CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director

Mayor Timothy M. Keller

January 21, 2021

David Thompson, PE
Thompson Engineering Consultants, Inc.
PO Box 65760
Albuquerque, NM 87193

RE: Ventana Square Subdivision
9500 Universe NW
Grading and Drainage Plan & Drainage Report
Engineer's Stamp Date: 12/23/20
Hydrology File: B10D003C3

Dear Mr. Thompson:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Based upon the information provided in your submittal received 12/23/2020, the Grading and Drainage Plan & Drainage Report are approved for Grading Permit and for action by the DRB on Preliminary Plat.

As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2018)

Project Title: Ventana Square Subdivision Building Permit #:_____ Hydrology File #: _____

DRB#: PR-2020-004024 EPC#:_____ Work Order#: _____

Legal Description: Tracts H-5A, H-6A, H-6B, H-7A, H-8A, H-9A, H-10, & H-11, VENTANA SQUARE AT VENTANA RANCH

City Address: 9500 Universe NW

Applicant: Thompson Engineering Consultants, Inc. Contact: David B. Thompson

Address: P.O. Box 65760, Albuquerque, NM 87193

Phone#: (505) 271-2199 Fax#:_____ E-mail: tecnm@yahoo.com

Owner: Diamond Tail Realty, LLC Contact: Tom Growney

Address: 20 Fall Pippin Lane, Suite 203, Asheville, NC 28803

Phone#: (505) 250-5049 Fax#:_____ E-mail: tgrowney@growney-inc.com

TYPE OF SUBMITTAL: X PLAT (___# OF LOTS) ____ RESIDENCE ____ DRB SITE ____ ADMIN SITE

IS THIS A RESUBMITTAL?: _____ Yes X No

DEPARTMENT: _____ TRAFFIC/ TRANSPORTATION X HYDROLOGY/ DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
____ CONCEPTUAL G & D PLAN
____ GRADING PLAN
X DRAINAGE MASTER PLAN
____ DRAINAGE REPORT
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ OTHER (SPECIFY) _____
____ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY
X PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL
____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
X GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: December 23, 2020 By: David B Thompson

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED:_____

FEE PAID:_____

DRAINAGE REPORT
FOR
VENTANA SQUARE
TRACTS H-5A, H-6A, H-6B, H-7A, H-8A, H-9A, H-10, & H-11

December 2020

DRAINAGE REPORT
FOR
VENTANA SQUARE
TRACTS H-5A, H-6A, H-6B, H-7A, H-8A, H-9A, H-10, & H-11

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED

DATE: 01/21/21
BY: Renée C. Brissette
HydroTrans # B10D003C3

THE APPROVAL OF THESE PLANS/REPORT SHALL NOT BE CONSTRUED TO PERMIT VIOLATIONS OF ANY CITY ORDINANCE OR STATE LAW, AND SHALL NOT PREVENT THE CITY OF ALBUQUERQUE FROM REQUIRING CORRECTION, OR ERROR OR DIMENSIONS IN PLANS, SPECIFICATIONS, OR CONSTRUCTIONS. SUCH APPROVED PLANS SHALL NOT BE CHANGED, MODIFIED OR ALTERED WITHOUT AUTHORIZATION.

DAVID B. THOMPSON
NEW MEXICO
9677
LICENSED PROFESSIONAL ENGINEER
12-23-20

Prepared by:
Thompson Engineering Consultants, Inc.
P.O. Box 65760
Albuquerque, NM 87193

December 2020

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INTRODUCTION AND SITE LOCATION

This Drainage Report addresses the drainage plan for the vacant tracts at Ventana Square. Ventana Square is located northeast of the intersection of Paseo del Norte and Universe Boulevard in far northwest Albuquerque. Tracts H-1, H-2, H-3, H-4, and H-12 were developed between 2000 and 2005. This report specifically addresses the drainage plan and analysis for Tracts H-5A, H-6A, H-6B, H-7A, H-8A, H-9A, H-10, and H-11.

METHODOLOGY

The drainage analysis for these tracts is in accordance with Chapter 6 of the City of Albuquerque DPM, Effective June 8, 2020, entitled "Drainage, Flood Control, and Erosion Control". Ventana Square is located in Zone 1. The design storm to determine the peak flows for the site is the 100-year, 6-hour storm, which is 2.17 inches. Whereas, the design storm to determine the runoff volume for the site is the 100-year, 10-day storm, which is 3.90 inches. Hydraulic analyses of the drainage channel were completed for this report.

EXISTING DRAINAGE CONDITIONS

INTRODUCTION

This report addresses the remaining vacant tracts within the Ventana Square development. Five of the commercial tracts between Paradise Boulevard and Paseo del Norte were developed between 2000 and 2005. The tracts that are developed followed the Conceptual Grading and Drainage Plan for Ventana Square at Ventana Ranch, Tracts G and H dated June 12, 2000. The Ventana Square Conceptual Grading and Drainage Plan followed recommendations in the "Las Ventanas Subdivison Drainage Master Plan", dated October 1995. Please refer to Appendix A for excerpts from previous drainage reports and information.

Runoff from four of these tracts that front Paradise Boulevard are collected in a storm drain that drains north to the Las Ventanas Dam. Whereas, runoff from Tract H-12, which is a Storage Unit complex, drains to the south to an asphalt channel that is located within a 25-foot-wide drainage easement. The asphalt channel discharges to a retention pond directly east of the storage unit tract. This retention pond also collects runoff from a portion of the Vittoria Subdivision. This retention pond has a Drainage Covenant that identifies the owner and entity responsible for maintenance. According to the Upper Piedras Marcadas Watershed Drainage and Water Quality Management Plan, dated April 2017, by AMAFCA, this retention pond will be discharged through a series of storm drains and detention ponds to Unser Boulevard and then north to the Calabacillas Arroyo.

The FEMA Flood Insurance Rate Map Number 35001C0103H, effective date August 16, 2012, shown in Figure 1, indicates the presence of a Zone X flood hazard zone on the site. Zone X is an area in the 500-year flood or areas less than 1-foot deep 100-year flood.

ON-SITE FLOWS

The remaining undeveloped tracts plus Tract H-12 of Ventana Square were divided into six drainage basins (refer to Exhibit 1, Drainage Basin Map). Also, two additional drainage basins, one for the pond and one for the portion of Vittoria Subdivision that drains to the pond, were delineated to account for all of the basins that drain into the existing retention pond east of Ventana Square.

Basin 100 includes the existing retention pond. Basin 101, located on the south end of Tract H-12, includes the existing asphalt channel that conveys a total of 49.81 CFS from Tract H-12 and the remaining vacant tracts in Ventana Square to the existing retention pond. Basin 200 includes the area of Vittoria Subdivision that drains 40.78 CFS to the existing retention pond via a storm drain system at the northeast corner of the pond. Basins 301 and 302 include the Ventana Ranch Storage Units (Tract H-12) that drain to the asphalt channel that discharges to the retention pond. Basin 301 discharges 11.53 CFS to the asphalt channel through an opening in the perimeter wall. Basin 302 accepts offsite flows from Basin 303 of 4.97 CFS through the perimeter wall. Basin 303 includes portions of Tracts H-5A, H-6B, and H-9A. The total peak flow discharging through an opening in the perimeter wall to the asphalt channel from Basins 302 and 303 is 13.09 CFS. Basin 400 includes the remainder of the undeveloped Ventana Square tracts. These tracts include a portion of Tract H-5A, Tract H-6A, a portion of Tract H-6B, H-7A, H-8A, a portion of Tract H-9A, H-10, and H-11. The total runoff from Basin 400 is 24.08 CFS. Basin 500, which includes the northern portion of Tract H-5A, drains a total of 2.32 CFS north to be collected by a storm drain system that discharges to the Las Ventanas Dam north of Ventana Square. See Appendix B for hydrologic calculations.

The existing retention pond accepts runoff from basins 100 through 400. The total 100-year, 10-day volume reaching the existing retention pond is 5.10 acre-feet. The volume of the existing retention pond was calculated based on the topographic survey. The 100-year, 10-day water surface elevation of the existing retention pond is 5411.99. The top elevation of the retention pond is 5412.50, which results in a freeboard of 0.50 feet. Table 1 shows the existing conditions hydrology results.

Table 1 Existing Drainage Conditions

BASIN	Area (acres)	100yr-6hr Peak Flow (cfs)	100yr-10 day Runoff Volume (ac-ft)	Land Treatment
100	2.16	4.67	0.13	100%B
101	0.27	1.11	0.09	100%D
200	12.06	40.78	2.54	23%B, 23%C, 54%D
301	2.92	11.53	0.88	5%B, 6%C, 89%D
302	1.97	8.12	0.65	100%D
303	1.73	4.97	0.14	100%A
400	8.39	24.08	0.66	100%A
500	0.81	2.32	0.06	100%A

DEVELOPED DRAINAGE CONDITIONS

ONSITE FLOWS

The drainage basins for the developed or full buildout conditions are the same as the drainage basins used for existing conditions. The only difference is that the vacant commercial tracts in Ventana Square are assumed to have an impervious area of 85% of the area of each tract.

Basin 100 includes the existing retention pond. Basin 101, located on the south end of Tract H-12, includes the existing asphalt channel that conveys a total of 58.91 CFS from Tract H-12 and the developed tracts in Ventana Square to the existing retention pond. Basin 200 includes the area of Vittoria Subdivision that drains 40.78 CFS to the existing retention pond via a storm drain system at the northeast corner of the pond. Basins 301 and 302 include the Ventana Ranch Storage Units (Tract H-12) that drain to the asphalt channel that discharges to the retention pond. Basin 301 discharges 11.53 CFS to the asphalt channel through an opening in the perimeter wall. Basin 302 accepts offsite flows from Basin 303 of 6.71 CFS through the perimeter wall. Basin 303 includes portions of Tracts H-5A, H-6B, and H-9A. The total peak flow discharging through an opening in the perimeter wall to the asphalt channel from Basins 302 and 303 is 14.83 CFS. Basin 400 includes the remainder of the developed Ventana Square tracts. These tracts include a portion of Tract H-5A, Tract H-6A, a portion of Tract H-6B, H-7A, H-8A, a portion of Tract H-9A, H-10, and H-11. The total runoff from Basin 400 is 32.55 CFS. Basin 500, which includes the northern portion of Tract H-5A, drains a total of 3.14 CFS north to be collected by a storm drain system that discharges to the Las Ventanas Dam north of Ventana Square.

The existing retention pond accepts runoff from basins 100 through 400. The total 100-year, 10-day volume reaching the retention pond is 7.25 acre-feet, which exceeds the volume of the existing retention pond. So, the existing retention pond will be excavated to increase the volume. Table 2 shows the developed conditions hydrology results. See Appendix B for hydrologic calculations.

