

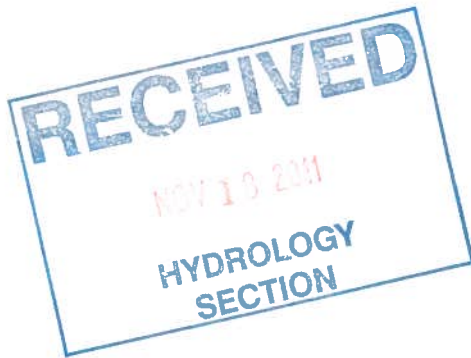
NOVEMBER 18, 2011

MASTER DRAINAGE STUDY

*Drainage plan for site
pipe sizes*

FOR

SANTA MONICA PLACE
San Pedro and Derickson Avenue NE



BY



ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

Thomas O. Isaacson, PE & LS

Fred C. Arfman, PE

Asa Nilsson-Weber, PE

I&A Project No. 1894

M:\PROJECT DOCUMENTS\1800-1899\1850\REPORTS & EXHIBITS

NOVEMBER 18, 2011

MASTER DRAINAGE STUDY

FOR

SANTA MONICA PLACE
San Pedro and Derickson Avenue NE

BY



ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

Thomas O. Isaacson, PE & LS

Fred C. Arfman, PE

Åsa Nilsson-Weber, PE

I&A Project No. 1894

Prepared by:

Åsa Nilsson-Weber

Åsa Nilsson-Weber, PE



11-18-11

Date

TABLE OF CONTENTS

Project Information

Reference Material

Introduction

Discharge Calculations

Interim Drainage Patterns

Proposed Drainage: Phase I

Proposed Drainage: Tract 1 and/or Tract 2

Proposed Drainage: Post Phase I Development

Supplemental Information:

- COA Vicinity Map D-18-Z
- FIRMETTE from FIRM Map No. 35001C0137G
- Existing Flow Exhibit from Drainage Report for Monterra Del Rey, Units 1-3

PROJECT INFORMATION:

PROPOSED LEGAL:

Tracts 1 thru 4, Santa Monica Place

EXISTING LEGAL DESCRIPTION:

Blocks 18 and 19, Tract A, Unit A, North Albuquerque Acres

TOTAL AREA:

58.19 Acres

FLOOD PLAIN:

Zone X

This site lies outside the 100-year flood based on FIRM Map No. 35001C0137G

Map Revision date: September 26, 2008

ENGINEER:

Isaacson & Arfman, P.A.

128 Monroe Street NE

Albuquerque, NM 87108

(505) 268-8828

Attn: Åsa Nilsson-Weber

SURVEYOR:

Surv-Tek, Inc.

(505) 897-3366

Attn: Russ P. Hugg, NMPLS No. 9750

DEVELOPER:

Titan Development

6300 Riverside Plaza Lane NW - #200

Albuquerque, NM 87120-2617

Attn: Kurt Browning

REFERENCE MATERIAL:

- **The Study Phase Letter Report for San Pedro Collectors to the North Pino Arroyo**
by Thompson Engineering Consultants, Inc.
dated April 2004
- **Drainage Report for Monterra Del Rey, Units 1-3**
by Isaacson & Arfman P.A.
dated March 2008
- **Revisions to Drainage Report for Monterra Del Rey, Units 1-3**
by Isaacson & Arfman P.A.
dated June 2008

INTRODUCTION:

The purpose of this document is to serve as a conceptual master grading and drainage plan for the 58.2-acre Santa Monica Place property (PROPERTY).

The PROPERTY is bound by Derickson Ave. NE to the north, by Louisiana Blvd. NE to the east, by Santa Monica Ave. NE to the south and by San Pedro Blvd. NE to the west. The proposed replat will consist of four tracts. The proposed zoning and acreage of each tract is provided in the following table.

