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

June 19, 2002

Ronald R. Bohannan, P.E.
Tierra West, LLC.
8509 Jefferson NE
Albuquerque, New Mexico 87113

RE: MARKET PLACE AT THE JOURNAL CENTER PH. 3 (D-17/D3B1)
(7620 Jefferson NE) (Tr. 3A-1C-1A1 of Journal Center)
ENGINEERS CERTIFICATION FOR CERTIFICATE OF OCCUPANCY
ENGINEERS STAMP DATED 8/21/2001
ENGINEERS CERTIFICATION DATED 6/18/2002

Dear Mr. Bohannan:

Based upon the information provided in your Engineers Certification submittal dated 6/18/2002, the above referenced site is approved for Permanent Certificate of Occupancy.

If I can be of further assistance, please contact me at 924-3981.

Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Public Works Department

C: Vickie Chavez, COA
approval file
drainage file

DRAINAGE REPORT

for

Market Place at Journal Center
Phase ~~4~~ 3
Albuquerque, New Mexico

Prepared by

Tierra West, LLC
8509 Jefferson Boulevard NE
Albuquerque, New Mexico 87113

Prepared for
Maestas, Ward & Associates
6121 Indian School Road NE, Suite 200
Albuquerque, New Mexico 87110

August 2001

RONALD RAY BOHANNAN NEW MEXICO 9861 REGISTERED PROFESSIONAL ENGINEER

PURPOSE

The purpose of this report is to prove the development of the subject 0.944-acre property, for the use as an Office building, is in accordance with the DPM, Chapter 22. This report demonstrates that the proposed improvements are consistent with the Market Place at Journal Center Master Drainage Plan and do not adversely effect the surrounding properties nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A Vicinity Map, is a 0.944-acre parcel of land located on the southeast corner of Jefferson Boulevard and Sun Avenue. The site is located on Zone Atlas page D-17. The site currently exists as a rough graded pad within the Market Place at Journal Center. The current legal description of the property is Tract 3A-1C-1A1 of Journal Center. As shown on FIRM map 35002C0137D, the site lies within Flood Zone X.

This site was analyzed within the Drainage Report and Grading Plan for the Market Place at Journal Center (D17-D3B1) previously submitted by Tierra West, LLC, with the stamp date of 12/17/96. The City of Albuquerque Hydrology Section approved the overall Drainage Management Plan on 1/13/97. Based upon the approved Drainage Management Plan, this site is located entirely within Basin A-1 of the Market Place at Journal Center. The overall Drainage Basin Map for the Market Place at Journal Center is shown on Exhibit B. The approved Master Plan indicates this parcel is allowed free discharge if the land treatments are equal to or less than 90% D, and 10% B. Since our improvements are consistent with developed condition assumptions within the Market Place at Journal Center Overall Drainage Plan, the site should be allowed free discharge.

EXISTING CONDITIONS

The site slopes from north to south with general grades between 2-3%. The site was rough graded with the construction of the Market Place at Journal Center. As discussed within the Market Place overall drainage report, all offsite flows pass through the site via an underground conduit. All onsite flows are captured by a series of drop inlets located within the parking fields. This developed flow is conveyed within an underground storm drain to the North Pino Arroyo, which runs adjacent to the site. As shown in the Market Place at Journal Center Overall Drainage Report, the onsite storm drainage system was designed for the entire build out of the center, including this third and final phase.

PROPOSED CONDITIONS

The proposed improvements consist of the construction of a single story office building and its associated parking field. As shown in Exhibit B, the entire site lies within Basin A1 as described within the Market Place at Journal Center drainage plan. As shown in Appendix A, the proposed land treatments are consistent with the developed condition assumptions for this site within the Market Place at Journal Center's Drainage Management Plan. The proposed building location and grading scheme for this site are consistent with the assumed grades as shown on the grading plan for the entire center.