Table 2 Developed Drainage Conditions

BASIN	Area (acres)	100yr-6hr Peak Flow (cfs)	100yr-10 day Runoff Volume (ac-ft)	Land Treatment
100	2.16	4.67	0.13	100%B
101	0.27	1.11	0.09	100%D
200	12.06	40.78	2.54	23%B, 23%C, 54%D
301	2.92	11.53	0.88	5%B, 6%C, 89%D
302	1.97	8.12	0.65	100%D
303	1.73	6.71	0.50	7.5%B, 7.5%C, 85%D
400	8.39	32.55	2.45	7.5%B, 7.5%C, 85%D
500	0.81	3.14	0.24	7.5%B, 7.5%C, 85%D

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/22/2020 at 3:31 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Figure 1 FEMA Flood Insurance Rate Map

DRAINAGE IMPROVEMENT PLAN

Description

The development of the remainder of Ventana Square will require the construction of drainage improvements (refer to Exhibit 2 for the Drainage Improvement Plan). As noted in the previous section, the existing retention pond needs to be excavated to store the 100-year, 10-day volume for the full buildout condition. As shown on Exhibit 2, the retention pond will be excavated one foot deeper and the pond will be excavated to the west without expanding the pond foot print. The 100-year, 10-day volume in the pond after excavation is complete will be 7.25 acre-feet. The 100-year water surface elevation will be 5411.27 resulting in a freeboard of 1.23 feet to the top of the pond. The total impervious area draining to the retention pond from basins 100 through 400 is 19.95 acres. The first flush volume during a 0.42-inch storm is 0.698 acre-feet. The water surface elevation of the first flush volume at full buildout will be 0.80 feet.

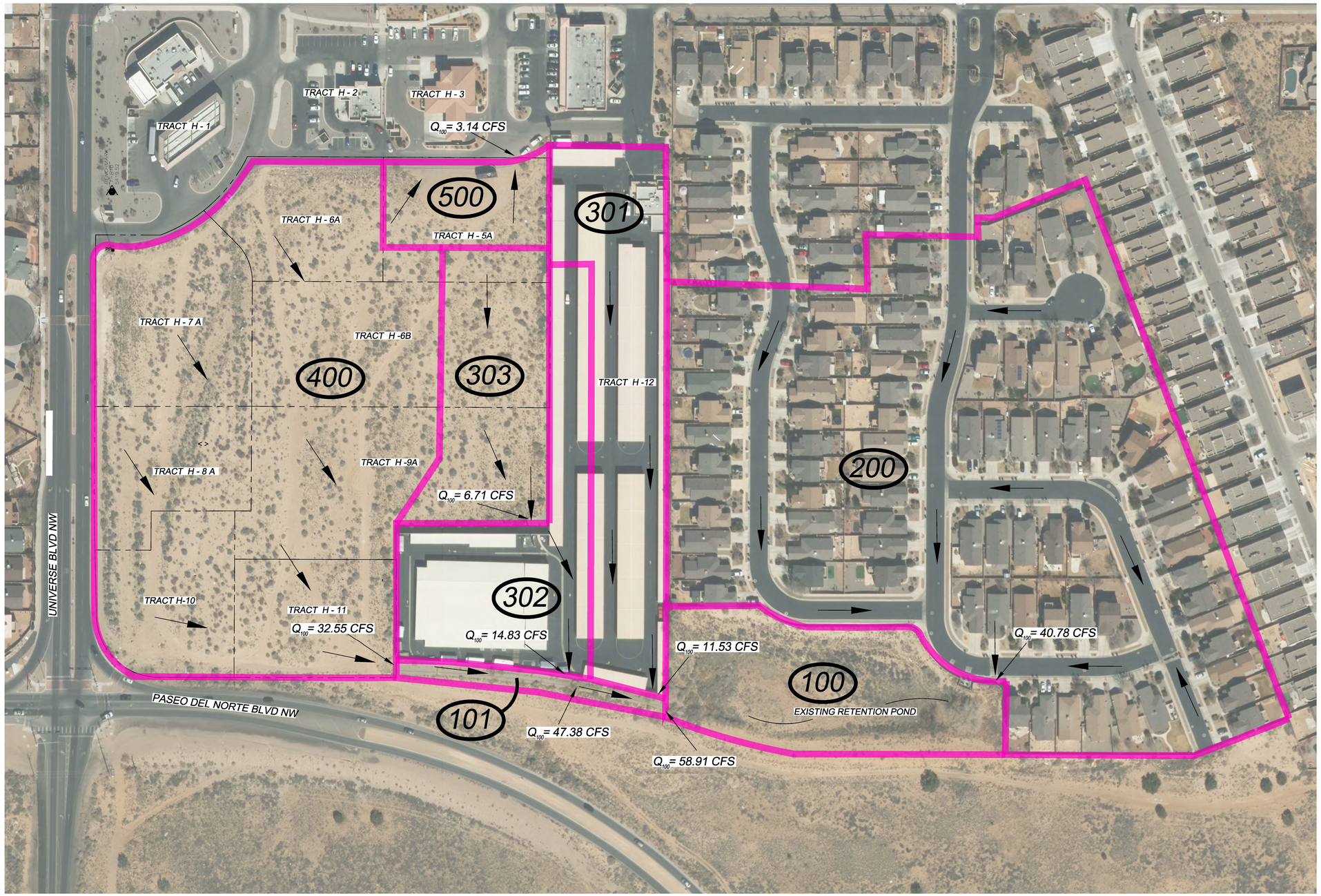
The existing asphalt channel in Basin 101 along the south property line of Tract H-12 located in a 25-foot-wide drainage easement will be replaced with a concrete channel, as shown on Exhibit 2. The existing asphalt channel is eroding on the east end near the entrance to the retention pond. So, the asphalt channel will be removed and replaced with a concrete channel. The concrete channel will be 10-feet-wide with 2-foot-tall vertical walls. The concrete channel will be continued on the west slope of the pond and buried 3 feet below the pond bottom. A 15-foot by 20-foot Type L riprap pad will be placed at the end of the concrete channel in the bottom of the pond. The riprap pad will be 18 inches deep and placed over a 12-inch-deep type 2 granular bedding.

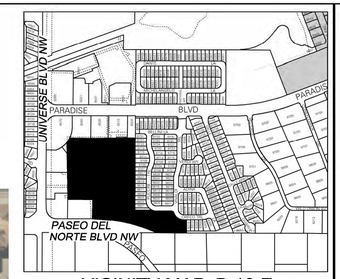
Channel Hydraulic Analysis

A hydraulic analysis of the concrete channel was completed. The concrete channel has a ten-foot-wide bottom and vertical walls. A Manning's Roughness Factor of 0.013 was used for the concrete channel. The minimum freeboard in the channel is 1.292 feet. At the outlet of the channel into the pond will be a 15-foot-wide by 20-foot-long riprap pad over a granular base. The type L riprap pad will be 18 inches thick. And the Type II granular base will be 12 inches thick. Exhibit 2 shows the plan view and detail of the concrete channel. See Table 3 for the channel hydraulics and Appendix C for the hydraulic calculations.

Table 3 Concrete Channel Hydraulics

Location	Peak Flow (cfs)	Slope (ft/ft)	Depth (ft)	Velocity (ft/sec)	Froude Number
West End of Channel	32.55	0.01	0.489	6.66	1.68
Middle of Channel	47.38	0.01	0.618	7.67	1.72
East End of Channel at Pond	58.91	0.01	0.708	8.32	1.74





VICINITY MAP B-10-Z

LEGEND

FLOW ARROW

BASIN BOUNDARY

100 BASIN ID

N

80 40 0 40 80

SCALE: 1"=80'

Thompson Engineering Consultants, Inc.
tecnm@yahoo.com
PHONE: (505) 271-2199
FAX: (505) 830-9248
P.O. BOX 65760
ALBUQUERQUE, NM 87193

NO.	REVISION	BY	DATE

PROJECT:
DATE:
HORIZ. SCALE:
VERT. SCALE:
DRAWN BY: BLN
CHECKED BY:
APPROVED BY:
FILE:

12-13-20

DEPARTMENT

VENTANA SQUARE

DRAINAGE BASIN MAP

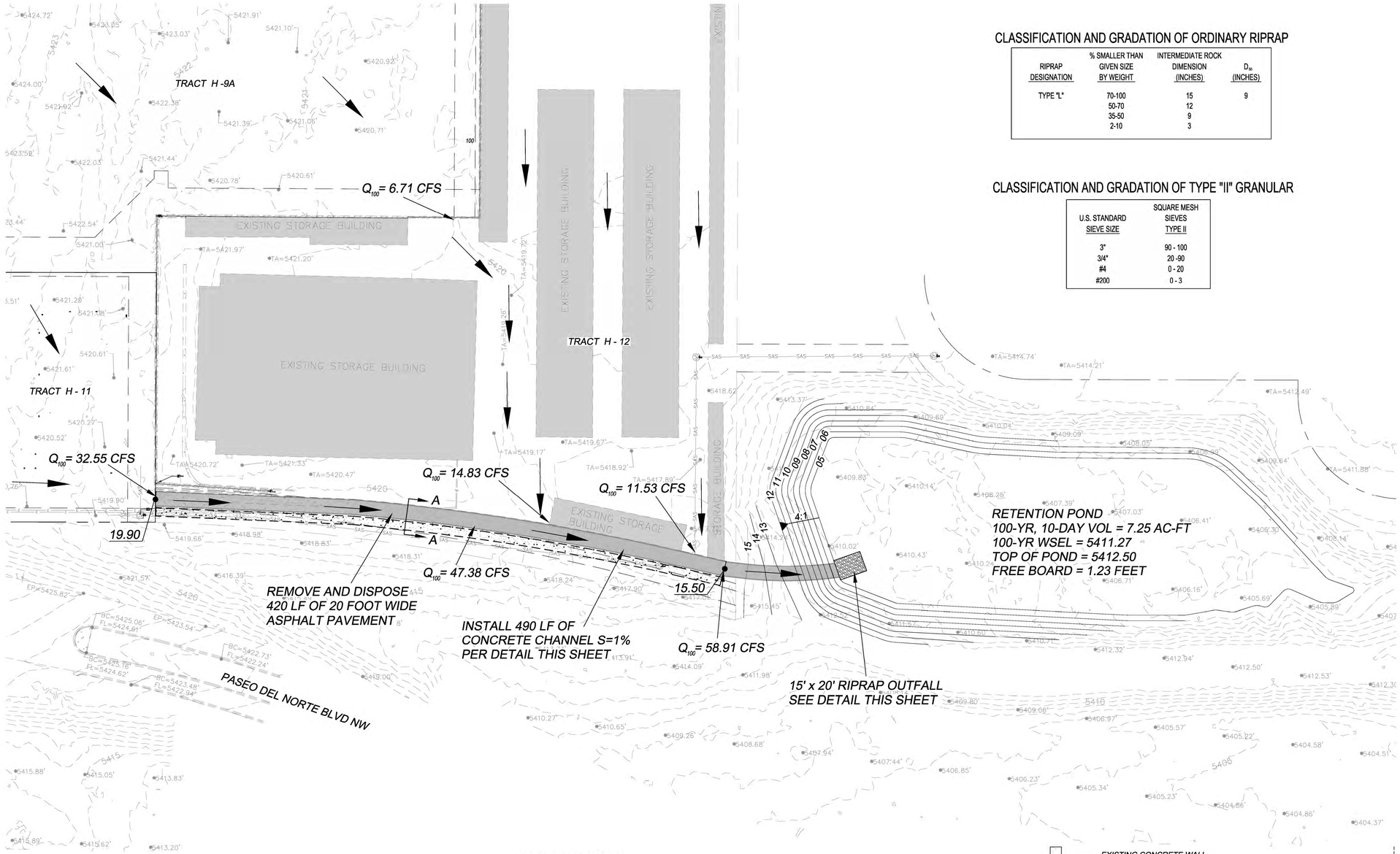
CITY/COUNTY REVIEW

	SIGN-OFF	DATE
WASTEWATER MGMT. DIV.		
WATER SERVICES		
SUBDIVISION ENG.		
STREETS		
TRAFFIC		

FOR CITY/COUNTY USE ONLY

SHEET No.

