M-81D005B Timarron West Unit 5

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

June 28, 2000,

Rick Beltramo, PE
Bohannan Huston, Inc
7500 Jefferson NE
Albuquerque, NM 87109

Re: Timarron West Unit 5 Drainage Study
Engineer's Stamp dated 6-27-00, (M8/D05B)

Dear Mr. Beltramo,

Based upon the information provided in your submittal dated 6-28-00, the above referenced Drainage Study is approved for Site Plan for Subdivision, Site Plan for Building Permit and Preliminary Plat action by the DRB.

This plan is also approved for Grading Permit release. As you are aware, a topsoil disturbance permit must be obtained prior to any grading on this site.

Prior to Final Plat sign-off, the Subdivision Improvements Agreement must be recorded. Please be advised that the Grading and Drainage Certification is required prior to release of the SIA for this project.

If you have any questions about my comments, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Hydrology Review Engineer

C: file

DRAINAGE STUDY FOR THE TIMARRON WEST SUBDIVISION UNIT 5

BOHANNAN HUSTON
Courtyard One
7500 JEFFERSON NE
Albuquerque
NEW MEXICO 87109
voice 505.823.1000
fax 505.821.0892

MAY 25, 2000

PREPARED FOR:

CENTEX HOMES
BUILDING B
6700 JEFFERSON NE
ALBUQUERQUE, NEW MEXICO 87109

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

June 21, 2000,

Rick Beltramo, PE
Bohannan Huston, Inc
7500 Jefferson NE
Albuquerque, NM 87109

Re: Timarron West Unit 5 Drainage Study
Engineer's Stamp dated 5-25-00, (M8/D05B)

Dear Mr. Beltramo,

Based upon the information provided in your submittal dated 5-26-00, the above referenced Drainage Study cannot be approved until the following minor comments are addressed:

- Please provide a detail on the backyard ponds needed for the lots on the west side of Whimbrel Ct.
- Please provide a detail to describe what the curb opening in El Moro Lane looks like.
- Please label Osprey Lane on sheet 1. Also, please label all ponds and provide water surface elevations for them.

If you have any questions about my comments, you can contact me at 924-3986.

Sincerely,

Brad Bingham

Bradley L. Bingham, PE
Hydrology Review Engineer

C: file

DRAINAGE INFORMATION SHEET

PROJECT TITLE: TIMARRON WEST UNIT 5 ZONE ATLAS/DRNG. FILE # L8/M8 / D005B

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: TRACT 2, LANDS OF GREVEY/LIBERMAN and LUTHERAN CHURCH PROPERTY

CITY ADDRESS: DE VARGAS ROAD

ENGINEERING FIRM: BOHANNAN HUSTON, INC. CONTACT: RICK BELTRAMO

ADDRESS: 7500 JEFFERSON NE, ALB. NM 87109 PHONE: (505) 823-1000

OWNER: CENTEX REAL ESTATE CORP. CONTACT: NORM GREGORY

ADDRESS: 6700 JEFFERSON NE-BLDG B, ABQ 87109 PHONE: (505) 761-9606

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- _____ DRAINAGE PLAN
- _____ FINAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- _____ EROSION CONTROL PLAN
- _____ ENGINEERS CERTIFICATION
- _____ OTHER

PRE-DESIGN MEETING:

- _____ YES
- X NO
- _____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- _____ SKETCH PLAT APPROVAL
- X PRELIMINARY PLAT APPROVAL
- X S. DEV. PLAN FOR SUBD. APPROVAL
- X S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- _____ SECTOR PLAN APPROVAL
- _____ FINAL PLAT APPROVAL
- _____ FOUNDATION PERMIT APPROVAL
- _____ BUILDING PERMIT APPROVAL
- _____ CERTIFICATE OF OCCUPANCY APPROVAL
- _____ GRADING PERMIT APPROVAL
- _____ PAVING PERMIT APPROVAL
- _____ S.A.D. DRAINAGE REPORT
- _____ DRAINAGE REQUIREMENTS
- _____ OTHER (SPECIFY)

RECEIVED
MAY 26 2000
HYDROLOGY SECTION

DATE SUBMITTED: 5-25-00

BY: ELIZABETH SMITH, E.I.