TRACT	ZONED	ACREAGE
Tract 1	R-2	8.9170 Acres
Tract 2	R-2	14.3296 Acres
Tract 3	R-T	19.3638 Acres
Tract 4	R-LT	15.5781 Acres

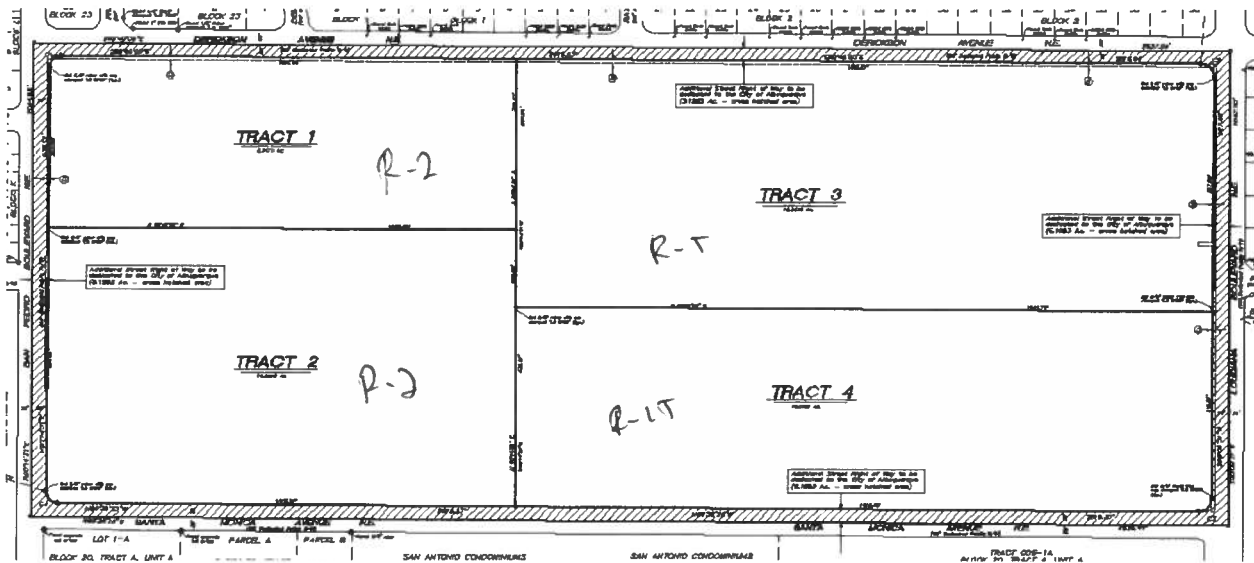


Figure 1: Proposed Santa Monica Place

DISCHARGE CALCULATIONS:

During the 100-year, 6-hour storm event, the PROPERTY will generate:

TRACT	Q100 Interim	Q100 Developed
Tract 1	25.46 CFS	38.31 CFS <i>4.3 cfs/ac</i>
Tract 2	40.92 CFS	61.57 CFS <i>4.3</i>
Tract 3	55.30 CFS	79.22 CFS <i>4.1</i>
Tract 4	44.49 CFS	63.73 CFS <i>4.1</i>

Existing

242.03

- Interim rates are based on uniform land treatments of 0%A, 50%B, 50%C and 0%D (PROPERTY after demolition of existing improvements)
- Developed rates are based on 0%A, 15%B, 15%C and 70%D for Tract 1 and 2 *low for commercial*
- Developed rates are based on 0%A, 20%B, 20%C and 60%D for Tract 3 and 4 *low*

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -				- VERSION: 1997.02d			RUN DATE (MON/DAY/YR) =11/11/2011					
INPUT FILE = 1850.DAT							USER NO.= AHYMO-S-9702dIsa-Arfman3					
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		

*S	SAN PEDRO AND DERICKSON AVE NE											
*S	UNDEVELOPED AND DEVELOPED CONDITIONS											
*S	100-YR, 6-HR STORM											
*S	1850.DAT											
*S	NOVEMBER 11, 2011											
*S	BY ASA NILSSON-WEBER / BJB											
*S	ISAACSON & ARFMAN, P.A.											