EXHIBT 1

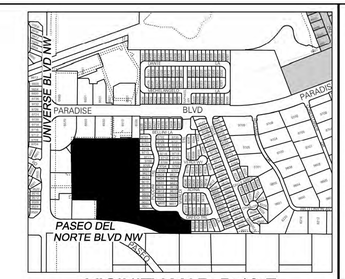


CLASSIFICATION AND GRADATION OF ORDINARY RIPRAP

RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D_{50} (INCHES)
TYPE "L"	70-100	15	9
	50-70	12	
	35-50	9	
	2-10	3	

CLASSIFICATION AND GRADATION OF TYPE "II" GRANULAR

U.S. STANDARD SIEVE SIZE	SQUARE MESH SIEVES TYPE II
3"	90 - 100
3/4"	20 -90
#4	0 - 20
#200	0 - 3



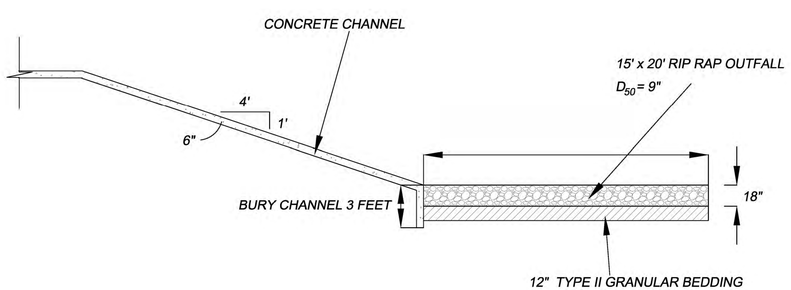
VICINITY MAP B-10-Z

LEGEND

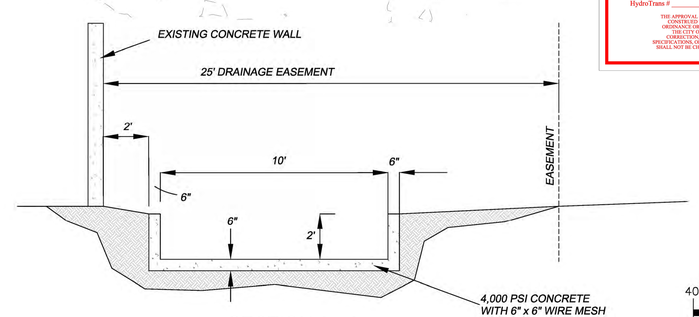
- 19.90 — PROPOSED SPOT ELEVATION
- —10— PROPOSED CONTOUR AND LABEL
- INSTALL 20' WIDE CHANNEL SEE DETAIL THIS SHEET
- REMOVED AND DISPOSE 20' WIDE CHANNEL
- FLOW DIRECTION

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 01/21/21
BY: René C. Brasuelle
HydroTrans # B10D003C3

THE APPROVAL OF THESE PLANS/REPORT SHALL NOT BE CONSTRUED TO PERMIT VIOLATIONS OF ANY CITY ORDINANCE OR STATE LAW, AND SHALL NOT PREVENT THE CITY OF ALBUQUERQUE FROM REQUIRING CORRECTION, OR ERROR OR DIMENSIONS IN PLANS, SPECIFICATIONS, OR CONSTRUCTIONS. SUCH APPROVED PLANS SHALL NOT BE CHANGED, MODIFIED OR ALTERED WITHOUT AUTHORIZATION.



RIPRAP OUTFALL DETAIL
NTS



SECTION A - A
CONCRETE CHANNEL DETAIL
NTS

N

40 20 0 20 40
SCALE: 1"=40'

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P.O. BOX 65760
ALBUQUERQUE, NM 87193

NO.	REVISION	BY	DATE

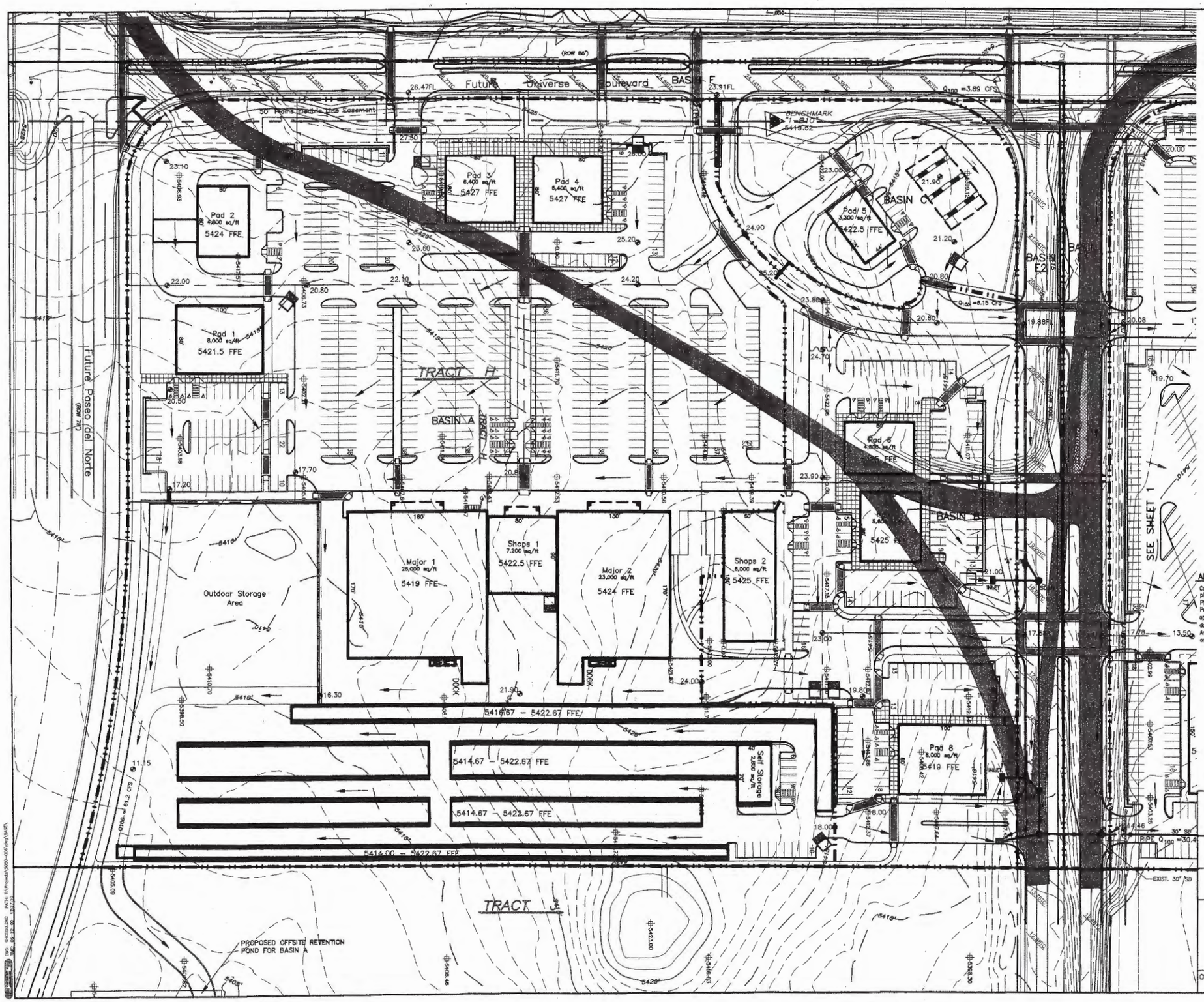
PROJECT:
DATE:
HORIZ. SCALE:
VERT. SCALE:
DRAWN BY: BLN
CHECKED BY:
APPROVED BY:
FILE:

DEPARTMENT
VENTANA SQUARE
DRAINAGE IMPROVEMENT PLAN

CITY/COUNTY REVIEW
SIGN-OFF
DATE
WASTEWATER MGMT. DIV.
WATER SERVICES
SUBDIVISION ENG.
STREETS
TRAFFIC
FOR CITY/COUNTY USE ONLY

SHEET No.
EXHIBT 2

APPENDIX A
PREVIOUS DRAINAGE REPORTS AND INFORMATION



ALTERNATE USE

Concept: If one of the approved schematic alternate use plans is selected for development in lieu of the approved site Plan for Building Permit, a complete Site Plan for Building Permit Purposes will be prepared and submitted to the DRB for review and approval. (EPC review not required unless the plan for development does not match one of the alternate schematic plans). Any use that does not conform to the approved site plan or alternate use plans will require a new submittal to EPC.

1" = 50'

Easterling & Associates, Inc.
CONSULTING ENGINEERS
2600 The American Rd., SE, Suite 100
Rio Rancho, New Mexico 87124
(505) 898-8021 FAX (505) 898-8501
E-Mail: ea_engr@swcp.com

AS BUILT INFORMATION

CONTRACTOR
STAKED BY DATE
INSPECTOR'S
CONSTRUCTION BY DATE
FIELD
CONSTRUCTION BY DATE
CORRECTED BY DATE
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY DSH DATE 2-00
DRAWN BY DEC DATE 2-00
CHECKED BY RPB DATE 2-00

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

VENTANA SQUARE AT
VENTANA RANCH, TRACTS G & H
CONCEPTUAL GRADING & DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	Mo./DAY/YR.	Mo./DAY/YR.

CITY PROJECT No.	ZONE MAP NO.	SHEET
	B-10	C2

EXCERPT FROM LAS VENTANAS SUBDIVISION DMP

The main reasons for the difference in LVDF No. 1 developed flows from the PMDMP are:

- The Las Ventanas drainage scheme maximizes the drainage area into the pond by diversions of "500" and "600" basins. This has increased the contributing basin area to over 2 square miles from the PMDMP's 1.3 square miles. This correspondingly has reduced the flows going to the Calabacillas and the Middle Branch Piedras Marcadas.

- The Las Ventanas development scenario is different from that assumed by the PMDMP.

The differences in the contributing drainage areas are pictured in Figure 5, Contributing Basins for Las Ventanas Drainage Facility No. 1.

The two city ponds in Basin 503W and Basin 315B are summarized in Table 3. Following Table 3 are brief descriptions of flow scenarios for the ponds.

Table 3

City Ponds

Name	Drainage Area (sq mi)	Flowrate (cfs) In	Flowrate (cfs) Out	Storage (ac-ft)	Total Depth (ft)
503W Pond	.034	73	13	1.7	3.5
315B Pond	.047	107	0	4.5	7

Yr Hes → 3/4 acre

The city pond in Basin 503W intercepts flows from Basin 502 entering Las Ventanas just south of the northwest corner of the subdivision. This pond reduces flows from 73 cfs to 13 cfs.