As shown on in Exhibit C, the site is divided into three drainage sub-basins. Sub-basin A1A consists of the entire roof drainage and the north potion of the lot between the building and Sun Boulevard. Sub-basin A-1A discharges 1.05 cfs during the 100-year, 6-hour storm event, within a 2' channel. As show in Appendix B, the channel and sidewalk culvert are sized to convey the entire peak discharge rate. Sub basin A-1B consists of the outdoor patio and landscape area along the west portion of the site. Sub-basin A-1B drains .24 cfs during the 100-year, 6-hour storm event within the landscape area through a 12" sidewalk culvert, discharging

40 + 6.70 + 2.20 + 1.19

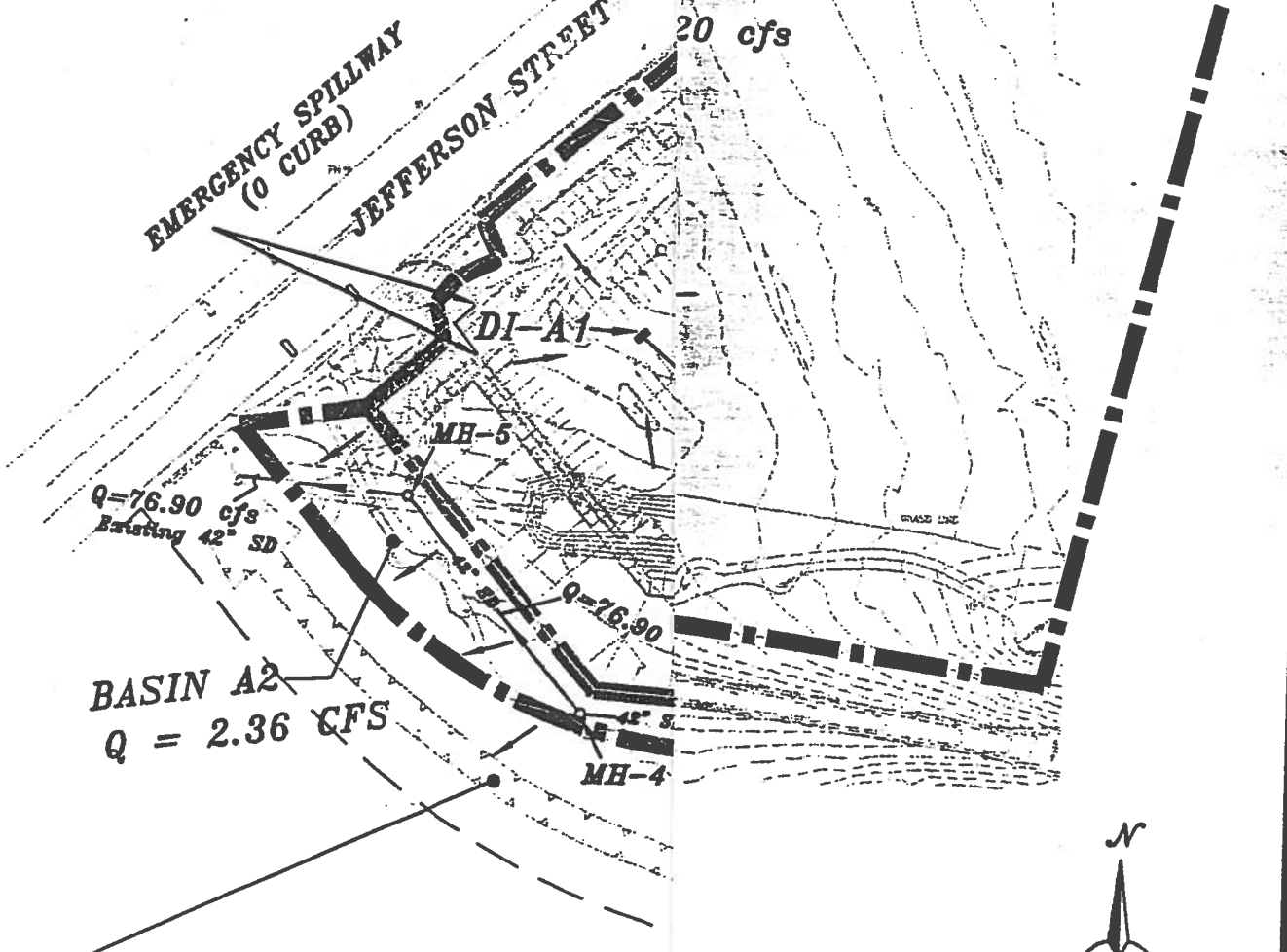
49 CFS

NOTE :

