company and unplatted land. Johnson Plaza lies entirely within the boundaries of Templeton Gap Secondary Basin.

3. METHOD:

Hydrologic calculations were completed using the soil conservation service methodology as prescribed in the "City of Colorado Springs Determination Of Storm Runoff Criteria" for both the 5 year and 100 year storms. Total precipitation for a 5 year 6 hour storm shall be considered as 2.1 inches, and 3.5 inches for the 100 year 6 hour storm. All computations are enclosed. Hydrologic soils Group A and B are encountered in this area, as obtained from the SCS maps.

4. ZONING AND LAND USE:

Planned zoning for this area is to be M1P and C5P with the southern portion of Johnson Plaza being used as a light industrial area and the Northern area for restaurants and retail stores.

MASTER DRAINAGE REPORT FOR JOHNSON PLAZA

5. EXTERNAL FLOWS:

The calculated 100 year external flow (214.84 cfs) entering the site is less than 500 cfs and therefore this site has been designed to handle the 5 year flow. The area east of this site contributes a flow of 84.97 cfs which enters two 18' catch basins located at the low point in Elmwood Drive. This flow will then be carried in a pipe to the box culvert under Nevada.

A flow of 1.78 cfs enters the Northern end of this site on the East side. A riprap channel should be placed on the 3:1 embankment in order to prevent erosion and direct the flow.

A portion of the residential area located South and East of the site will contribute a flow of 4.34 cfs onto the site. This flow will continue with two other sub-basins and enter an 18" RCP. That will carry the flow to the 36" RCP.

6. INTERNAL FLOWS:

This section of the report is to show the flows generated on the different sub-basins. A more detailed analysis of handling these flows will be submitted as these areas are platted and development plans are approved.

7. SUB-BASIN 9, 10, & 11

These sub-basins consist mainly of parking lots and open space for the commercial area. Runoff of 15.88 cfs from these sub-basins will be intercepted by an inlet and carried South in a pipe to the box culvert under Nevada.

8. SUB-BASIN 1, 2, & 3

Sub-basin 1 and 2 are mainly residential areas and sub-basin 3 is in the light industrial area. Flow from all three sub-basins (14.25 cfs) enters a pipe which transports the runoff (14.25 cfs) West to the 36" pipe.

MASTER DRAINAGE REPORT FOR JOHNSON PLAZA

6. INTERNAL FLOWS (cont'd.)

SUB-BASIN 4,5,6,7, & 8

Sub-basin 8 which is residential will deposit a flow of 2.30 cfs on the Eastern boundary. A riprap channel should be placed on the 3:1 slope to prevent erosion and direct the 100 year overflow. Sub-basin 7 is commercial and contributes 6.18 cfs. Both sub-basins 4 & 5 are in the light industrial area and will contribute 3.49 and 11.16 cfs consecutively. Sub-basin 6 is a grass covered median which has a runoff of 0.12 cfs. Nevada Avenue will contribute a flow of 7.77 cfs that will enter the curb cuts near the 12' D10R. All of these sub-basins will be collected by the 12' D10R which will transport the flow to the existing box culvert.

7. EXISTING 10' X 8.5' BOX CULVERT UNDER NEVADA AVENUE

The existing 10' X 8.5' box culvert under Nevada was originally designed to carry more flow than the calculated flow of 146.04 cfs. Due to the development of the Cragmor Storm Sewer and grading changes there is presently less flow than anticipated. This structure will be able to carry both the 5 year and 100 year (349.36 cfs) flows. Johnson Plaza will be graded so that no flow will enter onto Nevada Avenue. Flow leaving the box will be carried in a natural unimproved channel, which will adequately handle this flow, and then directly discharge into Monument Creek.