LVDMP

The city pond proposed for Basin 315B is a temporary retention pond because there is no existing storm drain into which these flows can be discharged. As long as it is a temporary retention pond, maintenance will be the responsibility of the property owner. The pond may be reconstructed into detention or eliminated when downstream improvements or capacity become available. As a detention pond, flows are reduced from 107 cfs to 39 cfs, which approximates the existing condition flowrates.

6.5 Synopsis of Developed Flow

The following is a synopsis of the flow patterns for Las Ventanas:

- West Branch Calabacillas Diversion System: Basins 502, 503W, 503M, 504E, and 316NW are routed to LVDF No. 1 via the West Branch Calabacillas Diversion Channel, 316NE is added to these flows, and the sum is discharged into LVDF No. 1 from the northwest.

- North Branch Piedras Marcadas System: Basins 501, 504W, 319A, 319B, 318A, 318B, 317A, and 316SW are routed via Tributary A, Tributary B, and the North Branch Piedras Marcadas Channel. Basins 601, 602, and 317A are routed as street flows to the North Branch Piedras Marcadas Channel and summed. The combined flows are summed with 316SE and discharged from the channel into LVDF No. 1 from the west.

- Basin 320 discharges to LVDF No. 2 in the east of Basin 320. Facility No. 2's discharges are added to the same pipe that outfalls from LVDF No. 1. Basin 505 is also added to this pipe as it exits Las Ventanas at the northeast corner of the property. The sum of the flows are conveyed to the West Branch of the Calabacillas.

LVDMP

- Basins 503E, 314BS, and 315B discharge in directions away from the routes to Facilities No. 1 and 2. 503E and 314BS exit Las Ventanas without attenuation although the total discharge from these two basins is less than the existing, undeveloped discharge from these areas. 315B in the southeast corner of Las Ventanas is proposed to have a temporary retention pond until downstream facilities are constructed east of Las Ventanas.

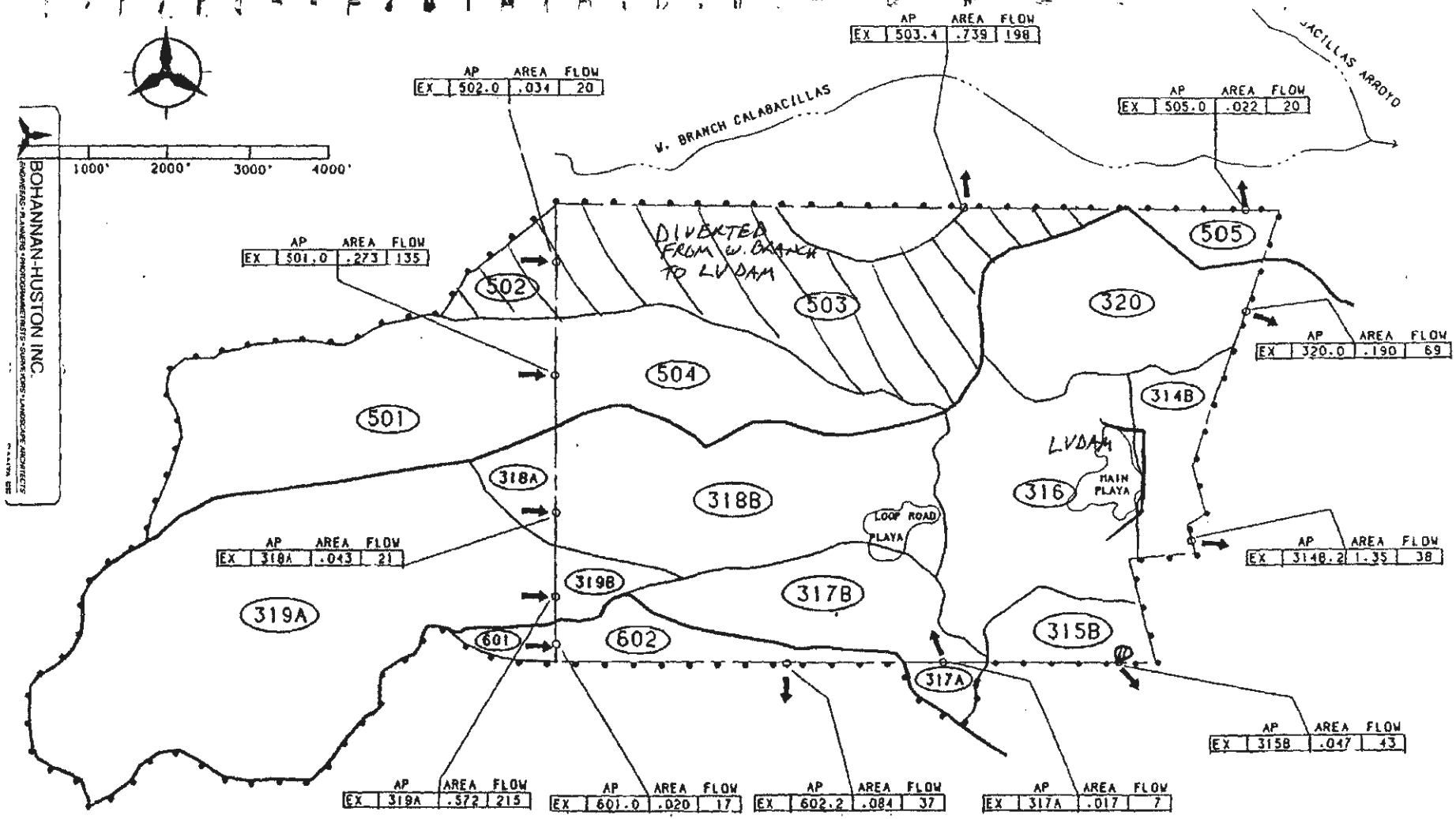
7.0 RECOMMENDATIONS AND PHASING OF PROPOSED DRAINAGE PLAN

7.1 Introduction

This Drainage Master Plan updates an upstream portion of the PMDMP that was requested by AMAFCA in 1993 and implements many of the conceptual improvements proposed in the PMDMP. It provides a plan for accommodating the off-site and on-site drainage flows in a series of channels, storm drains, and detention ponds.

By implementing components of the PMDMP and diverting additional basins to LVDF No. 1, drainage is effectively concentrated within Las Ventanas. The proposed drainage system lessens the peak flows that would impact the Calabacillas Arroyo and the Middle Branch of the Piedras Marcadas Arroyo.

A large portion of land will be required to provide locations for drainage structures that will accommodate increased flows due to full development. It is anticipated that the largest detention and outfall facilities will be located on the east edge of Las Ventanas. This area is approximately 80 acres and borders almost the entire length of the east boundary of the project.



ANALYSIS PT. I.D. — CONTRIBUTING DRAINAGE AREA (SQ. MILE) — PEAK FLOW (cfs)

