

DRAINAGE PLAN

Existing Conditions

The subject site is located in Atrisco Business Park, and consists of approximately 86.6 acres of undeveloped land. The site is bounded by paved streets on its north, east and south sides. A narrow undeveloped plot (Tract L-1, Atrisco Business Park), separates the site's west boundary from Unser Boulevard. Undeveloped offsite flows may currently enter the site from Tract L-1. Offsite flows do not appear to enter the site from the north, east or south.

The site drains generally from northwest to southeast over an average land slope of approximately 1.4%. A natural depression at the southeast corner of the site acts as a retention pond for existing flows. There are no improvements on the site other than an existing public storm drain (COA Project 4383.93) located along the east boundary adjacent to Airport Drive. There are currently no connections from the site to the storm drain. However, the storm drain was designed to accept controlled developed discharge from the site. The existing 24" storm drain on the north side of Los Volcanes Road was not planned to accept discharges from this site.

Proposed Conditions

It is proposed to re-subdivide the site in accordance with the established zoning (IP), and in conformance with the City-approved Master Development Plan for Atrisco Business Park, 1992 (EPC Z-92-57). The proposed lot and street layout for the site is depicted on Sheet 1 of 2 herein. The site will continue to drain to the south and east, and will discharge to the existing Airport Drive Storm Drain, between Bluewater Road and Los Volcanes Road. The existing Master Drainage Plan for Atrisco Business Park (Easterling & Associates, Inc., October 1993) established criteria for the control of developed discharge from the site based on evaluation of downstream capacity. As such, all developed discharges within this site will be limited to 0.1 cfs/acre. Proposed internal streets (streets "A", "B" and "C") will drain to a proposed public detention pond on Lot 10. The pond will also accept runoff from Lot 10, and will itself drain via a proposed connection to the existing 36" ROP along Airport Drive. Individual developed lots will have onsite ponding to limit peak 100-year discharge to 0.1 cfs/acre and drain in 24 hours. Each lot development will be accompanied by a Site Development Plan and a detailed lot-specific Grading and Drainage Plan, which will provide details of onsite ponding designs and outfall connections. Individual lot grading and drainage plans shall conform to this plan and to the existing Master Drainage Plan. In particular, Plate 3 of the Master Drainage Plan provides guidelines for grading and drainage design for lots in the 2.5 acre to 10 acre range.

The drainage patterns indicated on Sheet 1 of 2 herein are intended as a general guide, and individual lot drainage patterns may vary. Lots 11, 13, 15, 17 and 20 are shown with a drainage divide approximately at their north-south midpoint. The actual location of this divide will be determined individually for each lot. The proposed storm drains along Street "A" and on the north side of Bluewater Road will be designed to accommodate such flexibility.

Construction Phasing

It is proposed to construct the basic public infrastructure improvements in a single phase. This will consist of Streets "A", "B" and "C", public water and sewer facilities, the 24" public storm drain in Street "A", and the public detention pond and appurtenances. In addition, minor grading will be performed on individual lots to accommodate new street construction. It is not intended to mass-grade the entire site. Proposed lots will then develop on an individual basis. Temporary retention or detention ponds and/or ditch/dikes may be graded on individual undeveloped lots upstream of developing lots to control interim drainage. Such facilities will be sized to limit discharge to 0.1 cfs/acre or less. Design of interim facilities will be accomplished with the Subdivision Infrastructure Improvement Plans, for approval by the City Design Review Committee. Final design of offsite permanent drainage facilities will be performed at that time. A conceptual design of the proposed public pond on Lot 10 is presented herein.

Offsite flows from Basin OS1 through OS3, the undeveloped Tract L-1, may continue to enter Lots 21 through 23, or be prevented from entering these lots by means of ditch/dikes along their western property line. If such undeveloped offsite flows are accepted, they will be ponded and released at 0.1 cfs/acre of tributary offsite drainage area. Upon development of Tract L-1 (by others), Tract L-1 will be responsible for onsite control of its developed runoff to 0.1 cfs/acre. Tract L-1's outfall for developed discharge from Basins OS1 through OS4 will be at its southeast corner, discharging to Bluewater Road.