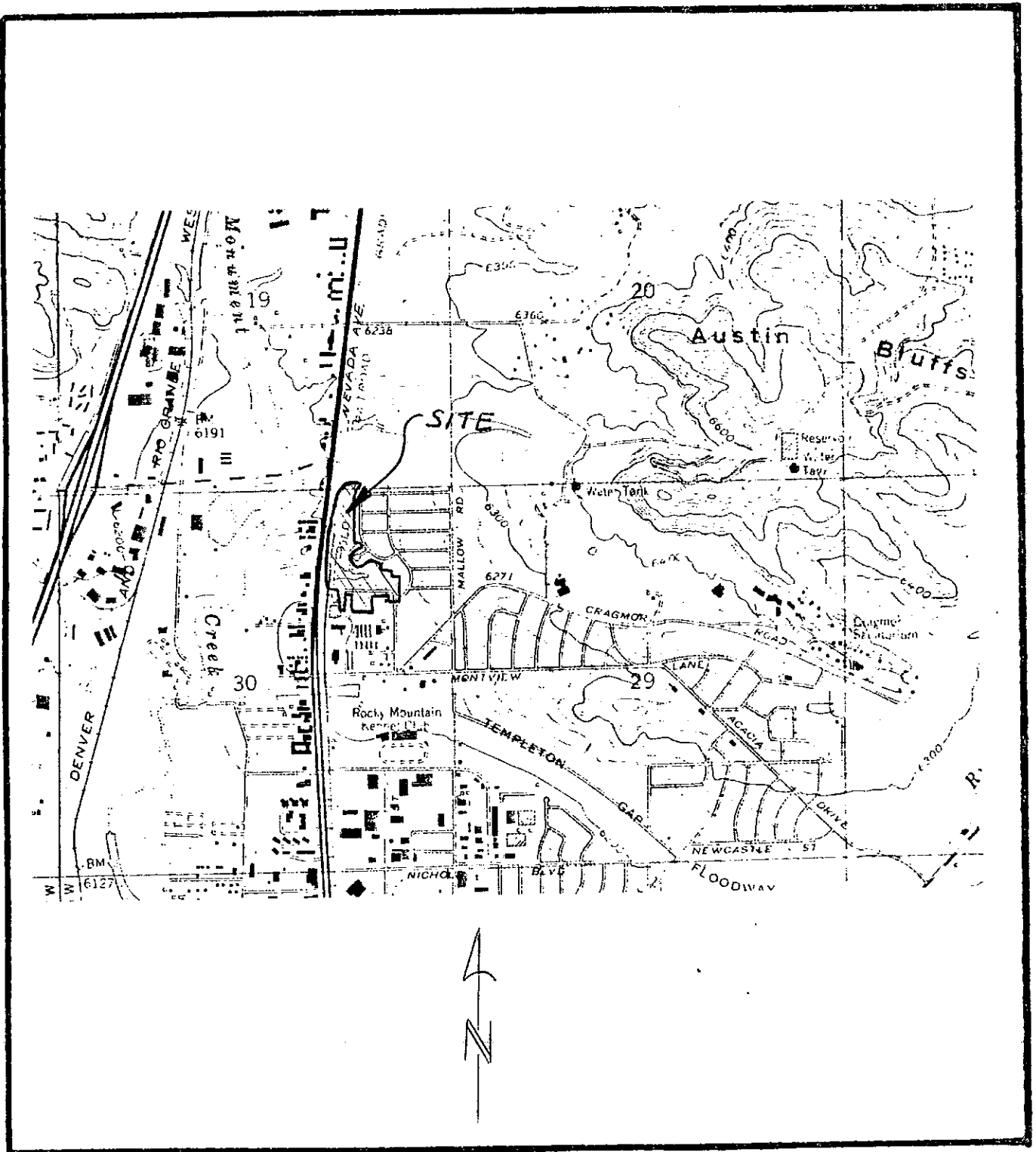
When the master drainage report was written for North Shooks' Run - Templeton Gap, the Johnson Plaza South location was assumed to be unusable area due to the Railroad R.O.W. Since the Railroad R.O.W. has been abandoned this land is now usable and does not follow the master drainage report in order to have area for development.

MASTER DRAINAGE REPORT FOR JOHNSON PLAZA

The grass lined channel and the 27" pipe located south of the refiling of a portion of Cragmor Heights Subdivision Addition No. 2, have been designed to handle a possible future storm sewer expansion. This system is designed to carry half of the exterior basin flow (42.49).