Elizabeth Smith

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DRAINAGE STUDY
FOR THE
TIMARRON WEST SUBDIVISION
UNIT 5

MAY 25, 2000

PREPARED BY:

BOHANNAN HUSTON, INC.
COURTYARD I
7500 JEFFERSON STREET N.E.
ALBUQUERQUE, NM 87109

PREPARED FOR:

CENTEX HOMES
BUILDING B
6700 JEFFERSON NE
ALBUQUERQUE, NM 87109

RICHARD LYNN BELTRAMO
NEW MEXICO
10596
REGISTERED PROFESSIONAL ENGINEER

PREPARED BY:

Rick Beltramo, P.E. Date 5/25/00

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I. INTRODUCTION

This Drainage Study will address the developed storm runoff and the necessary facilities to adequately convey the flow from the properties legally described as Tract 2, Lands of Grevey/Liberman and the Lutheran Church Property. This tract contains 63.0 acres are will be developed as Timarron West Units 4 and 5. Unit 5 is planned to contain 149 single-family homes on 26.3 acres.

Timarron West is located west of the Snow Vista Channel and north of DeVargas Road. Unit 5 is bounded to the north by Timarron West Unit 4 and to the east by Atrisco Village. The land to the west is undeveloped land called Tract 3, Lands of Grevey/Liberman. See vicinity map on the preliminary plat for location.

This study is necessary in order to obtain preliminary plat approval for the Timarron West Subdivision Unit 5. Prior to final plat and building permit approvals of this project, final grading plans and work order construction plans must be approved by the City of Albuquerque (CoA) and AMAFCA.

II. METHODOLOGY

Existing and proposed site hydrological conditions were analyzed for the 100-year, 6-hour storm in accordance with the revised Section 22.2, Hydrology, of the Development Process Manual (DPM) for the City of Albuquerque, dated January 1993. Street capacities were analyzed using Manning's equation, consistent with the revised DPM Section 22.2. All data and calculations supporting this study are located in **Appendix B.** The new rational method hydrologic procedures identified within the revised DPM Section 22.2 are utilized to determine peak flow rates for design of the storm drainage improvements within the projects. The 100-year, 6-hour storm is used as the design event. The results are included in **Appendix A.**

The storm sewer system internal to the subdivision is analyzed using current DPM methods for gravity flow conditions. Inlet capacity computations, along with all hydraulic computations, are included in **Appendix B**.

III. EXISTING CONDITIONS

Timarron West will be sited on undeveloped land that slopes west to east at approximately 3.5 percent. The existing basins to the west of Unit 5 are called Basin WN and Basin WS on the **Historic Conditions Off-site Basin Map** exhibit. Basin WN currently produces 15.6 cfs. The flow from this basin currently combines with undeveloped flow in Basin SN, the northern third of Unit 5, to produce 26 cfs. These combined basins currently drain into Cavett Street, through Atrisco Village, and into De Vargas Road. There are existing inlets in De Vargas Road at Cerrillos Road to accept the flow and convey it into Timarron West Unit 2. The **Atrisco Village Basin Map** shows the basins and the existing and proposed flows. The southern portion of Timarron West Unit 5 currently enters Atrisco Village at El Moro Lane. When Atrisco Village was built, there was no drainage report and no concern for offsite flow. Currently, 75 cfs enters the subdivision through El Moro Lane. Since there is no storm drain in the area, this 75 cfs currently flows in and floods the streets in Atrisco Village. This situation will be improved with the development of Timarron West Unit 5.

IV. LAND TREATMENTS

The minimum lot dimensions are 45' x 105'. The percent impervious was determined using the following formula from Table A-5 of the DPM, Section 22.2.

percent "D" = $7 * \sqrt{((N*N) + (5*N))}$

where N = units/acre.

V. PROPOSED DEVELOPED CONDITIONS

The proposed development is a single-family, detached-unit residential subdivision with 149 lots on 26.3 acres, producing a density of 5.66 D.U. per acre. Proposed street configurations are shown on the Preliminary Plat. (See **Plate 1**). An AHYMO analysis, shown in **Appendix A,** was performed to determine the flows created by this subdivision and to model the ponds.