EXISTING CONDITION → EX | 501.0 | .273 | 179

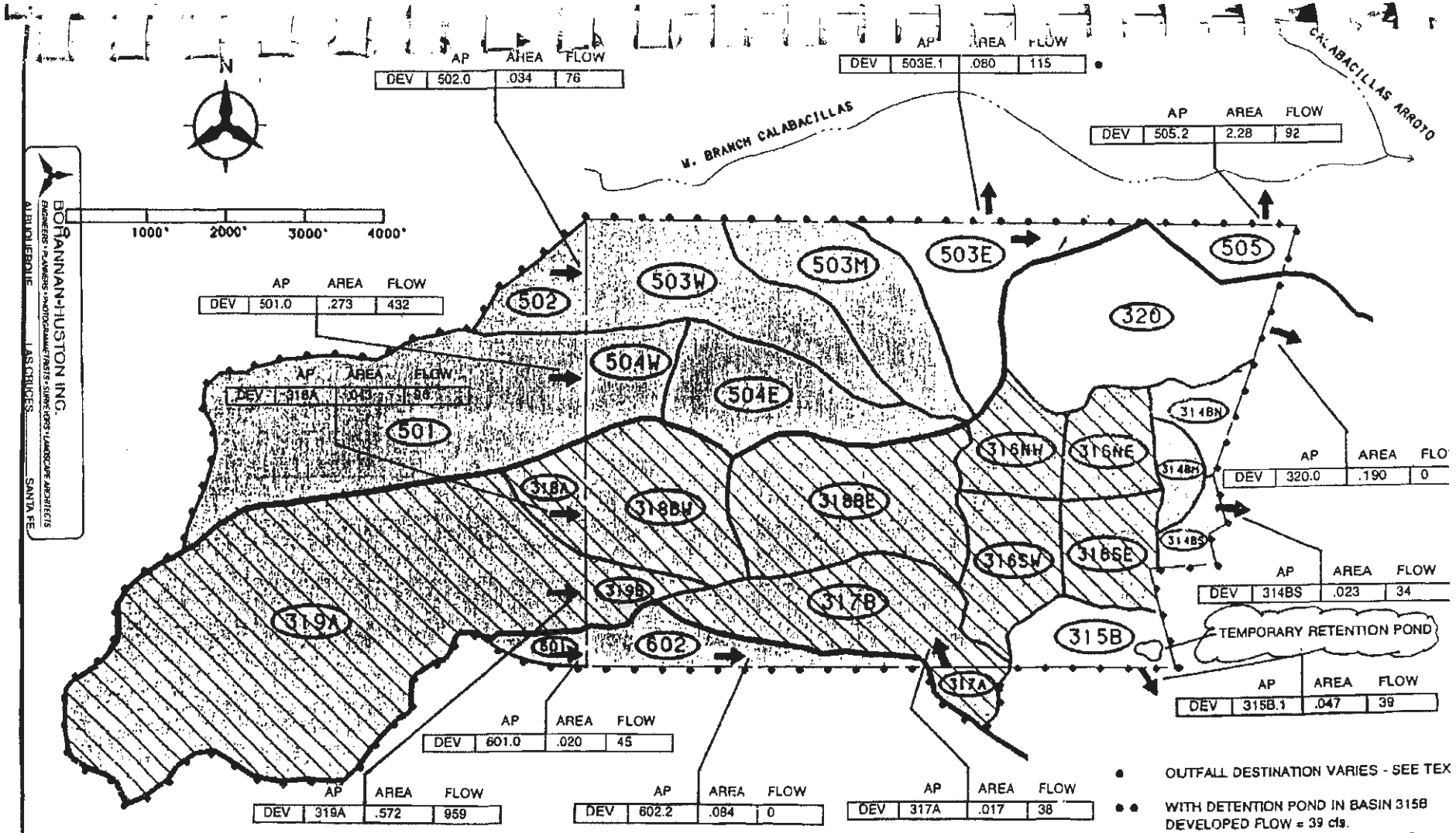
→ EXISTING FLOW DIRECTION

EXISTING FLOWS IN LAS VENTANAS
FIGURE 4

LAS VENTANAS
DRAINAGE MASTER PLAN

APR. 1995 JOB NO. 94118.20

01 250

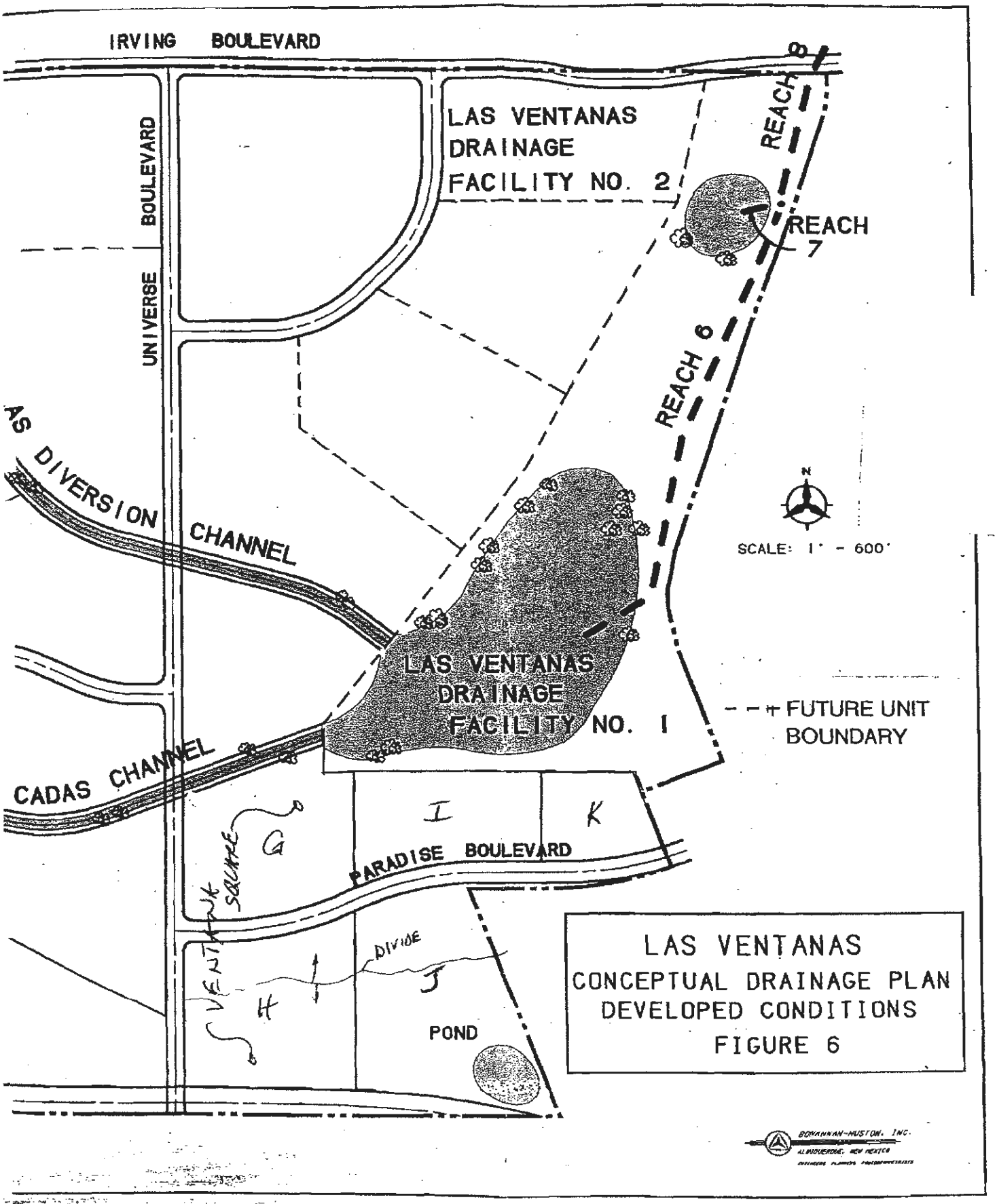


CONTRIBUTING BASINS
FOR LAS VENTANAS DRAINAGE &
RECREATION FACILITY NO. 1
DEVELOPED CONDITIONS

FIGURE 5

LAS VENTANAS
DRAINAGE MASTER PLAN
APR. 1995

JOB NO. 94118.20


IRVING BOULEVARD
UNIVERSE BOULEVARD
LAS VENTANAS DRAINAGE FACILITY NO. 2
REACH 8
REACH 7
REACH 6
AS DIVERSION CHANNEL
CADAS CHANNEL
LAS VENTANAS DRAINAGE FACILITY NO. 1
FUTURE UNIT BOUNDARY
N
SCALE: 1" = 600'
G
I
K
PARADISE BOULEVARD
DIVIDE
H
J
POND
LAS VENTANAS
CONCEPTUAL DRAINAGE PLAN
DEVELOPED CONDITIONS
FIGURE 6
BOHANNAN-HUSTON, INC.
ALBUQUERQUE, NEW MEXICO

700381 7/28/14.

DRAINAGE COVENANT
Vittoria Subdivision – Ventana Ranch
Temporary Retention Pond

2/6/03

This Drainage Covenant, between Ventana Ranch Community Association ("Owner"), whose address is 10 Tramway Loop, NE, Albuquerque, New Mexico 87122, and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is PO Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County New Mexico and is entered into as of the date Owner signs this Covenant.

1. Recital. Owner is the owner of certain real property described as Tract B of Vittoria Subdivision at Ventana Ranch (a replat of Tract J, Ventana Ranch) filed in the office of the Bernalillo County Clerk on January 29, 2003 in Book 2003C, Page 21(the "Plat").

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain Drainage Facilities on the Property, and the parties wish to enter into this Agreement to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standard plans and specifications approved by the City pursuant to Drainage File No. B-10/03F. VITTORIA SUBDIVISION Temporary Retention Pond, Ventana Ranch, City Project #700381.

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at Owner's cost in accordance with the approved Drainage Reports and plans until the permanent Drainage Facility connection is constructed with Paseo Del Norte, at which time this Agreement may be released pursuant to Paragraph 9 and the Owner shall leave Tract B as Open Space or develop as a Park pursuant to Note 7 on the Vittoria Plat.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection, maintenance or repair of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility within 30 days ("Deadline") of receipt of the Notice, as provided in Section 10, and the Owner will comply promptly with the requirements of the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

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Mary Herrera Bern. Co. COV R 21.00

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City may assess the Owner for the cost of the work and for any other expenses or damages which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Owner for any damages resulting from the City's repair or maintenance following notice to the Owner as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

8. Indemnification. Owner agrees to indemnify and save the City, its officials, agents and employees harmless from all claims, actions, suits and proceedings arising out of or resulting from the Owner's negligent maintenance, construction, repair or use of the Drainage Facility. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instruction is the primary cause of bodily injury to persons or damage to property.

9. Cancellation of Agreement and Release of Covenant. This Agreement may be released if the Drainage Facility is no longer required for the protection of the public health, safety and welfare by the City filing "Notice of Release" with the Bernalillo County Clerk. The Notice of Release must be signed by the City's Chief Administrative Officer, or his designee, and the approval of the City Hydrologist must be endorsed thereon.

10. Notice. For purposes of given form written notice to the Owner, Owner's address is:

Ventana Ranch Community Association
10 Tramway Loop, NE
Albuquerque, NM 87122

Notice may be given to the Owner either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within three days after the notice is mailed if there is not actual evidence of receipt. The Owner may change Owner's address by giving written notice of the change by Certified Mail, return receipt requested, to the City Public Works Department, PO Box 1293, Albuquerque, New Mexico, 87103.

11. Term. This Agreement shall continue until terminated by the City pursuant to Section 9 above.

12. Binding on Owner's Property. The covenants and obligations of the Owner said forth herein shall be binding on Owner, its heirs, personal representatives, assigns and successors and on owner's Property and shall constitute covenants running with the Owner's Property until released by the City.

13. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understanding, oral or written, whether previous to the execution hereof or contemporaneous herewith regarding this subject matter.

14. Changes to Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

15. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

16. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning of construction of any of its provisions.

CITY OF ALBUQUERQUE:

By: _____
Jay Czar
Chief Administrative Officer

Dated: 2-6-03

OWNER: VENTANA RANCH COMMUNITY ASSOCIATION

By: _____
Robert M. Murphy, President
Ventana Ranch Community Association

Dated: _____

APPROVED:

_____ 2/6/03
Director, Public Works Department

REVIEWED BY:

_____ 2/6/03
City Engineer

1-31-03

KJC. 2/5/03

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CITY'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on February 6, 2003 by Fred J. Aguirre for by Jay Czar, Chief Administrative Officer for the City of Albuquerque, a New Mexico municipal corporation, on behalf of the corporation.

My commission expires: 11-15-2003

Gloria D. Saavedra
Notary Public

OWNER'S ACKNOWLEDGEMENT

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on January 20, 2003 by Robert M. Murphy, President, Ventana Ranch Community Association, a New Mexico non-profit corporation.

My commission expires:

OFFICIAL SEAL
LISA K. KILBRETH
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 10-11-04

Lisa K. Kilbreth
Notary Public

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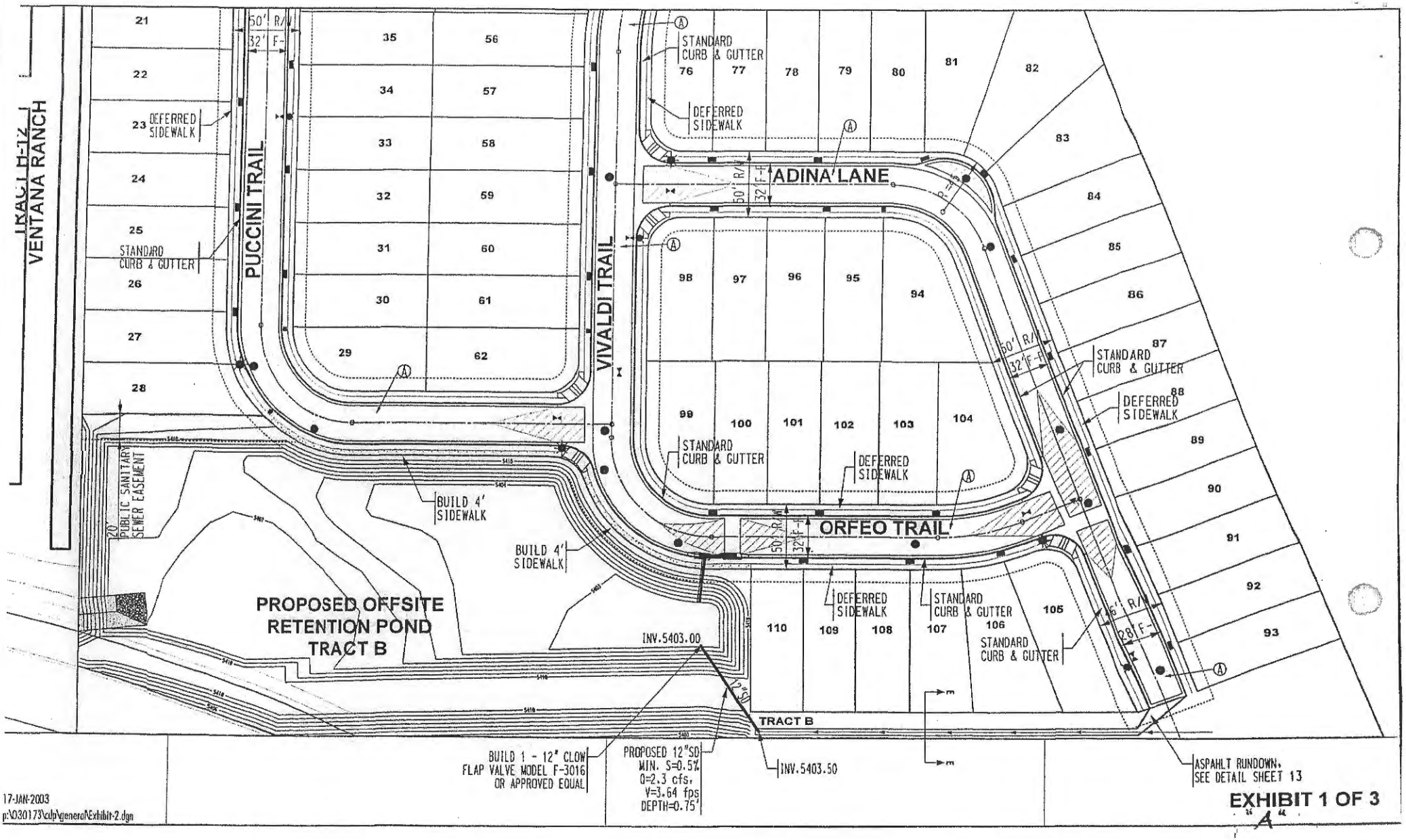

