CITY OF ALBUQUERQUE

April 18, 2012

Craig W. Hoover, P.E.
Bohannan Huston, Inc.
7500 Jefferson St NE
Albuquerque, NM 87109

Re: Ladera Dam 5 and Dam 9 Arroyos: APS Projects Drainage Management Plan

Engineer's Stamp dated 4-6-12 (J08/D000)

Dear Mr. Hoover,

Based upon the information provided in your submittal received 4-6-12, the above referenced plan is approved for Drainage Management Plan with the following comment:

- Basins UD.5b and L91a will most likely have to pond in the developed condition, because the proposed developed percentage impervious areas are 30% and 39.1%, respectively. This is unfortunate since a pond is being built.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Sincerely,

Curtis A. Cherne, P.E.
Principal Engineer, Planning Dept.
Development and Building Services

C: choover@bhinc.com

J-08/D035

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/2005)

PROJECT TITLE: Ladera Dam 5 and Dam 9 Arroyos: APS Projects ZONE MAP/DRG. FILE J-08-Z
DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: _____
CITY ADDRESS: _____

ENGINEERING FIRM: Bohannan Huston, Inc. CONTACT: Craig W. Hoover, P.E.
ADDRESS: 7500 Jefferson Street NE PHONE: 505-798-7835
CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87109

OWNER: Albuquerque Public Schools CONTACT: Marty Eckert
ADDRESS: PO Box 25704 PHONE: (505) 765-5950 ext. 265
CITY, STATE: Albuquerque, NM ZIP CODE: 87190-0454

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:	CHECK TYPE OF APPROVAL SOUGHT:
X DRAINAGE ANALYSIS REPORT	___ SIA/FINANCIAL GUARANTEE RELEASE
___ DRAINAGE PLAN 1st SUBMITTAL	___ PRELIMINARY PLAT APPROVAL
___ DRAINAGE PLAN RESUBMITTAL	___ S. DEV. PLAN FOR SUB'D APPROVAL
___ CONCEPTUAL G & D PLAN	___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ GRADING PLAN	___ SECTOR PLAN APPROVAL
___ EROSION CONTROL PLAN	___ FINAL PLAT APPROVAL
___ ENGINEER'S CERT (HYDROLOGY)	___ FOUNDATION PERMIT APPROVAL
___ CLOMR/LOMR	___ BUILDING PERMIT APPROVAL
___ TRAFFIC CIRCULATION LAYOUT	___ CERTIFICATE OF OCCUPANCY (PERM)
___ ENGINEER CERT (TCL)	___ CERTIFICATE OF OCCUPANCY (TEMP)
___ ENGINEER CERT (DRB SITE PLAN)	___ GRADING PERMIT APPROVAL
___ OTHER (SPECIFY)	___ PAVING PERMIT APPROVAL
	___ WORK ORDER APPROVAL
	___ OTHER (SPECIFY)

RECEIVED
APR 06 2012
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:
___ YES
X NO
___ COPY PROVIDED

SUBMITTED BY: Craig W. Hoover, P.E. DATE: April 6, 2012

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

CITY OF ALBUQUERQUE

January 20, 2012

Craig W. Hoover, P.E.
Bohannan Huston, Inc.
7500 Jefferson St NE
Albuquerque, NM 87109

Re: Ladera Dam 5 and Dam 9 Arroyos: APS Projects DMP
Engineer's Stamp dated-no stamp- December 2011 (J08/D000)

Dear Mr. Hoover,

Based upon the information provided in your submittal received 12-27-11, the above referenced report DMP cannot be approved for Grading Permit until the following comments are addressed:

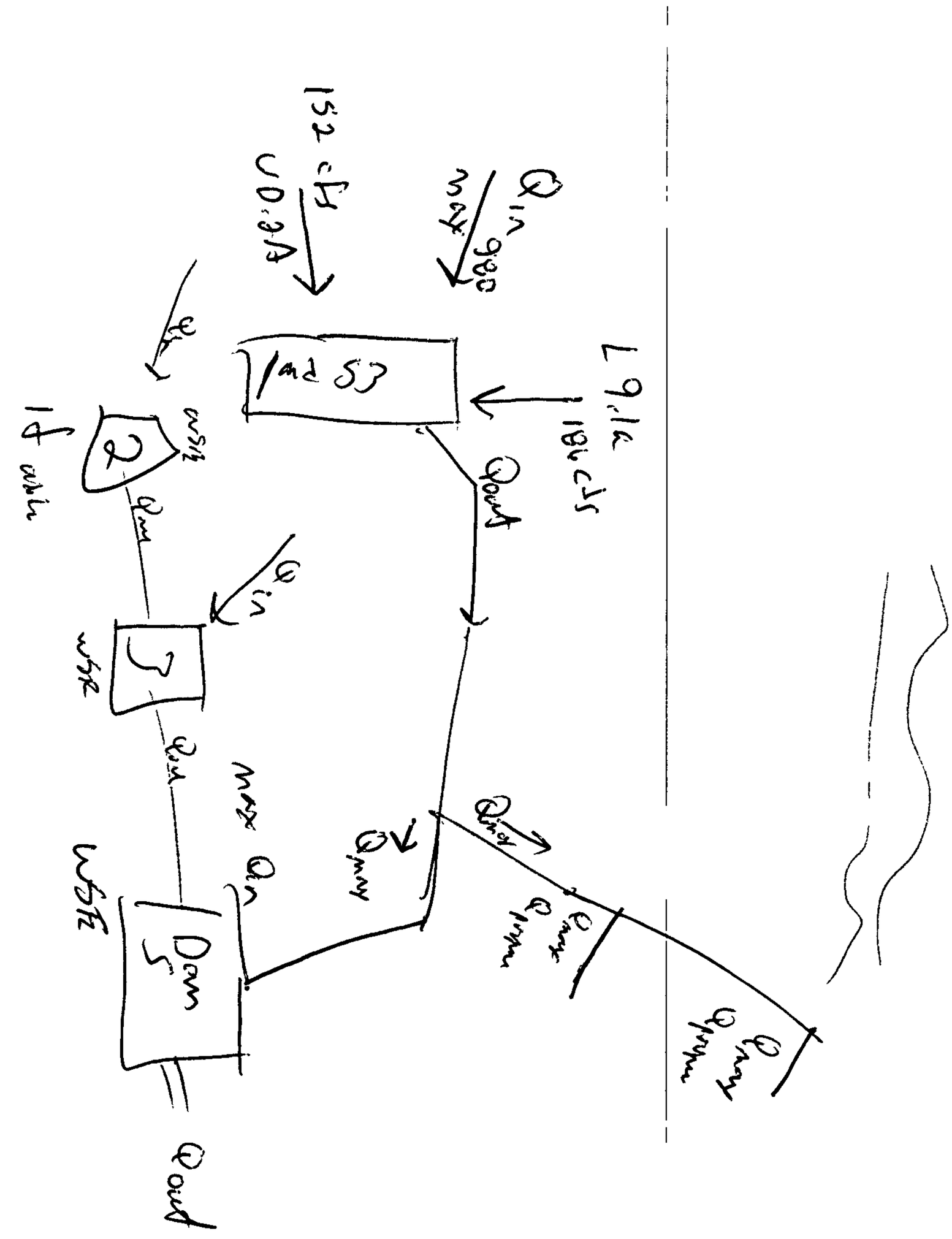
- Provide plan-size exhibits that show basins, flows, proposed and existing infrastructure, platted and future streets, storm drain capacity and storm drain flows. I would refer you to BHI UNM Commercial District or MDS.
- How long does it take Pond 5S to drain? Is the 24-hour storm appropriate?
- Please explain what is expected for water quality inlets.
- The West I40 DMP shows pond 5S as 49 ac-ft, whereas this report shows it as 30 ac-ft.
- Provide a short narrative for the Stormcloud subdivision including the capacity of the storm drain that the 36" proposed storm drain ties into.
- Provide the WSE on the exhibit showing pond 5S (currently Figure 3).
- Is Pond 5S required to protect the APS stadium? If so, should it be built before the building?
- Show the flood plains.
- Show Arroyo Vista Blvd in plan and profile where the 54" storm drain crosses it.
- Provide calculations for the ported riser in pond 5S.
- A Grading Plan is required to obtain a Grading Permit.
- Hydrology is storing files electronically now. It would be helpful to put the AHYMO output on a CD in PDF format.
- A CLOMR/LOMR will be required.

Sincerely,

Curtis A. Cherne, P.E.
Principal Engineer, Planning Dept.
Development and Building Services

C: choover@bhinc.com

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— If you want to add Athyno for extend Ladera System you should include a new Sheet that summarize it

— replace Prf Sheet w/ Basin type Sht where is prd SS hydrograph. Sometimes in Sht Athyno?

Bohannan Huston

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APR 06 2012
HYDROLOGY SECTION

April 6, 2012

Curtis A. Cherne, P.E.,
Principal Engineer, Planning Dept.
Development and Building Services
PO Box 1292
Albuquerque, NM 87103

Re: Response to City of Albuquerque Hydrology Department comments for the Ladera Dam 5 and Ladera Dam 9 Arroyos: APS Projects DAR.