A detention/desiltation pond (Pond B) will be constructed on the west boundary of Unit 5 to detain and divert the offsite flow to one of two detention and desiltation ponds. Pond 'B' was designed to store

water as well as to convey it. It is 30' wide with 4:1 side slopes and a 10' bottom. The southern offsite basin and most of the southern two-thirds of Unit 5 will drain into Pond 'C' located at the south end of the subdivision. This pond will drain into El Moro Lane through a storm drain, which will daylight through a curb opening. The pond will release 2.3 cfs into El Moro Lane and store 2.4 acre-ft. The pond has one foot of freeboard and an additional 1.0 foot of retention to accommodate sedimentation. If the pond receives more than the 100-year flow, the water would exit through an emergency overflow weir and travel down Benevides Road. The freeboard and emergency overflow provide positive outfall and added protection for the Atrisco Village Subdivision. The second detention pond, Pond 'A', accommodates flow from the northern offsite basin. It has nearly one foot of freeboard and stores 0.3 acre-feet. This pond will drain 2 cfs into the existing pond west of Unit 4. The flow from these ponds combines with the flow from the northern third of Unit 5 and several basins in Unit 4. This flow will be routed through a detention/surge pond within Unit 4. This pond was designed to accept 23.3 cfs from Unit 5. The flow then travels through Units 4, 3, 2, and 1 to the Snow Vista Channel. The calculations for the storm drain, hydraulic grade line, street capacity, and pond design are in **Appendix B**.

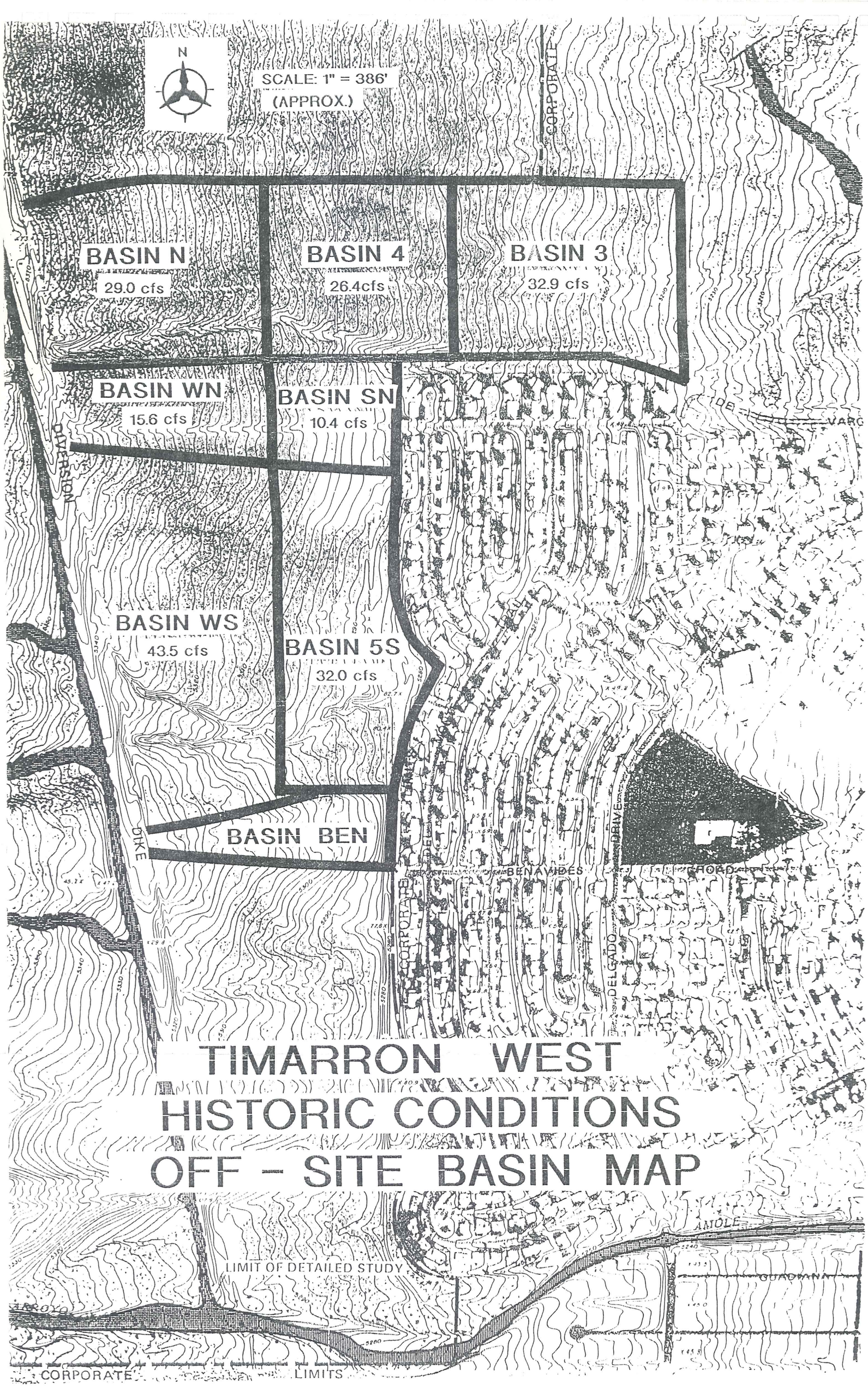