EXHIBIT 1 OF 3

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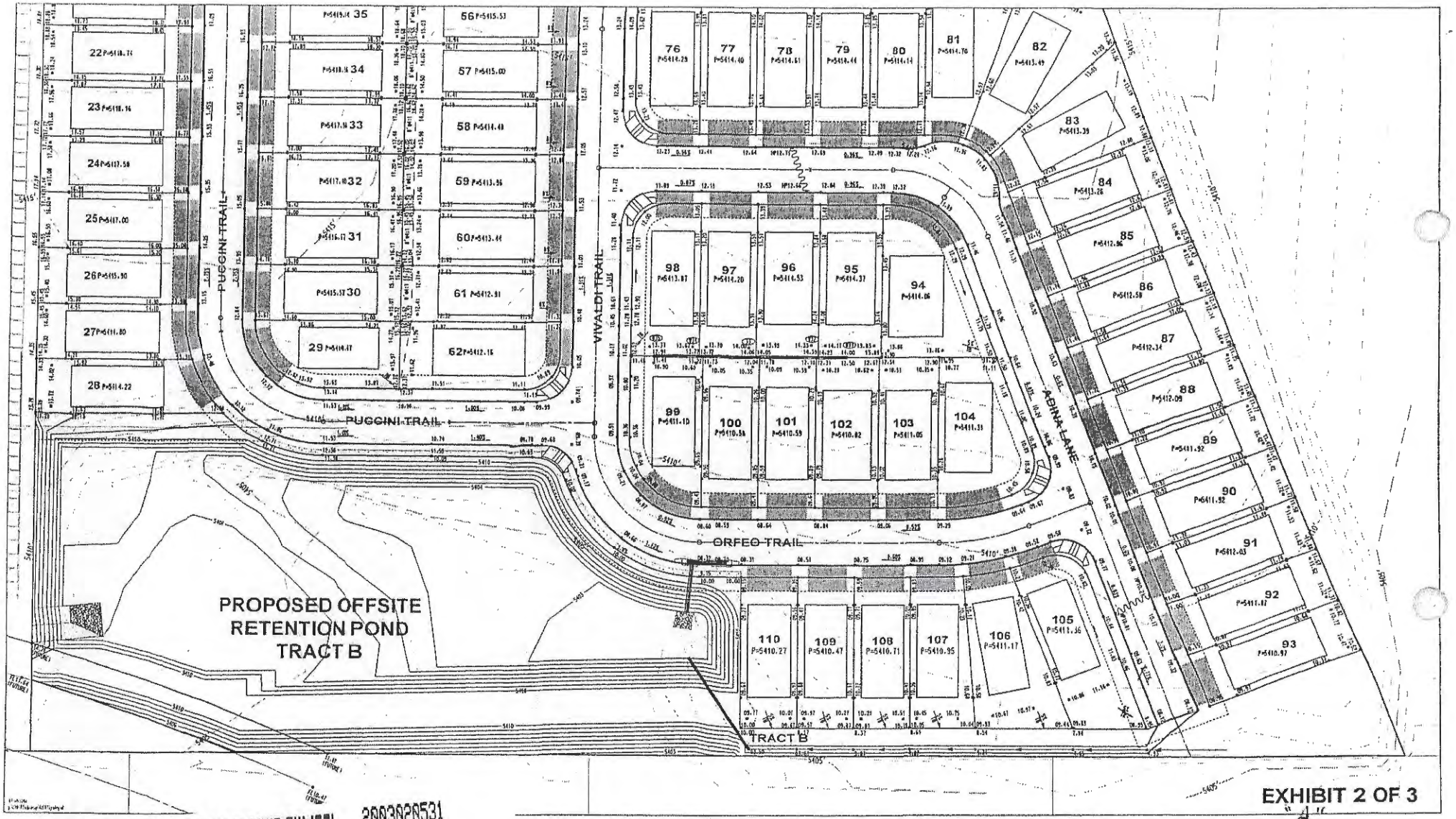

EXHIBIT 2 OF 3

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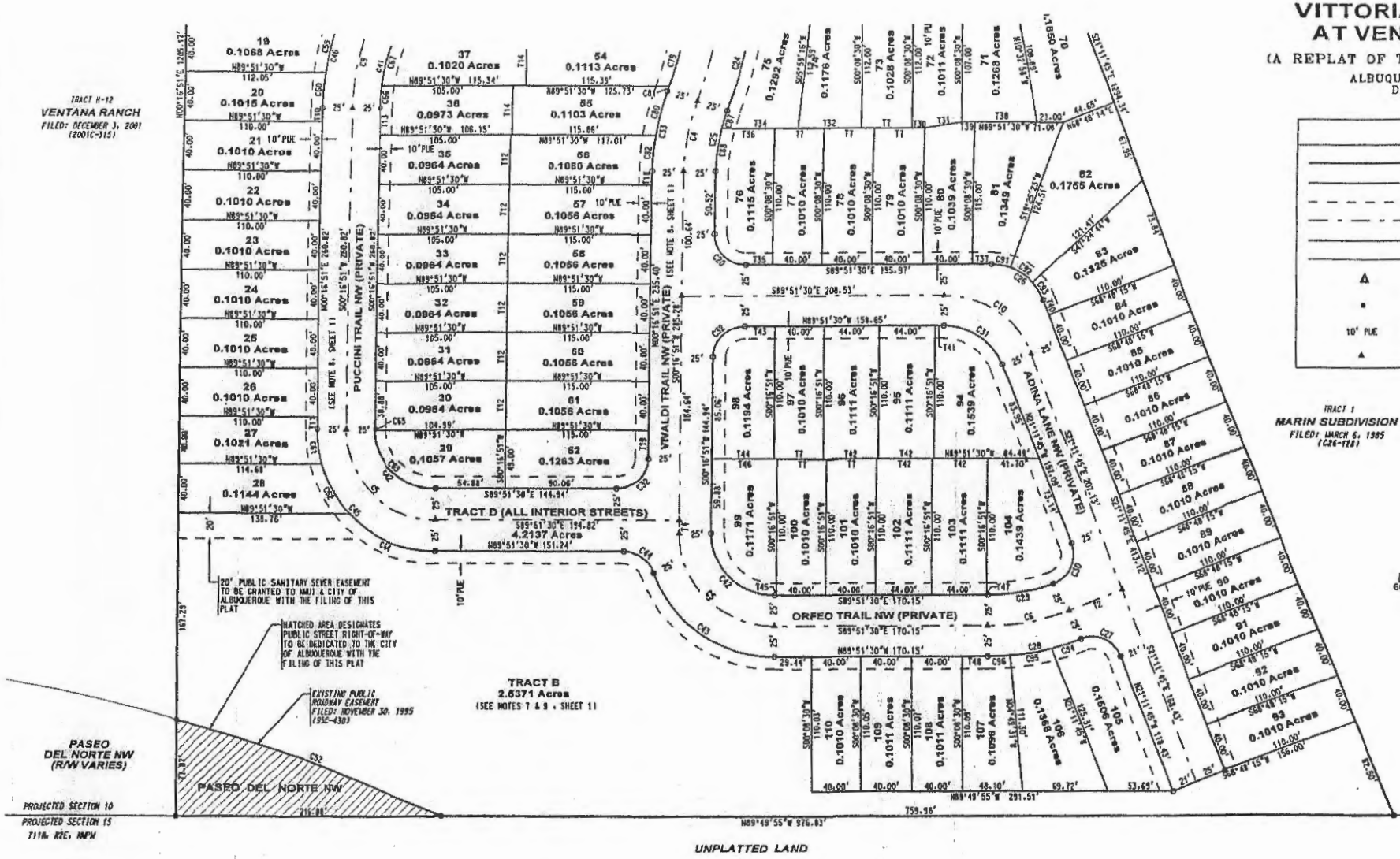
Bern. Co. COV
ary Herrera

PLAT OF

VITTORIA SUBDIVISION AT VENTANA RANCH

(A REPLAT OF TRACT J, VENTANA RANCH)

ALBUQUERQUE, NEW MEXICO
DECEMBER, 2002



LEGEND

———	BOUNDARY LINE
———	LOT/TRACT LINE
- - - -	EASEMENT LINE
— · —	CENTERLINE
———	RIGHT-OF-WAY LINE
———	ADJOINING PROPERTY LINE
△	CITY OF ALBUQUERQUE CONTROL MONUMENT
•	⅝" REBAR WITH 1¼" YELLOW PLASTIC SURVEY CAP STAMPED "WEAVER LS 6544"
10' PUE	10' PUBLIC UTILITY EASEMENT TO BE GRANTED WITH THE FILING OF THIS PLAT
▲	CENTERLINE MONUMENT TO BE INSTALLED

N

60 30 0 60

SCALE: 1" = 60'

SHEET 2

SHEET 3

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Page: 7 of 7
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Mary Herrera Bern. Co. COV R 21.00