Private storm drains indicated on Sheet 1 of 2 herein will be constructed to serve individual lots as they develop. Each developing lot which drains to a private storm drain will be responsible for constructing the storm drain across its frontage and across adjacent lots to the point of connection to a public storm drain downstream, as indicated on Sheet 1 of 2 herein.

Floodplain Issues

The 1983 FEMA Floodway map indicates that a substantial portion of the site lies in a designated flood hazard area. The proposed Unser Diversion, to be built by AMAFCA west of the site, is the physical means by which this floodplain will be eliminated. Right-of-way and funding are in place for the Unser Diversion, and an approved design is complete. A CLOMR has been approved by FEMA, and a LOMR is to be issued upon completion of the Unser Diversion project. Construction has not yet begun, but it is expected that work may commence in 1996. The plan shown on Sheet 1 of 2 hereon depicts conditions under which the upstream diversion is considered to be in place.

Meanwhile, it is proposed that, if necessary, individual lot developments give consideration to elevating building pads above the published flood elevations in order to proceed with building construction prior to floodplain removal.

HYDROLOGY SUMMARY

	BASIN ID	CONDITION	DESCRIPTION	AREA (acres)	LAND TREATMENT DISTRIBUTION				Q ₁₀₀ (FREE RUNOFF) (cfs)	Q ₁₀₀ (ALLOWABLE) (cfs)	PROPOSED DOWNSTREAM CONVEYANCE
					A	B	C	D			
EXISTING CONDITIONS	EX1	UNDEVELOPED	EXISTING TRACT L-1 (OFFSITE) AND LOTS 1-9, TRACT M	91.2	90	9	1	0	125.2	N/A	NOT APPLICABLE
	OS1	DEVELOPED	TRACT L-1 (PART)	0.9		NOT	YET	DETERMINED	0.09		BLUEWATER ROAD
	OS2	DEVELOPED	TRACT L-1 (PART)	0.7		NOT	YET	DETERMINED	0.07		BLUEWATER ROAD
	OS3	DEVELOPED	TRACT L-1 (PART)	0.7		NOT	YET	DETERMINED	0.07		BLUEWATER ROAD
	OS4	DEVELOPED	TRACT L-1 (PART)	2.3		NOT	YET	DETERMINED	0.23		BLUEWATER ROAD
DEVELOPED CONDITIONS	A1	DEVELOPED	PROPOSED LOTS 1 THRU 6	24.3		NOT	YET	DETERMINED	2.43		STREET "A" STORM DRAIN
	A2	DEVELOPED	PART OF PROPOSED LOTS 11,13,15,17,20	8.9		NOT	YET	DETERMINED	0.89		STREET "A" STORM DRAIN
	A3	DEVELOPED	PROPOSED LOT 9	2.9		NOT	YET	DETERMINED	0.29		STREET "A" STORM DRAIN
	B	DEVELOPED	PROPOSED LOTS 21 THRU 23	6.7	0	10	10	80	26.2	0.67	STREET "B"
	C	DEVELOPED	PART OF PROPOSED LOTS 11,13,15,17,20 PROPOSED LOTS 12,14,16,18,19	24.3		NOT	YET	DETERMINED	2.43		BLUEWATER ROAD STORM DRAIN
	D	DEVELOPED	PROPOSED LOTS 7 & 8	11.4		NOT	YET	DETERMINED	1.14		EXISTING AIRPORT DRIVE STORM DRAIN
	E1	DEVELOPED	PROPOSED STREETS "A", "B" & "C"	5.2	0	9	9	82	20.4	0.52	POND ON LOT 10
	E2	DEVELOPED	PROPOSED LOT 10	2.8	0	10	10	80	11.1	0.28	POND ON LOT 10

NOTES:

1. LAND TREATMENT DISTRIBUTION ASSUMED FOR BASINS B AND E2.
2. LAND TREATMENTS AND LOT-SPECIFIC POND DESIGNS FOR BASINS A1-A3, B, C & D PER INDIVIDUAL LOT GRADING AND DRAINAGE PLANS (FUTURE SUBMITTALS).
3. ALLOWABLE Q₁₀₀ BASED ON 0.1 cfs/acre.
4. HYDROLOGIC COMPUTATIONS PER COA DPM 22.2, JANUARY 1993.