START										TIME=	.00	
RAINFALL TYPE= 1										RAIN6=	2.450	
*S	TRACT A-1 UND											
*S	* * * AP1 * * *											
COMPUTE NM HYD	101.00	-	1	.01393	25.46	.756	1.01772	1.500	2.856 PER IMP=	.00		
*S	TRACT A-2 UND											
COMPUTE NM HYD	102.00	-	2	.02239	40.92	1.215	1.01772	1.500	2.856 PER IMP=	.00		
*S	TRACT A-3 UND											
COMPUTE NM HYD	103.00	-	3	.03026	55.30	1.642	1.01772	1.500	2.856 PER IMP=	.00		
*S	TRACT A-4 UND											
COMPUTE NM HYD	104.00	-	4	.02434	44.49	1.321	1.01772	1.500	2.856 PER IMP=	.00		
*S	TRACT A-1 DEV											
COMPUTE NM HYD	201.00	-	5	.01393	38.31	1.379	1.85593	1.500	4.298 PER IMP=	70.00		
*S	TRACT A-2 DEV											
COMPUTE NM HYD	202.00	-	6	.02239	61.57	2.216	1.85593	1.500	4.297 PER IMP=	70.00		
*S	TRACT A-3 DEV											
COMPUTE NM HYD	203.00	-	7	.03026	79.22	2.802	1.73618	1.500	4.091 PER IMP=	60.00		
*S	TRACT A-4 DEV											
COMPUTE NM HYD	204.00	-	8	.02434	63.73	2.254	1.73618	1.500	4.091 PER IMP=	60.00		
FINISH												

AHYMO Summary Table

INTERIM DRAINAGE PATTERNS:

(post demolition / pre development)

In the interim condition, the majority of the PROPERTY will discharge to the northwest to enter the existing public storm sewer system inlets near the intersection of Derickson Ave. and San Pedro Blvd. NE.

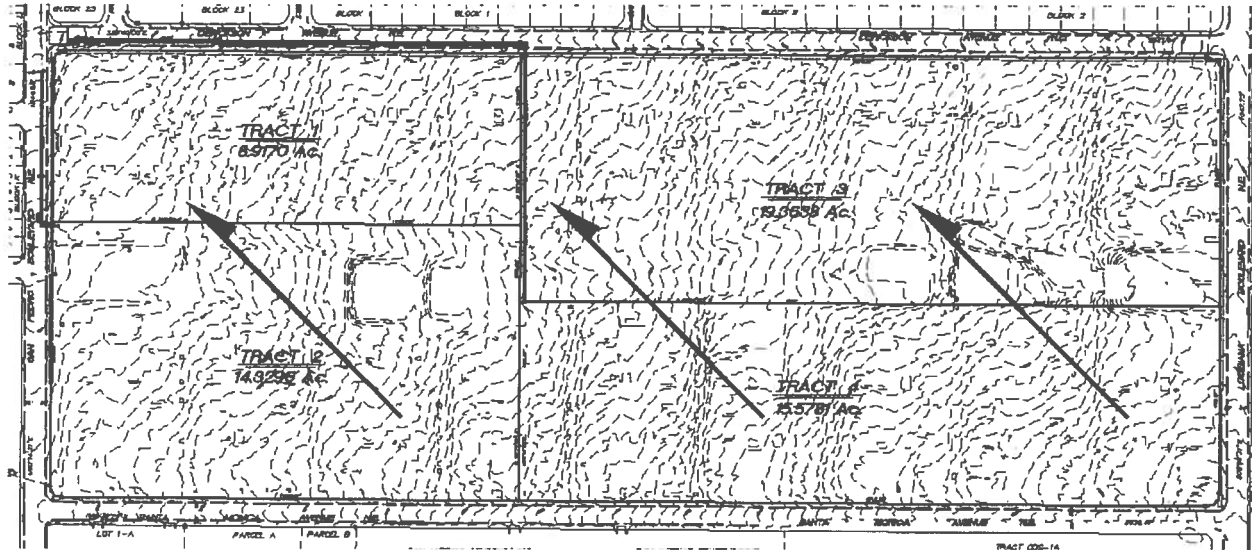


Figure 2: Interim Drainage Patterns

The existing public storm drain system at the intersection of Derickson Ave. and San Pedro Blvd. includes a 48" pipe east to an existing cattle guard inlet and a 36" pipe south to collect street flow from four existing inlets (two each side of San Pedro Blvd.). Flow is conveyed north to the North Pino Arroyo.