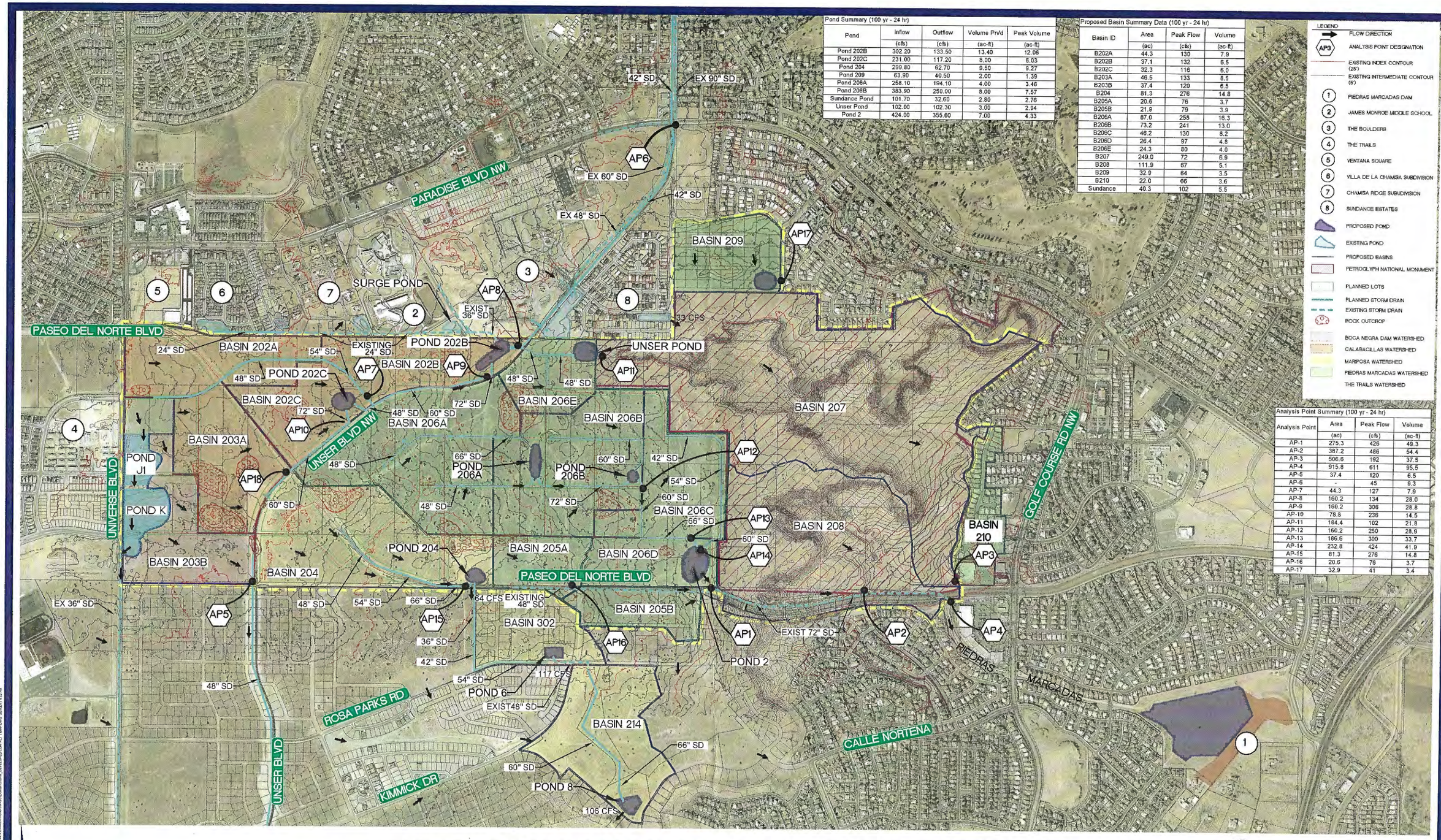
EXHIBIT 3 OF 3
"A"

SHEET 3 OF 4

Bohannan ▲ Huston

Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES



Pond Summary (100 yr - 24 hr)				
Pond	Inflow	Outflow	Volume Prv'd	Peak Volume
	(cfs)	(cfs)	(ac-ft)	(ac-ft)
Pond 202B	302.20	133.50	13.40	12.06
Pond 202C	231.00	117.20	8.00	6.03
Pond 204	299.80	62.70	9.50	9.27
Pond 209	63.90	40.50	2.00	1.39
Pond 206A	258.10	194.10	4.00	3.46
Pond 206B	383.90	250.00	8.00	7.57
Sundance Pond	101.70	32.60	2.80	2.76
Unser Pond	102.00	102.30	3.00	2.94
Pond 2	424.00	355.60	7.00	4.33

Proposed Basin Summary Data (100 yr - 24 hr)			
Basin ID	Area	Peak Flow	Volume
	(ac)	(cfs)	(ac-ft)
B202A	44.3	130	7.9
B202B	37.1	132	6.5
B202C	32.3	116	6.0
B203A	46.5	133	8.5
B203B	37.4	120	6.5
B204	81.3	276	14.8
B205A	20.6	76	3.7
B205B	21.9	79	3.9
B206A	87.0	255	16.3
B206B	73.2	241	13.0
B206C	46.2	130	8.2
B206D	26.4	97	4.8
B206E	24.3	80	4.0
B207	249.0	72	6.9
B208	111.9	67	5.1
B209	32.9	64	3.5
B210	22.0	66	3.6
Sundance	40.3	102	5.5

LEGEND

- FLOW DIRECTION
- AP3 ANALYSIS POINT DESIGNATION
- EXISTING INDEX CONTOUR (25')
- EXISTING INTERMEDIATE CONTOUR (5')
- 1 PIEDRAS MARCADAS DAM
- 2 JAMES MONROE MIDDLE SCHOOL
- 3 THE BOULDERS
- 4 THE TRAILS
- 5 VENTANA SQUARE
- 6 VILLA DE LA CHAMISA SUBDIVISION
- 7 CHAMISA RIDGE SUBDIVISION
- 8 SUNDANCE ESTATES
- PROPOSED POND
- EXISTING POND
- PROPOSED BASINS
- PETROGLYPH NATIONAL MONUMENT
- PLANNED LOTS
- PLANNED STORM DRAIN
- EXISTING STORM DRAIN
- ROCK OUTCROP
- BOCA NEGRA DAM WATERSHED
- CALABACILLAS WATERSHED
- MARIPOSA WATERSHED
- PIEDRAS MARCADAS WATERSHED
- THE TRAILS WATERSHED

Analysis Point Summary (100 yr - 24 hr)			
Analysis Point	Area	Peak Flow	Volume
	(ac)	(cfs)	(ac-ft)
AP-1	275.3	426	49.3
AP-2	387.2	488	54.4
AP-3	506.6	192	37.5
AP-4	915.8	611	95.5
AP-5	37.4	120	6.5
AP-6	-	45	9.3
AP-7	44.3	127	7.9
AP-8	160.2	134	28.0
AP-9	160.2	306	28.8
AP-10	78.8	236	14.5
AP-11	184.4	102	21.8
AP-12	160.2	250	28.9
AP-13	186.6	300	33.7
AP-14	232.8	424	41.9
AP-15	81.3	276	14.8
AP-16	20.6	76	3.7
AP-17	32.9	41	3.4

GRAPHIC SCALE

(IN FEET)
1 inch = 600 ft.

UPPER PIEDRAS MARCADAS WATERSHED DRAINAGE AND WATER QUALITY MANAGEMENT PLAN
PLATE 1 - ALTERNATIVE 1

AMAFCA

WILSON & COMPANY
4900 LANG AVE. NE
ALBUQUERQUE, NM 87109
PHONE: 505-348-4000
www.wilsonco.com

APPENDIX B
HYDROLOGIC CALCULATIONS

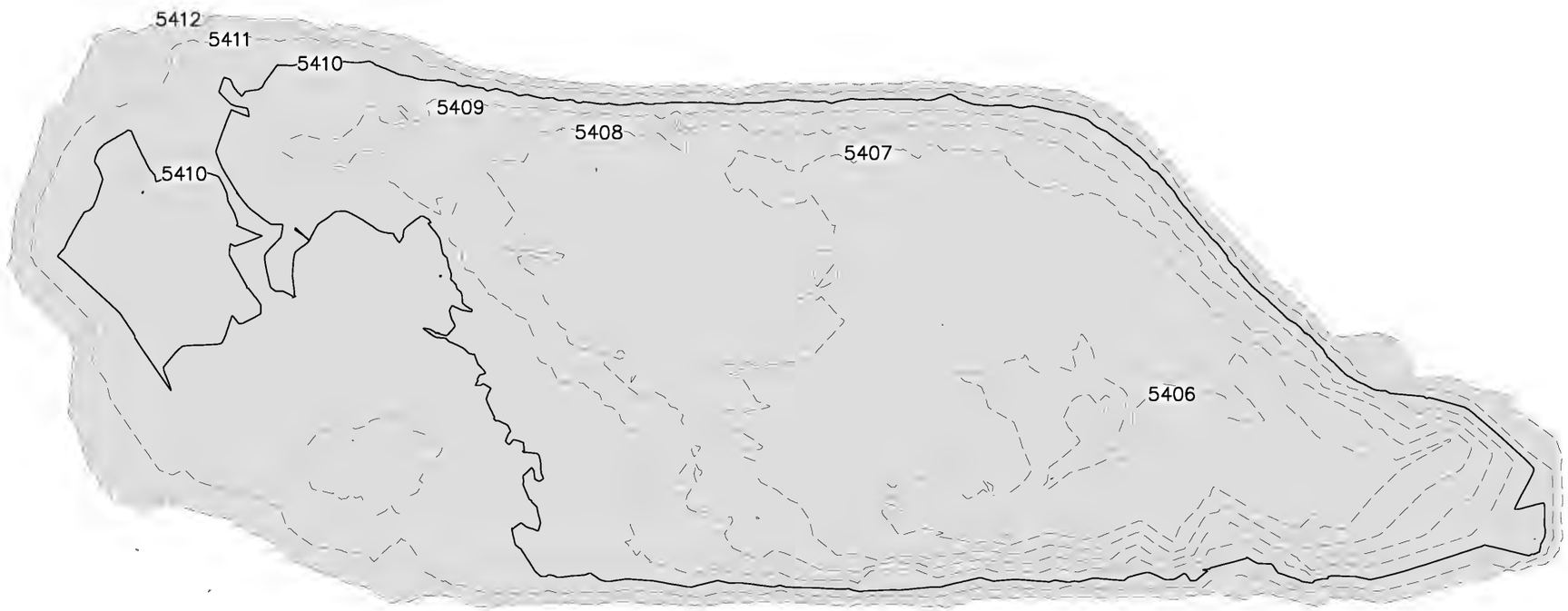
100-YEAR HYDROLOGIC CALCULATIONS

BASIN #	AREA (acre)	LAND TREATMENT A (%)	B (%)	C (%)	D (%)	WEIGHTED E (in)	100-YEAR PRECIPITATION V (6-hr) (acre-ft)	V (6-hr) (cu-ft)	V(10-day) (acre-ft)	V(10-day) (cu-ft)	Q (cfs)
EXISTING CONDITIONS											
100	2.1600	0.00	100.00	0.00	0.00	0.73	0.13	5,724	0.13	5,724	4.67
101	0.2700	0.00	0.00	0.00	100.00	2.24	0.05	2,195	0.09	3,891	1.11
200	12.0600	0.00	23.00	23.00	54.00	1.60	1.60	69,869	2.54	110,767	40.78
301	2.9200	0.00	5.00	6.00	89.00	2.09	0.51	22,122	0.88	38,443	11.53
302	1.9700	0.00	0.00	0.00	100.00	2.24	0.37	16,018	0.65	28,390	8.12
303	1.7300	0.00	0.00	100.00	0.00	0.95	0.14	5,966	0.14	5,966	4.97
400	8.3900	0.00	0.00	100.00	0.00	0.95	0.66	28,933	0.66	28,933	24.08
500	0.8100	0.00	0.00	100.00	0.00	0.95	0.06	2,793	0.06	2,793	2.32
TOTAL RUNOFF	30.31						3.53	153,622	5.16	224,906	97.57
FULL DEVELOPMENT CONDITIONS											
100	2.1600	0.00	100.00	0.00	0.00	0.73	0.13	5,724	0.13	5,724	4.67
101	0.2700	0.00	0.00	0.00	100.00	2.24	0.05	2,195	0.09	3,891	1.11
200	12.0600	0.00	23.00	23.00	54.00	1.60	1.60	69,869	2.54	110,767	40.78
301	2.9200	0.00	5.00	6.00	89.00	2.09	0.51	22,122	0.88	38,443	11.53
302	1.9700	0.00	0.00	0.00	100.00	2.24	0.37	16,018	0.65	28,390	8.12
303	1.7300	0.00	7.50	7.50	85.00	2.03	0.29	12,748	0.50	21,983	6.71
400	8.3900	0.00	7.50	7.50	85.00	2.03	1.42	61,825	2.45	106,610	32.55
500	0.8100	0.00	7.50	7.50	85.00	2.03	0.14	5,969	0.24	10,293	3.14
TOTAL RUNOFF	30.31						4.51	196,472	7.49	326,099	108.60
EXCESS PRECIP.		0.55	0.73	0.95	2.24	E_i (in)					
PEAK DISCHARGE		1.54	2.16	2.87	4.12	Q_{Pi} (cfs)					