REPRESENTATIVE PRIVATE STORM DRAIN CAPACITY

MINIMUM SLOPE = 0.0050 ft/ft (typ)
MANNING'S "n" = 0.010
DIAMETER = 1.0 ft

Using MANNING'S Equation

$$Q_{cap} = 3.28 \text{ cfs}$$

$$Q_{req} = 3.08 \text{ cfs}$$

NOTE:
FINAL HYDRAULIC ANALYSIS TO ACCOMPANY DETAILED STORM DRAIN DESIGN (FUTURE SUBMITTAL)

PRELIMINARY STAGE/STORAGE DATA FOR PROPOSED PUBLIC POND ON LOT 10

ELEVATION (ft)	LENGTH (ft)	WIDTH (ft)	AREA (sf)	STORAGE (ac-ft)	OUTFLOW (cfs)
5099	258	25	6,450	0.0000	0.00
5100	266	33	8,778	0.1748	0.67
5101	274	41	11,234	0.4045	1.01
5102	282	49	13,818	0.6921	1.26
5103	290	57	16,530	1.0404	1.47

Notes

1. Hydrographs for Basins B, E1 and E2 computed and routed through the pond using AHYMO194 computer program.
2. Pond outlet configuration: 5.36" orifice at entrance to 12" outlet pipe (inlet control).
3. Maximum Computed WSE = 5102.94.
4. Final sizing and configuration to be determined with design of Subdivision Infrastructure Improvements.

REPRESENTATIVE STREETFLOW HYDRAULIC CALCULATIONS

MAXIMUM 100-YEAR STREETFLOW OCCURS ON THE APPROACH TO THE PROPOSED DOUBLE "C" INLETS NORTH OF LOT 11

Q_{max} = 20.44 cfs
STREET WIDTH = 40' F-F
PAVEMENT CROSS-SLOPE = 2.00%
GUTTER PAN CROSS-SLOPE = 6.25%
LONGITUDINAL SLOPE = 0.9% (typ)
MANNING'S "n" = 0.017