FLOW VALUES FOR BASINS B, C,
WERE OBTAIN FROM THE DRAINA
UNDER CITY DRAINAGE NUMBER

0 cfs

20 cfs



PR YOUT

EXHIBIT B

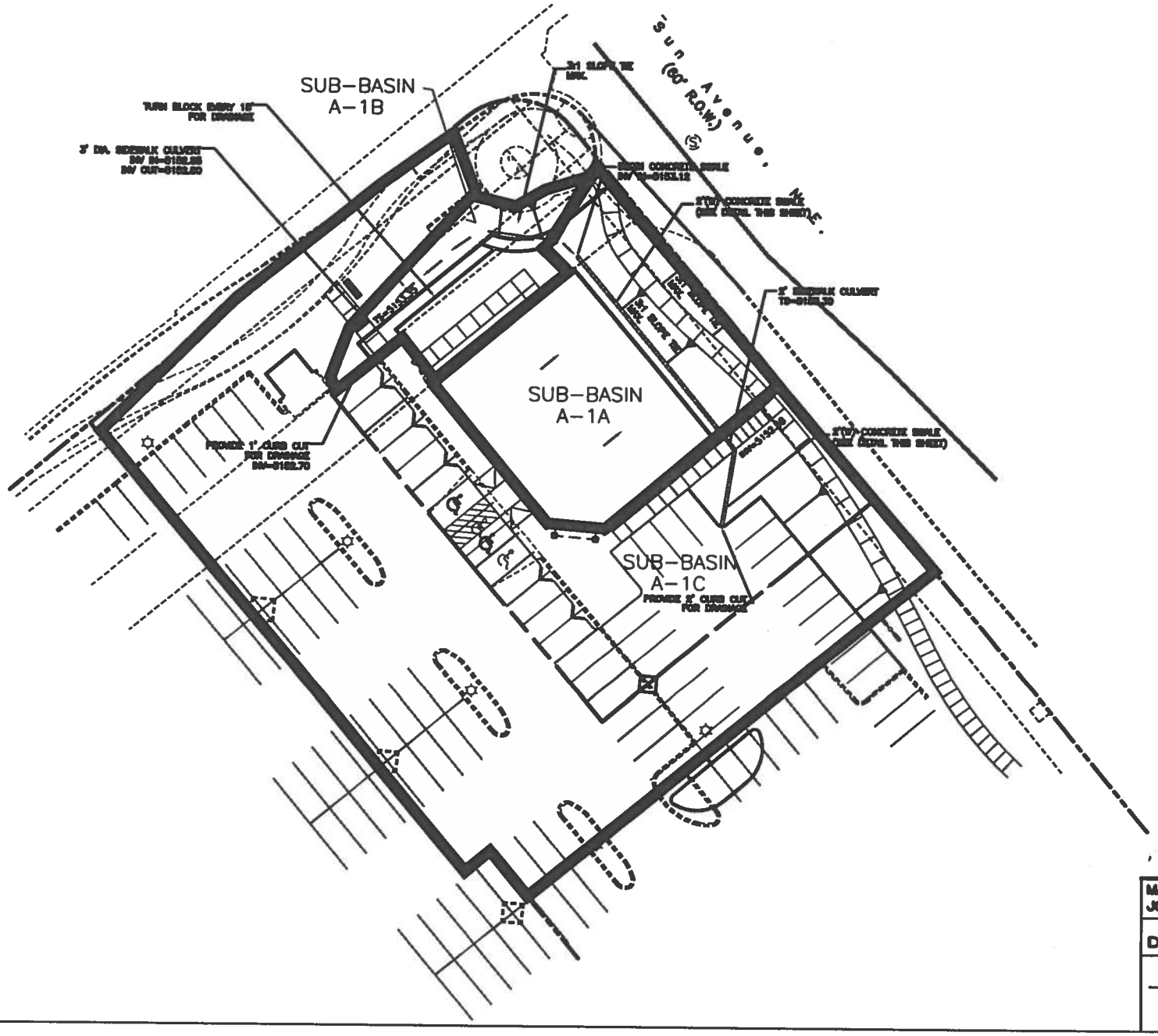


EXHIBIT C

MARKET PLACE AT THE JOURNAL CENTER PHASE 3	
DRAINAGE BASINS	
TIERRA WEST, LLC	

to the parking lot through a 1' curb cut. Sub-basin A-1C consists of the remaining portion the site. Sub-basin A-1C discharges 2.52 cfs, which combined with the discharge from Sub-basins A-1A and A-1B sheet flow to the existing Drop inlet located within the parking field directly south of this site.