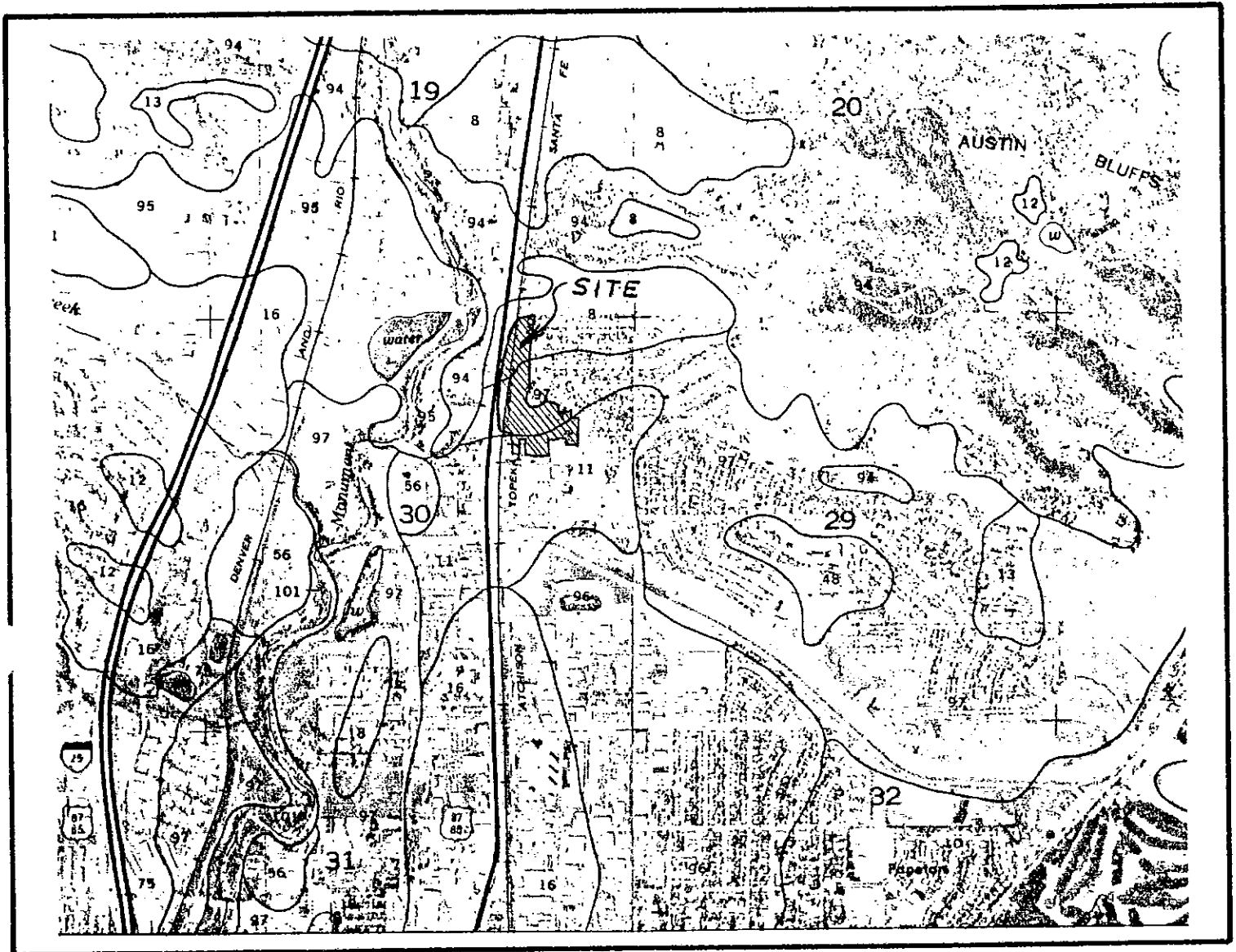
8. FINANCIAL ANALYSIS - COST OF PUBLIC IMPROVEMENTS

<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
Pipe				
18" RCP	80	LF	\$ 22.00	\$ 1,760.00
24" RCP	36	LF	24.00	864.00
27" RCP	438	LF	26.00	11,388.00
36" RCP	497	LF	44.00	21,868.00
42" RCP	43	LF	53.00	2,279.00
Catch basins				
8' DIOR	1	EA	2,500.00	2,500.00
12' DIOR	1	EA	6,000.00	6,000.00
18' DIOR	2	EA	6,000.00	12,000.00
Manholes	3	EA	1,500.00	4,500.00
Special Inlet Structure	1	EA	2,500.00	2,500.00
			SUB TOTAL	65,659.00
			Plus 20% Engineering and Contingencies	<u>13,131.80</u>
				78,790.80
Drainage Fee	15.713Ac X \$2,119/Ac = \$33,295.85			
Bridge Fee	15.713Ac X \$24.00/Ac = \$ 377.11			



VICINITY MAP
 SCALE 1" = 2000'