Using the AHYMO COMPUTE RATING CURVE command,

$$d_n \approx 0.47'$$

$$\text{and } d_n \approx 1.3$$

CAPACITY OF DOUBLE "C" INLETS

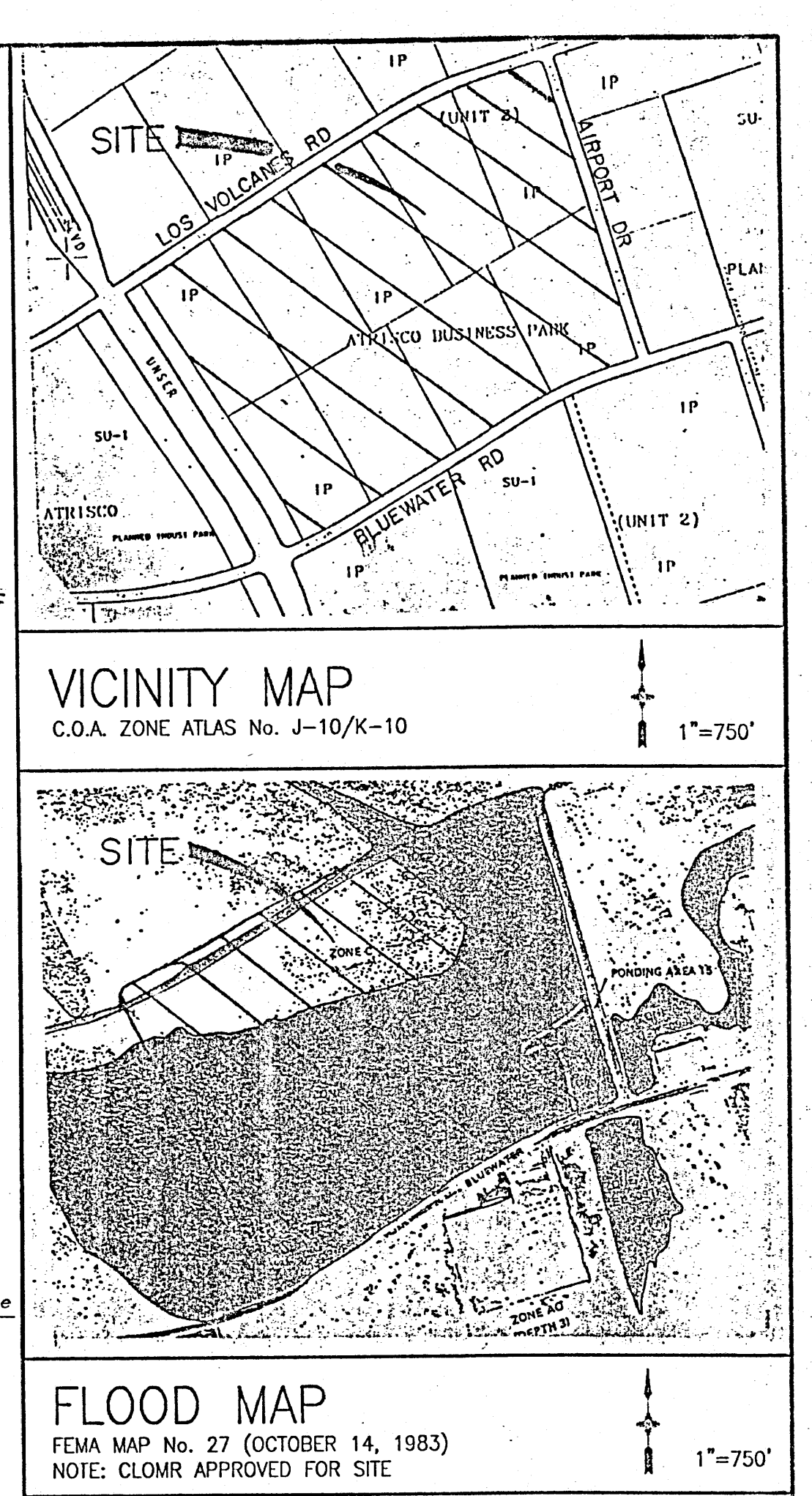
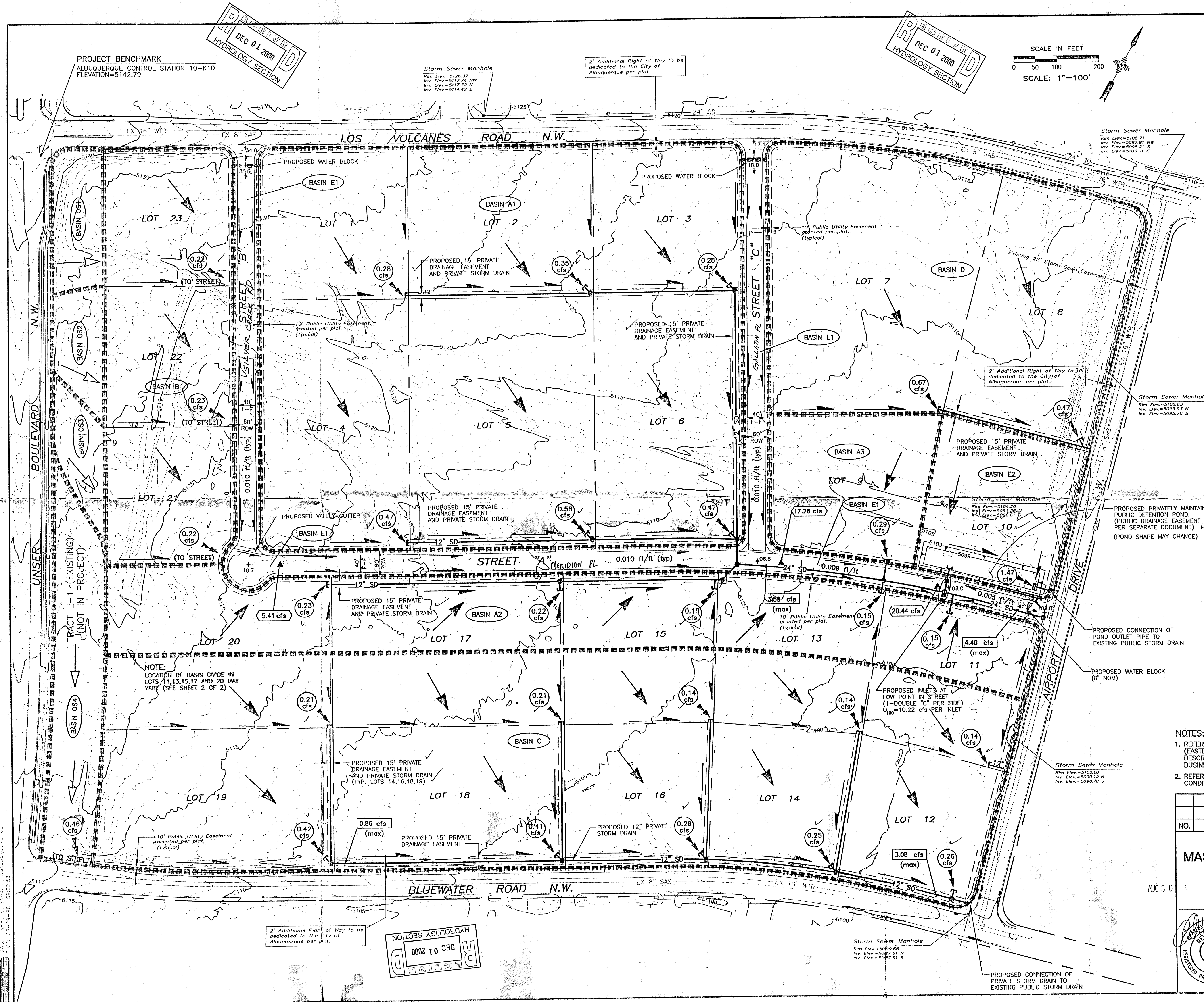
OPEN AREA IN GRATE $\approx 6.8 \text{ sf/inlet}$
WITH 50% CLOGGING, EFFECTIVE AREA = 3.4 sf/inlet
WITH 6" WATER DEPTH, NEGLECTING CURB OPENING CAPACITY,