The total predicted 100-year peak runoff generated from this site will be 3.81 CFS. An existing drop inlet located within the Market Place parking field captures the entire flow. This inlet is connected to the local storm drainage system, which conveys the developed flow for the area to the North Pino Arroyo. If this inlet clogs or if the flow exceeds the predicted 100-year peak rate, the flow will discharge through the existing driveway located at Jefferson Boulevard, within phase on of he overall center.

SUMMARY AND RECOMMENDATIONS

This site is an existing lot within the Market Place at Journal Center, which is an existing commercial center. The City of Albuquerque Hydrology Section approved the drainage management plan for the entire center. This Market Place at Journal Center Master Drainage Plan assumed fully developed conditions for this site. The proposed improvements are consistent with the land treatment types used for the developed condition for this site within the Market Place at Journal Center's drainage plan. The predicted 100-year, 6-hour peak discharge rate for the site is 3.81 cfs, which is less than the allowable rate of 4.21 cfs prescribed within the Market Place at Journal Center Overall Drainage Plan. The development of this site is also consistent with the DPM Chapter 22 Hydrology section. Since this site encompasses less than 5 acres, a NPDES permit is not required prior to any construction activity. No improvements are to occur within the City Right-of-Way, therefore an infrastructure list is not required. It is recommended this development be approved for rough grading, Site Plan for Subdivision and Site Plan for Building Permit.

RUNOFF RATE COMPARISON

Use Equation A-10: $Q_P = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
Values of Q_{pi} are from Table A-9, and are in CFS/acre. Area values are in acres.

DEVELOPED RATE OF RUNOFF (CFS)									
BASIN	**Q_{PA}**	**A_A**	**Q_{PB}**	**A_B**	**Q_{PC}**	**A_C**	**Q_{PD}**	**A_D**	**Total CFS**
Sub-basin A-1B	1.56	0.020	2.28	0.049	3.14	0.019	4.70	0.009	0.24
Sub-basin A-1A	1.56	0.000	2.28	0.052	3.14	0.026	4.70	0.181	1.05
Sub-basin A-1C	1.56	0.00	2.28	0.059	3.14	0.058	4.70	0.470	2.52
Total site as proposed in this report									3.81
Site as proposed in the Market Place at Journal Center*	1.56	0.00	2.28	0094	3.14	0.00	4.70	0.850	4.21

* based upon treatment percentages used for basin A-1

WEST CURB OPENING AND SIDEWALK CULVERT CAPACITY

Weir Equation:

$$Q = CLH^{3/2}$$

Q= flow (cfs)
C = 2.75
H = Curb Height (ft)
L = width of opening

$$Q_{max} = 2.75(1)(.5)^{3/2} = 0.97 \text{ cfs}$$

Q_{req}= .24 cfs

NOTE: NORTHERN SIDEWALK CULVERT AND CURB OPENING CONNECTED TO CHANNEL, THEREFORE CAPACITY IS GOVERNED BY CHANNEL CAPACITY/ MANNINGS EQUATION. THIS CAPACITY IS DEMONSTRATED ON OTHER SHEET WITHIN THEI REPORT

Swale Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
Beginning	6	0	0.5	1.50	6.08	0.2465985	0.6	4.00	1.05	0.70

- **Manning's Equation:**

  Q = 1.49/n * A * R^(2/3) * S^(1/2)

  A = Area
  R = D/4
  S = Slope
  n = 0.017

DRAINAGE REPORT
FOR
TRACTS 3A-1A, 3A-1B, & 3A-1C
JOURNAL CENTER BUSINESS PARK

AUGUST 1994

Prepared for:

JOURNAL CENTER CORPORATION
7777 JEFFERSON NE
ALBUQUERQUE, NM 87109

Prepared by:

Bohannan-Huston Inc.
Courtyard I
7500 Jefferson NE
Albuquerque, NM 87109

8/18/94

James R. Topmiller, P.E. Date

I. PURPOSE

The purpose of this drainage report is to present a historic and proposed drainage conditions for Tract 3A-1, Journal Center Business Park and incidentally, Tract 3A-2, which is an existing developed bank site adjacent to Tract 3A-1. This report is intended to support Site Plan for Subdivision and preliminary plat review by the Development Review Board at their August 23, 1994 hearing. Additionally, this report supplies the guidance and direction for preparation of public street and drainage construction for Pepperday Lane, a private street proposed across Tract 3A-1.