A portion of Unit 5 is too low to drain into detention pond 'C'. The flow from Basins 3 and 6 will surface flow to El Moro Lane. Even though these basins discharge freely into El Moro Lane, the flow entering Atrisco Village will decrease significantly from existing conditions. Currently, 75.7 cfs enters El Moro Lane. When Timarron West Unit 5 is built, 26.6 cfs will be released. An analysis of the streets in Atrisco Village was completed as part of this report. Atrisco Village was built in the 1950's. Apparently, no accounting for off-site storm water was made and therefore no storm drain facilities were provided. The only existing storm drain in the area was built to protect the Carlos Rey Elementary School and conveys the flow into the park/pond facility to the south. The **Atrisco Village Basin Map** shows the existing and proposed flow rates and the street slopes. The street capacity calculations and the inlet capacities are included in **Appendix B.** The main area of concern is intersection of Apodaca and Delgado just west of the elementary school. There are two type 'C' inlets at this intersection to intercept runoff. At worst case, if the water does not completely turn the corner onto Delgado, it may overtop the curb and sidewalk and enter the school site. The latest grading plan for the school shows an existing swale and inlet intended to divert the flow around the school building and into the pond/park. Based on a very approximate analysis, it is estimated that approximately 2 cfs overtops the curb and escapes the public right-of-way (see analysis in **Appendix B**). Flooding, if it should occur, is minimal. The existing swale and storm drain will adequately keep the storm water from the existing building. The ultimate impact