$$Q_{cap} = 0.6(3.4) \sqrt{(64.4)(0.5)} = 11.6 \text{ cfs/inlet}$$

$$Q_{req} = 10.2 \text{ cfs/inlet}$$

AUG 30 1996

NO.	REVISIONS	BY	DATE
CONCEPTUAL MASTER GRADING AND DRAINAGE PLAN			
LOTS 1-23, MERIDIAN BUSINESS PARK			
(REPLAT OF LOTS 1-9, TRACT M, UNIT 2)			
ATRISCO BUSINESS PARK			
Easterling & Associates, Inc.			
CONSULTING ENGINEERS			
10131 Coors Rd., NW, Suite H-7			
Albuquerque, New Mexico 87114			
(505) 898-8021 FAX (505) 898-8501			
DESIGNED BY: JML	DRAWN BY: JMM	CHECKED BY: CME	SHEET 2
JOB NO: 4320	DATE: 8/96		OF 2



LEGEND		
DESCRIPTION	PROPOSED	EXISTING
CONTOURS (1 FT)		
CONTOURS (5 FT)		
SPOT ELEVATIONS		
APPROXIMATE DRAINAGE BASIN BOUNDARY		
DRAINAGE DIVIDE / WATER BLOCK		
DIRECTION OF RUNOFF		
FLOWLINE		
OVERFLOW		
PROPERTY LINE		
STORM DRAIN M.M. & LINE		
STORM INLET		
ALLOWABLE 100-YEAR DEVELOPED DISCHARGE		
100-YEAR STREET FLOW		
100-YEAR STORM DRAIN FLOW		
ONSITE BASIN		
OFFSITE BASIN		

- NOTES:
- REFER TO MASTER DRAINAGE PLAN FOR ATRISCO BUSINESS PARK, (EASTERLING & ASSOCIATES INC., OCTOBER 1993, K-10/D23) FOR DESCRIPTION OF OVERALL DRAINAGE CONDITIONS IN ATRISCO BUSINESS PARK.
 - REFER TO SHEET 2 OF 2 OF THIS PLAN FOR DESCRIPTION OF PROPOSED CONDITIONS FOR TRACT M, AND FOR REPRESENTATIVE CALCULATIONS.

REVISIONS			
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DESIGNED BY	DRAWN BY	CHECKED BY	SHEET
JML	JMM	CME	1
JOB NO.	DATE		OF
4320	1/96		2