In summary, we are seeking the following approvals based on this drainage report submittal:

- Site Plan for Subdivision approval
- Preliminary plat approval
- Work order approval for the proposed street (Pepperday Lane)

II. METHODOLOGY

Undeveloped and developed site conditions will be analyzed for the 100-year, 6-hour storm event in accordance with the City of Albuquerque's revised Section 22.2, Hydrology of the Development Process Manual, January 1993 (DPM).

Due to the proposed sump condition in the new street, with no surface outfall to public right-of-way, the outfall for drainage for the areas under this drainage study will be designed for twice the 100-year storm event. Although the new street will be private initially, which may eliminate the requirements for twice a 100-year storm design, the proposed street is anticipated to be converted to a public street in the future, necessitating design for twice the 100-year storm event.

III. SITE DESCRIPTION AND CHARACTERISTICS

Tract 3A-1 is currently an undeveloped, vacant parcel of land located within the Journal Center Business Park. It is surrounded on the south by the North Pino Arroyo concrete drainage channel (a map enclosed), I-25 on the east, San Francisco Road on the north, and Jefferson Street on the west. All three mentioned streets are fully paved, developed public streets. Tract 3A-1 in its current platting is approximately 18 acres.

Tract 3A-2, is the existing Sunwest Bank, only constructed recently and completed in 1994. With that construction, a 40' face to face private street was constructed on its south boundary. Additionally, an existing building, currently housing an insurance agency, is located on proposed Tract 3A-1C opposite the Sunwest Bank building.

The site is not located within a FEMA floodplain. The nearest FEMA floodplain is identified on FEMA maps as being confined to the existing north Pino Arroyo concrete channel.

IV. EXISTING HYDROLOGIC AND SITE DRAINAGE CONDITIONS

In its undeveloped condition, Tract 3A-1 largely drains southwesterly to the north Pino Arroyo concrete channel. Most of this drainage is currently collected in a public 42" RCP storm drain located in the southwestern-most area of Tract 3A-1. The 42" pipe discharges to the North Pino Arroyo channel. A portion of Tract 3A-1, located in the northwestern portion of the tract, drains to an existing swale and desilting pond and then across Tract 3A-2. After crossing Tract 3A-2, flows re-enter the existing private street and are discharged southerly to the 42" pipe.

In its undeveloped condition, Tract 3A-1 is anticipated to generate approximately 58 CFS in the 100-year storm event.

Off site basins to Tract 3A-1 are minimal. Jefferson Street, San Francisco Road and the North Pino Arroyo channel all form effective barriers to offsite flows. A minor

portion of the westerly side of the I-25 west frontage road drains onto the site. This area has been included in the flow provided above for the undeveloped Tract 3A-1.

V. PROPOSED (DEVELOPED) HYDROLOGIC AND HYDRAULIC CONDITIONS

Please refer to the proposed "Drainage Plan" and "Street and Storm Drain Profile" sheet, enclosed in the rear pockets of this report.

SITE DRAINAGE

The proposed Drainage Management Plan for the developed site will continue to use existing discharge points and follow drainage patterns very similar to the existing site condition. The minor offsite flows from I-25 west frontage road, as described in the undeveloped conditions section of the report, will continue to be accepted.

Developed flows for the 100-year storm event are shown on the Drainage Plan and calculations are in the rear of this report.

PHASING

It is mentioned in the Purpose Section of this report that no development of the tracts is proposed immediately. Only the roadway will be constructed immediately in the first phases. Accordingly, the following sections discuss the drainage of this plan in a phased manner. Phase I will be the platting of Tract 3A-1 into three parcels and construction of the roadway. Phase II will be the future development of Tract 3A-1A. Phase III will be the future development of Tract 3A-1C.

PHASE I

In Phase I, the construction of the roadway and the platting of Tract 3A into three parcels, the drainage from Tract 3A-1A will be collected both by the proposed new street and by the existing asphalt-lined swale in Tract 3A-1C. At the intersection near AP-1, near the southeast corner of Tract 3A-2, a drainage inlet will be constructed to collect all actual street flows of approximately 36.7 cfs. This comprises the flows from

Basin 3A-1B (10.5 cfs), Basin 3A-1G (7.2 cfs), Basin 3A-1E (1.7 cfs) and Basin 3A-1D (6.7 cfs) and a portion of the Basin 3A-1A drainage (approximately 10.6 cfs). The flow is approximately 35.7 cfs and when multiplied times two to reflect twice the 100-year storm event design, results in the inlet being designed to collect 73.4 cfs.