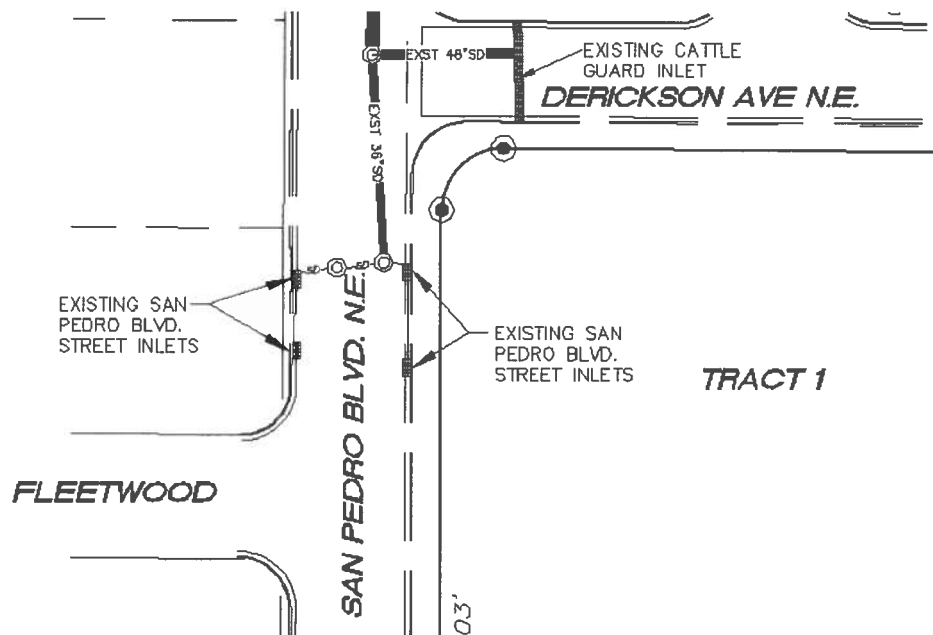


Figure 3: Existing Public Storm Sewer System

PROPOSED DRAINAGE: ALL DEVELOPMENT

Development of all tracts will require a Drainage and Grading Plan submittal to City of Albuquerque Hydrology for review and approval for Building Permit. Each plan must include supplemental calculations addressing the drainage criteria established in this report. As each tract develops, additional private on-site storm drain infrastructure including detention ponding may be required to control discharge rates. *not for residential why*

Requirements for each tract will be dependent on the order that the tracts develop.

Initial development guidelines are as follows:

- The first Tract to develop (Tract 1, 2, 3 or 4) will be required to construct the items referenced as Phase I.
- Calculations must address adjacent public street and storm drain system capacities as well as interim detention pond capacities.

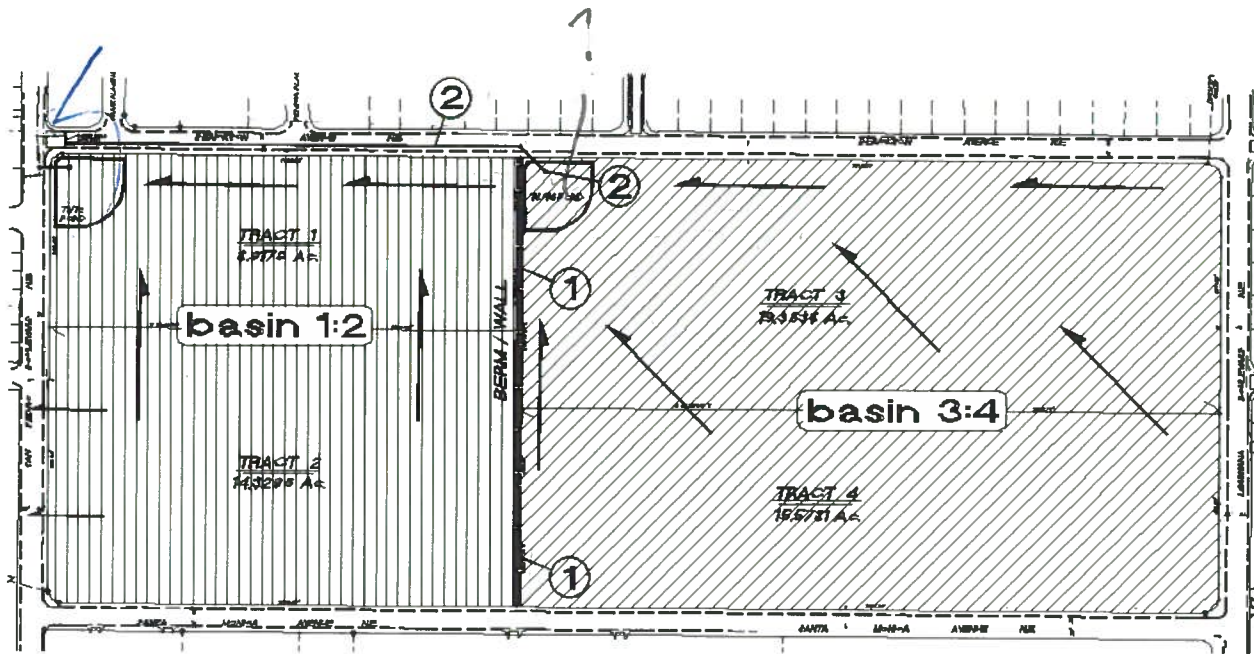
Additional guidelines are as follows:

- The first Tract within Basin 1:2 to develop (Tract 1 or 2) will also be required to construct the items noted as Basin 1:2 Phase.
- Calculations must address adjacent public street and storm drain system capacities (both existing and proposed conditions).

*if Tract 1/2 develop first, Hydrology could
(Sediment pond)
force developer to grade on adjacent property,
and storm drain built,
unless this site is graded as part of
PP approval, site to the west will have
to accept existing flows*

PROPOSED DRAINAGE: PHASE I

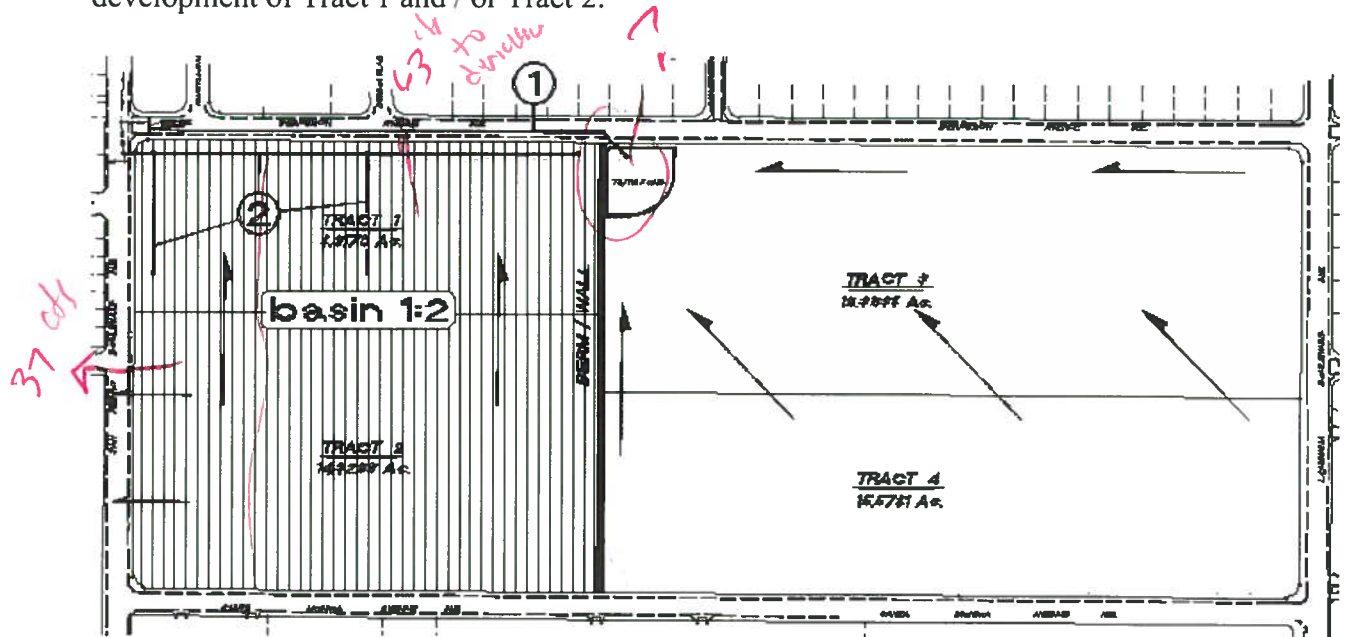
The following drainage infrastructure is to be designed and constructed as part of the first tract to be developed:



1. Construct berm between Basin 1:2 and Basin 3:4 to establish two separate drainage basins.
2. Construct 1000(±) lf of E/W storm drain main from existing cattle guard east to Tracts 1:3 property corner. Provide complete calculations and size accordingly. Extend to property to accept Basin 3:4 discharge.
3. Maximum street capacity of Derickson Ave. = 67 cfs due to existing mountable curb on north side. (per 'Revisions to Drainage Report', by Isaacson & Arfman P.A. – June 2008)
4. Existing off-site discharge to Derickson Ave. from off-site basin 5A = 40.5 cfs (see Supplemental Information for Existing Flow Exhibit from Drainage Report for Monterra Del Rey, Units 1-3).
5. Remaining available Derickson Ave. street capacity for PROPERTY = 26.5 cfs.
6. Basin 1:2 and Basin 3:4 may each free discharge 13 cfs to Derickson Ave. (in the fully developed condition) to be captured within the existing street and storm drain system. Additional public storm drain inlets may be constructed within Derickson Ave. to increase site free discharge.
7. Undeveloped tracts shall be graded to drain to detention ponds / desiltation basins.

grade now

The following drainage infrastructure is to be designed and constructed as part of the development of Tract 1 and / or Tract 2:



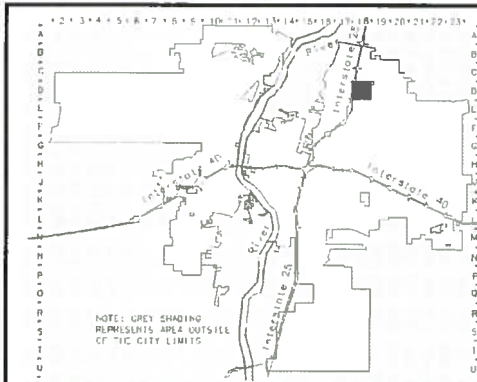
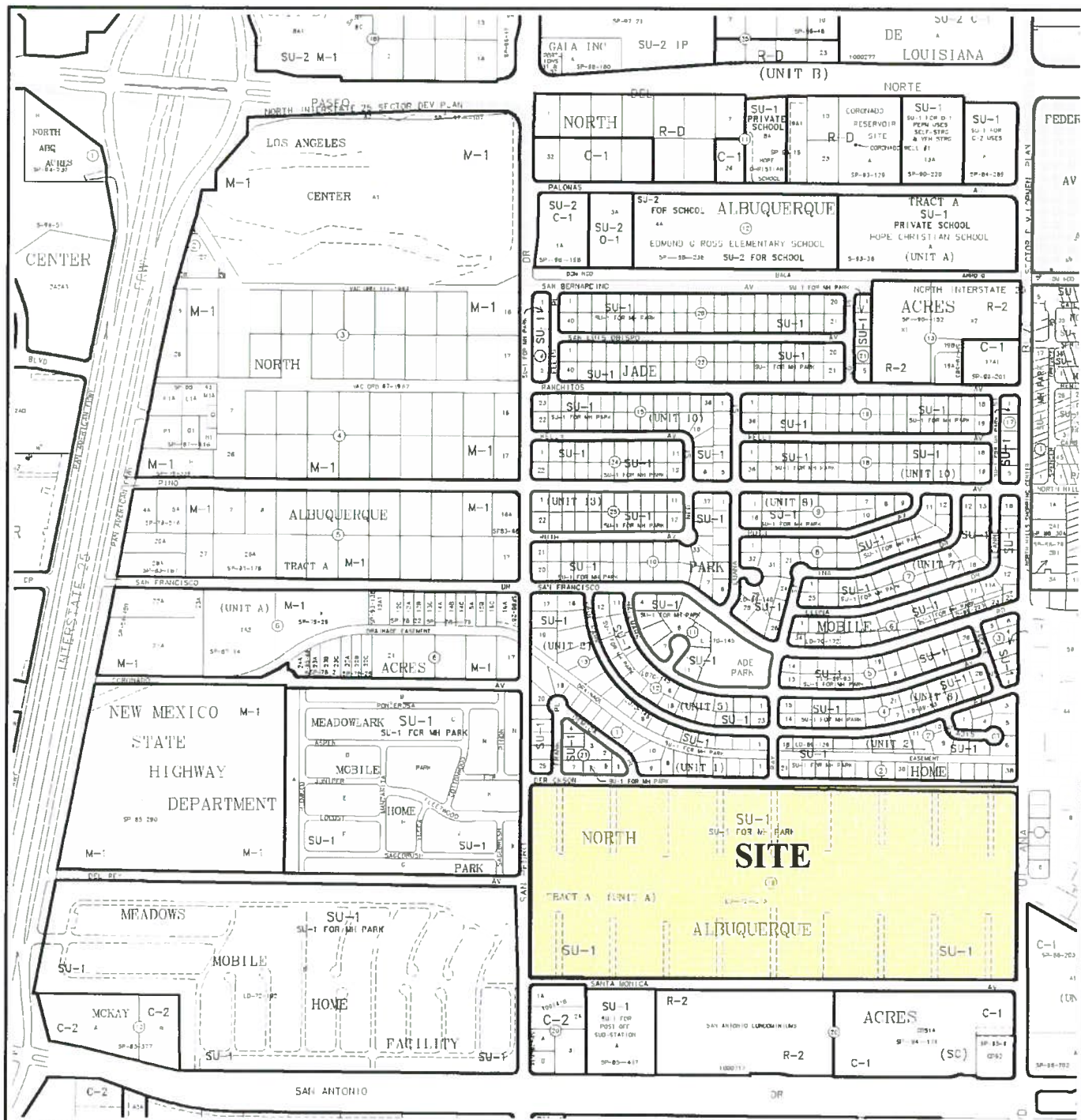
1. If not yet constructed, construct Phase 1 infrastructure as outlined in this report.
2. Extend San Pedro storm drain system to Tracts 1 and /or 2 at desired location. Provide complete calculations and size accordingly based on fully developed conditions.
 - a. As part of drainage calculations, analyze San Pedro Blvd. street capacity to determine availability for free discharging a portion of Basin 1:2. *-from previous 36.7 cfs*