due to the planned development reduces runoff at this critical location by approximately 50 cfs, greatly improving the conditions.

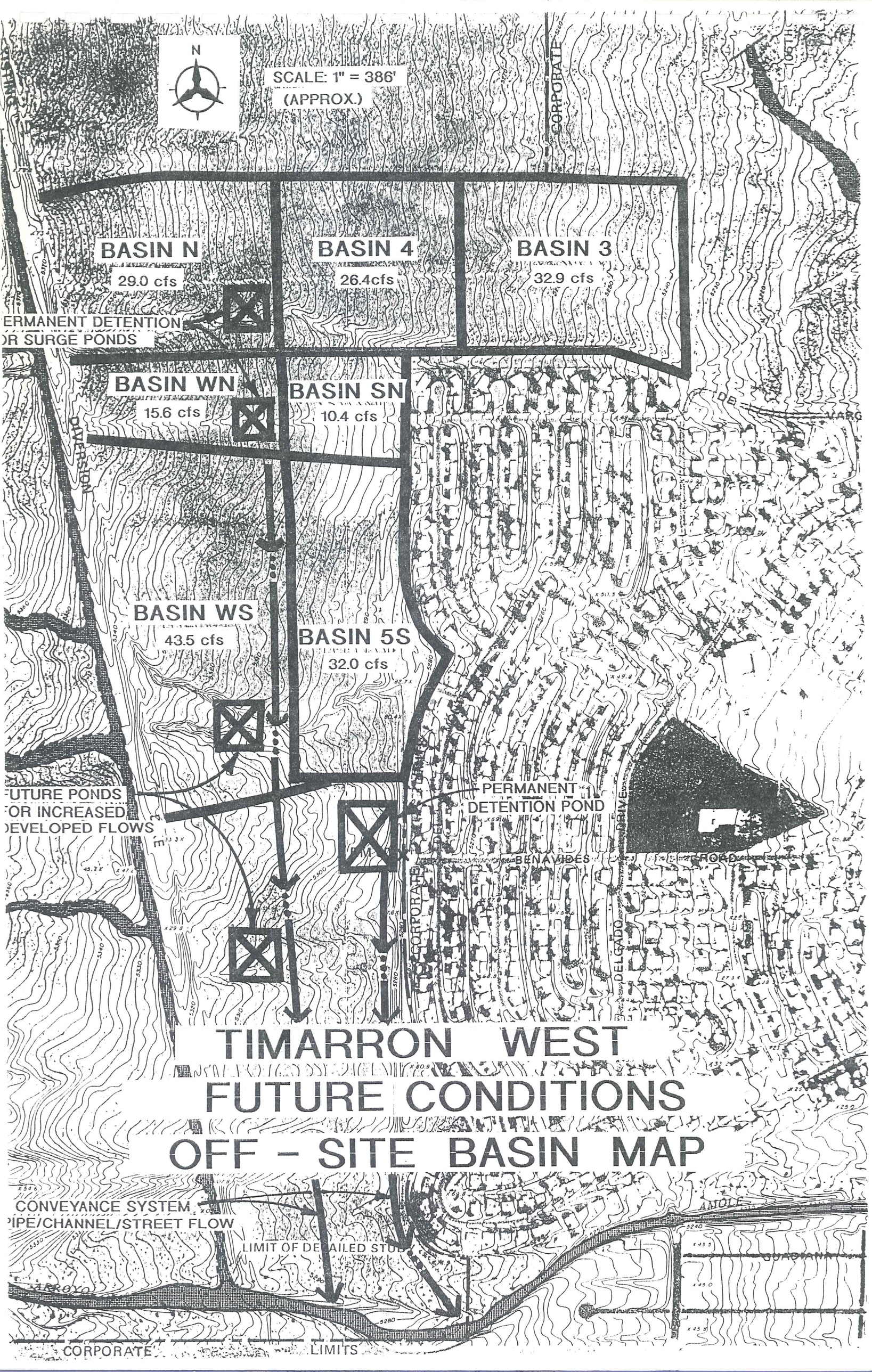
In the future, when the land to the west of Timarron West is developed, the offsite detention ponds could be removed. These future developments would be required to divert the water south through storm drains or channels to the Amole Arroyo. Alternately, permanent detention ponds could be constructed functioning in a similar manner as the proposed temporary ponds. The exhibit titled **Future Conditions Off-Site Basin Map** illustrates the direction of the future flow.

VI. CONCLUSION

The development of Timarron West Unit 5 will result in an improvement in the drainage conditions for downstream areas. The flow rates entering the existing Atrisco Village Subdivision will decrease with the implementation of the detention ponds and storm drain system. Future developments have the option to use the established outfall or redirect runoff to the Amole Channel. This report includes a detailed study of the existing and proposed runoff, street capacities, and pond volumes. Attached are the preliminary plat, existing conditions basin map, proposed conditions basin map, and grading plan. This drainage plan maintains the overall drainage pattern and allows for safe management of storm runoff in the proposed development.



TIMARRON WEST
HISTORIC CONDITIONS
OFF - SITE BASIN MAP


N
SCALE: 1" = 386'
(APPROX.)
BASIN N
29.0 cfs
BASIN 4
26.4cfs
BASIN 3
32.9 cfs
ERMANENT DETENTION
OR SURGE PONDS
BASIN WN
15.6 cfs
BASIN SN
10.4 cfs
DIVERSION
BASIN WS
43.5 cfs
BASIN 5S
32.0 cfs
UTURE PONDS
OR INCREASED
EVELOPED FLOWS
PERMANENT
DETENTION POND
BENAVIDES
ROAD
DRIVE
DELGADO
CORPORATE
TIMARRON WEST
FUTURE CONDITIONS
OFF - SITE BASIN MAP
CONVEYANCE SYSTEM
IPE/CHANNEL/STREET FLOW
LIMIT OF DETAILED STUDY
ARROYO
ANOLI
GUADIANA
CORPORATE
LIMITS