The storm drainage inlet is to be constructed only to extend beyond the proposed street paving. Thereafter, the pipe will stop and discharge a temporary swale extended to the existing swale in Tract 3A-1C.

PHASE II

The Phase II effort, which comprises the development of Tract 3A-1A and assumes that no construction or development has occurred in Tract 3A-1C, has no additional infrastructure to provide other than that provided by Phase I. Discharge of Basin 3A-1A developed flows will be made directly to the new street (in amount no greater than 10.6 cfs) and to the proposed 42" RCP stubout in the southwest corner of Tract 3A-1A.

Street flows will be collected by the storm drain inlet built with the street in the downstream intersection discharged to the temporary asphalt line swale provided in Tract 3A-1C.

PHASE III

Phase III is the development of Tract 3A-1C, and assumes that Tract 3A-1A has been constructed and that the road has been constructed, and will identify the final alignment of the 48" storm drain extended from the proposed street to the existing 42" storm drain on the southern boundary of Tract 3A-1C. Construction of this 48" extension will provide for connection to the 42" stubout required for Tract 3A-1A and will make an additional 36" stubout for Tract 3A-1C developed flows. The 42" stubout to Tract 3A-1A will have an actual 100-year storm flow rate of 26.4 cfs and a design flow rate of 53 cfs. The proposed 36" stubout for Tract 3A-1C has a actual 100-year storm flow rate of 21.7 cfs but will be designed for a 43.4 cfs flow. The total flow in the 48" storm drain will be approximately 109 cfs (design flow). A slope of 0.8%, the capacity

of that 48" line will be 128 cfs. Downstream, the existing 42" pipe at its slope of 2.42% has a capacity of 156 cfs while its design flow rate is 151.6 cfs. With the proposed pipe sizes and slopes, all flows will be contained within the pipe with flows running very near the top of the pipe.

REASON FOR DEFERRAL OF 48" SD EXTENSION ACROSS TRACT 3A-1C

The purpose of this section is to emphasize the reason for delaying the construction for the proposed 48" outfall storm drain to Phase III. Without a Site Plan identifying building location and driveway alignments for a specific use of Tract 3A-1C, it is not prudent try to establish an alignment at this time and construct the storm drain. Construction now in the wrong alignment may require costly relocation later when a development is proposed.

In leiu of this construction, temporary asphalt lined swales will be used to correct upstream undeveloped and developed flow rates and discharge these to the existing 42" RCP storm drain.

A floating 20' wide public drainage easement is proposed across Tract 3A-1C to permit later definition of the SD alignment and its construction.

VI. CONCLUSION

This report has presented a drainage management plan for the proposed replatting of Tract 3A-1 into three separate parcels. The plan as presented provides safe and adequate drainage projected for the proposed development and downstream infrastructure. It is requested this plan be approved and the additional documents referred to in the Purpose Section be approved.

CALCULATIONS

BASINS 3A-1A (includes some area of W. Frontage Rd. of I-25.

Total Area, 8.8 acres in zone 2, DPM
Assume 80% Impervious Area, 0.80 X 8.8 ac. = 7.0 acres
20% Landscaped, 8.8 - 7.0 = 1.8 acres
Flowrates, Land treatment D = 7.0 acres X 4.7 cfs/ac. = 32.9 cfs
Land treatment B = 1.8 (2.28 cfs/ac.) = 4.1 cfs
(from Table 9, DPM) 37.0 cfs total

BASIN 3A-1B

Total Area, 2.5 ac.
@ 80% impervious, Flowrate $(Q_D)_{100}$ = 0.80(2.5)4.7 = 9.4 cfs (Land treatment "D")
Flowrate $(Q_B)_{100}$ = 0.20(2.5)2.28 = 1.1 cfs (Land treatment "B")
10.5 cfs total

BASIN 3A-1C

Total Area, 5.0 acres
@ 80% impervious, Flowrate $(Q_D)_{100}$ = 0.80(5.0)4.7 = 18.8 cfs (Land Treat. "D")
@ 20% treatment B, Flowrate $(Q_B)_{100}$ = 0.20(5.0)2.28 = 2.3 cfs
21.1 cfs