ZONE = 1
$P_{6\text{-}HR}$ (in.) = 2.17
$P_{24\text{-}HR}$ (in.) = 2.49
P_{10DAY} (in.) = 3.90

WEIGHTED E (in) = $(E_A)(\%A) + (E_B)(\%B) + (E_C)(\%C) + (E_D)(\%D)$
$V_{6\text{-}HR}$ (acre-ft) = (WEIGHTED E)(AREA)/12
V_{10DAY} (acre-ft) = $V_{6\text{-}HR} + (A_D)(P_{10DAY} - P_{6\text{-}HR})/12$
Q (cfs) = $(Q_{PA})(A_A) + (Q_{PB})(A_B) + (Q_{PC})(A_C) + (Q_{PD})(A_D)$

APPENDIX C
HYDRAULIC CALCULATIONS



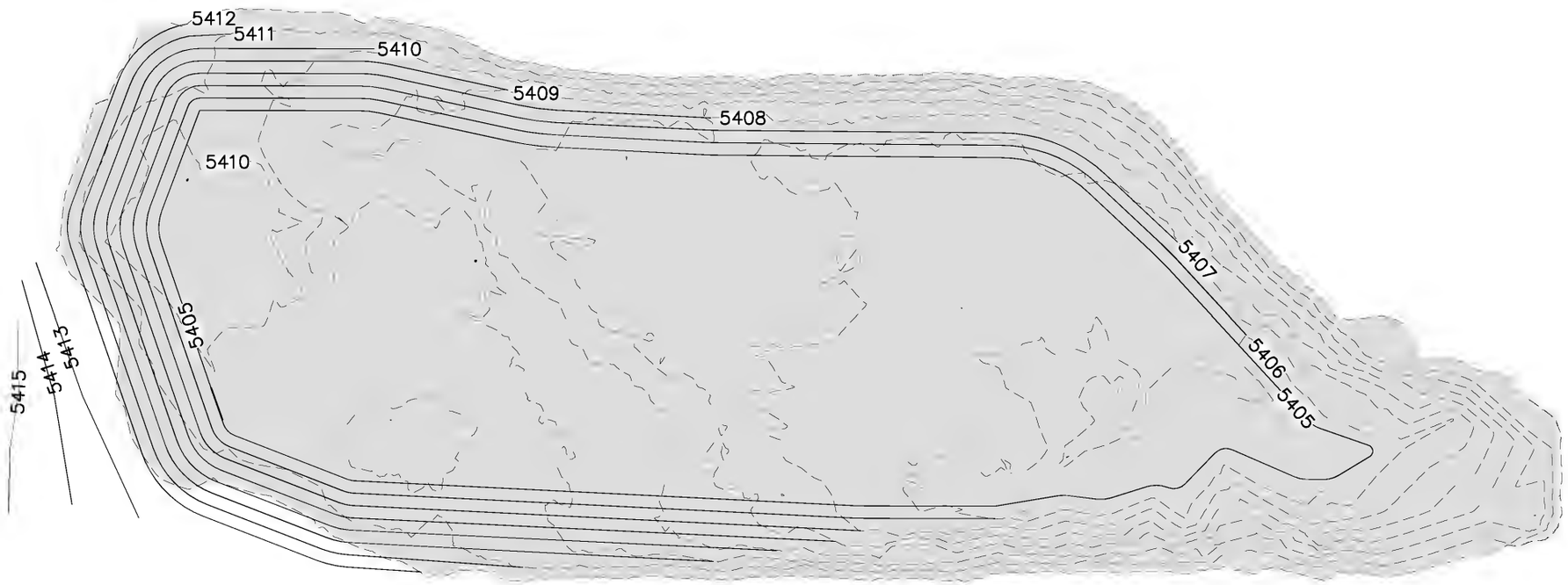
VENTANA SQUARE POND AREAS

5412	66198.11
5411	59962.30
5410	43163.87 + 2623.96
5409	34983.50
5408	28689.97
5407	18168.64
5406	4889.56

VENTANA SQUARE DMP POND VOLUMES
DECEMBER 13, 2020

VITTORIA SUBDIVISION EXISTING RETENTION POND

ELEVATION	AREA (SF)	INC. VOLUME (CF)	CUM. VOLUME (CF)	CUM. VOLUME (AC-FT)
5406	4890	0	0	0.0000
5407	18169	11530	11530	0.2647
5408	28690	23430	34959	0.8025
5409	34984	31837	66796	1.5334
5410	45788	40386	107182	2.4606
5411	59962	52875	160057	3.6744
5412	66198	63080	223137	5.1225



VENTANA SQUARE PROPOSED POND AREAS

5412	66,814
5411	62,452
5410	58,418
5409	54,140
5408	49.812
5407	45,320
5406	40,840
5405	36,738

VENTANA SQUARE DMP POND VOLUMES
DECEMBER 18, 2020

VITTORIA SUBDIVISION EXCAVATED RETENTION POND

ELEVATION	AREA (SF)	INC. VOLUME (CF)	CUM. VOLUME (CF)	CUM. VOLUME (AC-FT)
5405	36738	0	0	0.0000
5406	40840	38789	38789	0.8905
5407	45320	43080	81869	1.8795
5408	49812	47566	129435	2.9714
5409	54140	51976	181411	4.1646
5410	58418	56279	237690	5.4566
5411	62452	60435	298125	6.8440
5412	66814	64633	362758	8.3278

Manning Formula:

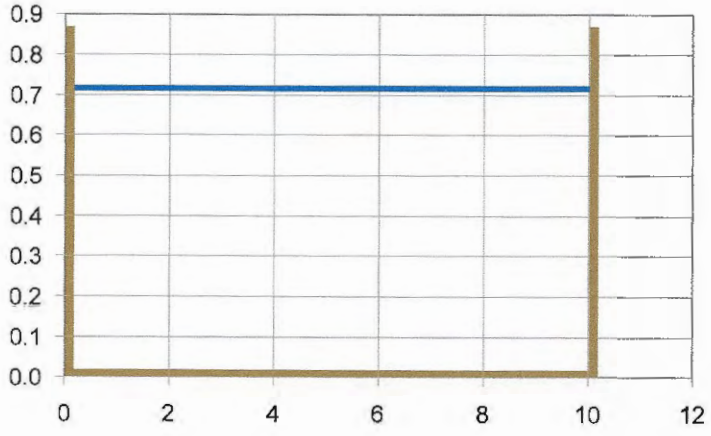
Rectangular Channel

Input

Flow	58.91 cfs
Slope	0.01 ft/ft
Manning's n	0.013
Base Width	10 ft
Right Side Slope	0:1
Left Side Slope	0:1

Output

Depth	0.708 ft
Flow Area	7.08 sf
Velocity	8.32 fps
Velocity Head	1.07 ft
Top Width	10.00 ft
Froude Number	1.74
Critical Depth	1.026 ft
Critical Slope	0.00313 ft/ft



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Manning Formula:

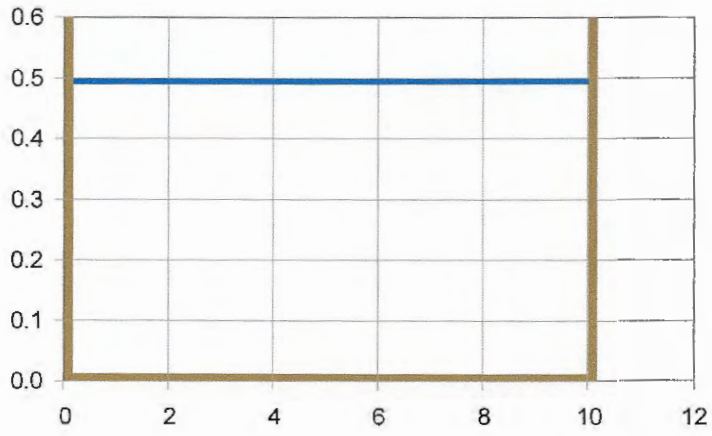
Rectangular Channel

Input

Flow	32.55 cfs
Slope	0.01 ft/ft
Manning's n	0.013
Base Width	10 ft
Right Side Slope	0:1
Left Side Slope	0:1

Output

Depth	0.489 ft
Flow Area	4.89 sf
Velocity	6.66 fps
Velocity Head	0.690 ft
Top Width	10.00 ft
Froude Number	1.68
Critical Depth	0.691 ft
Critical Slope	0.00331 ft/ft



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Manning Formula:

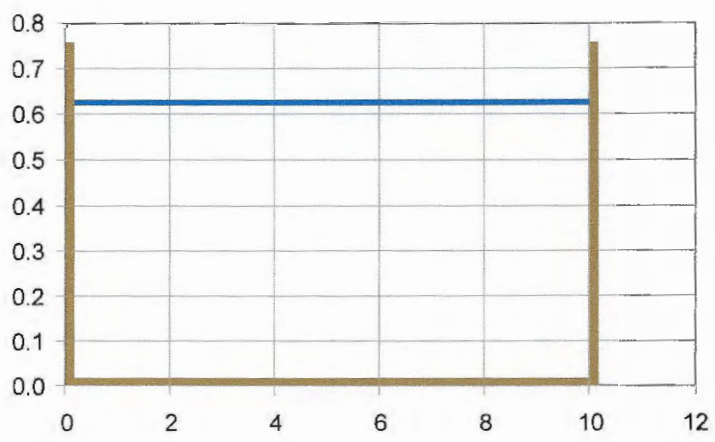
Rectangular Channel

Input

Flow	47.38 cfs
Slope	0.01 ft/ft
Manning's n	0.013
Base Width	10 ft
Right Side Slope	0:1
Left Side Slope	0:1

Output

Depth	0.618 ft
Flow Area	6.18 sf
Velocity	7.67 fps
Velocity Head	0.914 ft
Top Width	10.00 ft
Froude Number	1.72
Critical Depth	0.887 ft
Critical Slope	0.00319 ft/ft



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