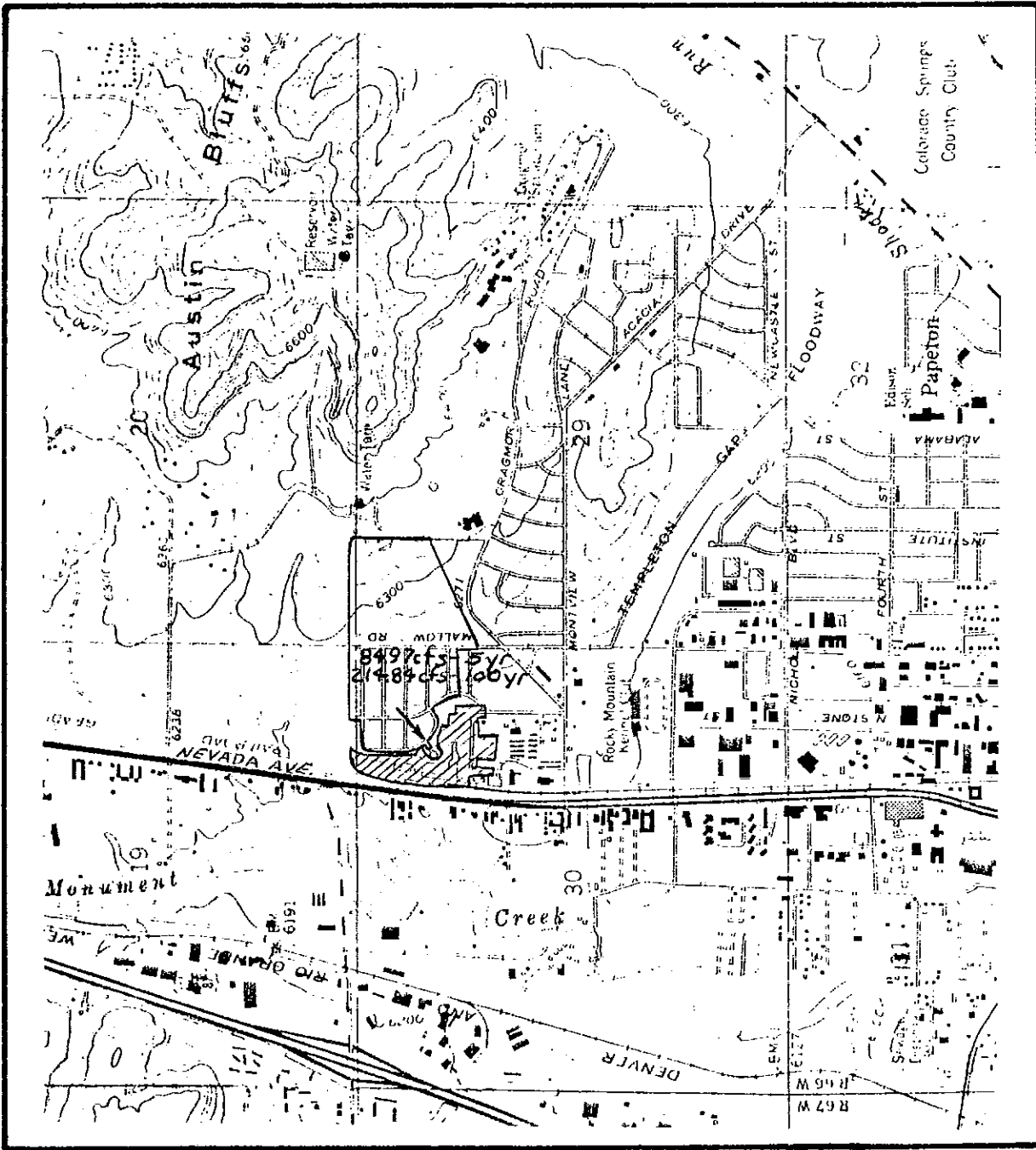
FIGURE 1



SOILS MAP

SCALE 1" = 2000'

FIGURE 2



OFFSITE DRAINAGE MAP

SCALE 1" = 2000'

FIGURE 3

Figure 5

Johnson Plaza South

Elmwood Catch Basin Design

Off site flow = 84.97 cfs - 5 year

Flow on each side of street = 42.49 cfs

 sump condition use two 18' DIOR (cap = 44.4cfs)

Use 24" Dia. RCP @ Min. 3.53% to carry 42.49 cfs
across Elmwood.

Figure 6
Johnson Plaza South
Elmwood Drive - Street Capacity

Existing rolled curbs

Assume capacities are average of ramp and vertical width = 36'.

North end of Elmwood

$$S = 8'/590' = 0.0136 = 1.36\%$$

$$Q \text{ cap} = 19.06 \text{ cfs} - \text{ramp curb}$$

$$Q \text{ cap} = 48.41 \text{ cfs} - \text{vertical curb}$$

$$Q \text{ avg} = 33.76 \text{ cfs} - \text{rolled curb}$$

South end of Elmwood

$$S = 14'/520' = 0.0269 = 2.69\%$$

$$Q \text{ cap} = 26.85 - \text{ramp curb}$$

$$Q \text{ cap} = 68.29 - \text{vertical curb}$$

$$Q \text{ avg} = 47.57 - \text{rolled curb}$$