 - b. Existing off-site developed discharge within San Pedro = 145.9 cfs. See Existing Flow Exhibit from Drainage Report for Monterra Del Rey, Units 1-3 (see supplemental information).
 - c. Per Phase I development, Basin 1:2 is permitted 13 cfs of free discharge to Derickson Ave. (in the fully developed condition) to be captured within the existing street and storm drain system. Additional public storm drain inlets may be constructed within Derickson Ave. to increase site free discharge.
 - d. All discharge from undeveloped property to Derickson Ave. and San Pedro Blvd. must first pass through a desiltation pond to minimize suspended solids from passing to public roadways.

SUPPLEMENTAL INFORMATION

COA Vicinity Map D-18-Z

FIRMETTE from FIRM Map No. 35001C0137G

Existing Flow Exhibit from Drainage Report for Monterra Del Rey, Units 1-3



A G I S
Albuquerque Geographic Information System
PLANNING DEPARTMENT

© Copyright 2004



Zone Atlas Page

D-18-Z

Map Amended through February 01, 2005

MAP SCALE 1" = 500'



PANEL 0137G

FIRM

FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO
AND INCORPORATED AREAS

PANEL 137 OF 825

SEE MAP INDEX FOR PANEL LAYOUT

COUNTIES	CITY OF	MANAGER	PANEL	SUFFIX
BERNALILLO COUNTY	35002	575	G	
INCORPORATED AREAS	35001	037	G	

Map is used. The Map Number shown below should be used when plotting the Flood Insurance Rate Map. The Flood Insurance Rate Map is used as the basis for the Flood Insurance Rate Map.



MAP NUMBER
35001G0137G

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using FIRM On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps, please visit the FEMA Flood Map Store at www.mis.fema.gov.

MONTERA DEL REY, UNITS 1-3 EXISTING FLOW EXHIBIT

NOTE: A PORTION OF BASIN 5
(AS SHOWN IN THE SAN PEDRO
COLLECTOR STUDY PHASE REPORT)
DRAINS TO SAN PEDRO