BASIN 3A-1D (new road)

Total Area, 1.6 acres
@ 0.80(1.6)4.7 = 6.0 cfs (Land treatment "D")
@ 0.20(1.6)2.28 = 0.7 cfs (Land treatment "B")
6.7 cfs

BASIN 3A-1E (exist. private road)

Total Area, 0.4 acres
@ 0.85 (0.4) 4.7 = 1.6 cfs (Land treatment "D")
@ 0.15 (0.4) 2.28 = 0.1 cfs (Land treatment "B")
1.7 cfs total

BASIN 3A-1F (south side of 3A-1A which discharges to AMAFCA channel directly)

Total Area, 0.6 acres
@ 10%, 0.10 (0.6) 4.7 = 0.3 cfs (Treatment D)
@ 90%, 0.90 (0.6) 2.28 = 1.2 cfs (Treatment B)
1.5 cfs total

↑ impervious percentage

BASIN 3A-1G (existing Sunwest Bank)

total Area, 1.7 acres
@ 0.80%, 0.80 (1.7) 4.7 = 6.4 cfs (Treatment D)
@ 0.20%, 0.20 (1.7) 2.28 = 0.8 cfs (Treatment B)
7.2 cfs total

TR. 3A-1C SWALE

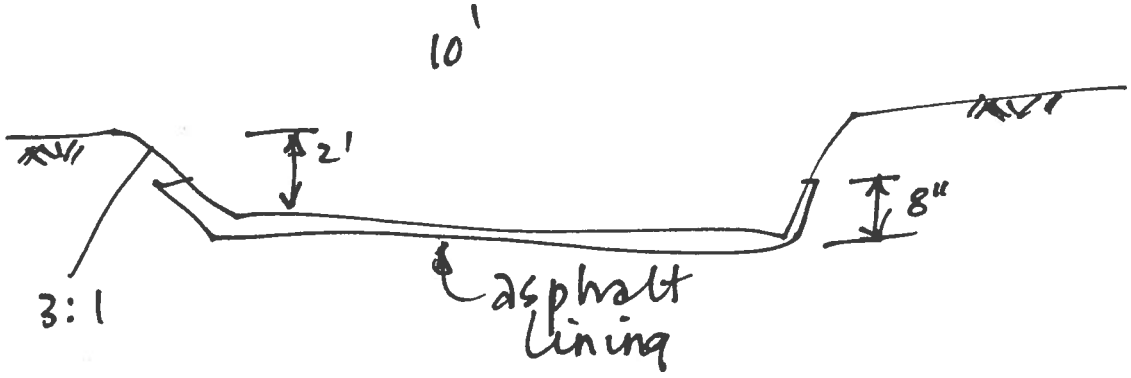
MANNING'S N = .0250 SLOPE = .0120

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	4.00	3	22.00	0.00			
2	12.00	0.00	4	34.00	4.00			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
0.33	0.33	3.7	10.7	12.1	2.9	12.00
0.67	0.67	8.0	35.4	14.2	4.4	14.00
1.00	1.00	13.0	72.6	16.3	5.6	15.99
1.33	1.33	18.6	122.3	18.4	6.6	17.99
1.67	1.67	25.0	185.2	20.5	7.4	19.99
2.00	2.00	32.0	261.8	22.6	8.2	21.99
2.33	2.33	39.6	353.0	24.7	8.9	23.99
2.66	2.66	47.9	459.3	26.8	9.6	25.98
3.00	3.00	56.9	581.5	29.0	10.2	27.98
3.33	3.33	66.6	720.5	31.1	10.8	29.98
3.66	3.66	76.9	876.8	33.2	11.4	31.98
4.00	4.00	87.9	1051.3	35.3	12.0	33.98
4.00	4.00	88.0	1053.5	35.3	12.0	34.00

Depth of Flow

Flow rate capacity



Existing Swale Across Tr. 3A-1C

NOTE TO READER

MOST HYDRAULIC CALCULATIONS ARE PROVIDED ON THE "STORM DRAIN AND STREET P & P" AND SOME OTHER SHEETS IN REPORT.

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET _____ OF _____

PROJECT NO. _____ BY _____ DATE _____

SUBJECT _____ CH'D _____ DATE _____