Dear Mr. Cherne:

In December 2011, Bohannan Huston, Inc. (BHI) submitted a Design Analysis Report (DAR) to your office for the Ladera Dam 5 and Dam 9 Arroyos: APS Projects. City comments from a letter dated January 20, 2012 were received and addressed resulting in re-submittal of the DAR in March 2012. Following that, we have received draft City Hydrology review comments authored by Curtis A. Cherne, P.E. from a meeting held on March 29, 2012. This letter and revised final DAR serves as a response those comments and also transmits additional information to supplement the original DAR. We greatly appreciate your expedited review and approval of this DAR. In response to your comments we offer the following responses:

- Comment: Table 2 on Page 3 lists 82% impervious for Basin UD.4D, whereas, Exhibit 2 does not show any development in this basin.
  Response: Basin UD.4D percent impervious is based on a conceptual plan for the APS Stadium Site. Updated Exhibits 1 and 2 show the proposed tennis courts within this basin.

- Comment: 100 yr-6 hr storm calculations are required to support the sizing of the pond emergency spillway.
  Response: 100-yr 6 hr storm calculations have been added to the Appendix. See Spillway Analysis located within Appendix B.

- Comment: Where is the Pond 5S hydrograph in the report?
  Response: Two hydrographs have been added to Appendix A for Pond 5S. These hydrographs show the developed and interim conditions inflow and outflow hydrographs.

- Comment: There are most likely restrictions on flows due to downstream capacity. An exhibit should demonstrate the max flows allowed and the proposed flows.
  Response: The restrictions to the flows due to downstream capacity are based on the capacity of the Ladera System of Dams. For the Ladera System of Dams AMAFCA requires that the 100-yr water surface elevation (WSEL) be 1 foot below the emergency spillway. See Exhibits 1 and 2 for 100-yr WSEL for developed and interim conditions for Ladera Dams 1 through 7.

- Comment: Pond 5S is to drain in 24 hours if the 24 hour storm is to be used for design. Refer to Paragraph 8, p. 22-170 of the DMP.

Response: Ponds 5S in the interim conditions for the 24 hour and 6 hour storms will drain within 24 hours and 6 hours respectively. Pond 5S will drain within 60 hours in developed conditions. Pond 5S takes 60 hours to drain because of the Petroglyph Diversion that is proposed upstream of this Pond. This upstream portion has detention facilities that attenuate the flow over greater amounts of time because of the increase of volume that is being diverted and downstream constraints. The design of Pond 5S is consistent with the existing Ladera System of Dams.

- Comment: The lower chamber of Pond 5S will contain more frequent runoff events. What frequency is the lower chamber designed for?
  Response: The lower chamber of Pond 5S is designed for just over the 10-year storm event.

- Comment: It appears Pond 5S spillway will be built with the Work Order rather than with the Grading Plan. The spillway will need to be built prior to Certificate of Occupancy.
  Response: Agree.

- Comment: On Exhibit 2, why are developed flows less than interim flows?
  Response: Exhibit 2 was changed to Developed Condition Location and Basin Map. For flows reaching Pond 5S the developed peak flows are less than the interim peak flows but the developed condition has more volume associated with those flows. This reduction in the peak flows is caused by the proposed Petroglyph Diversion which contains detention facilities that attenuate the flow over a greater amount of time, thus reducing the peak inflow into Pond 5S.

- Comment: The report mentions a 54" pipe as the principal spillway, while Exhibit 3 shows a 48" and there is no build note shown on the PNP sheets provided. Since this is not a dam, it may be more appropriate to change the name of the principal spillway to the pond outlet.
  Response: Pond 5S will have 136 linear feet of 54" pipe at the pond outlet that will then be reduced to a 48" pipe that will connect to the proposed storm drain located in Arroyo Vista. See the updated Exhibit 5. Within this report the principal spillway will now be referred to as the pond outlet

If you have any questions or concerns, please do not hesitate to contact me at 505-798-7835.

Sincerely,

Craig W. Hoover, P.E.
Senior Vice President
Water Resources Group

CWH/srd

Enclosures

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HYDROLOGY
SECTION

LADERA DAM 5 AND DAM 9 ARROYOS:

APS PROJECTS

DESIGN ANALYSIS REPORT



APRIL 2012

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HYDROLOGY SECTION

Prepared for:

Albuquerque Public Schools

and

Western Albuquerque Land Holdings, LLC.

Prepared by:

Bohannan Huston

Engineering

Spatial Data

Advanced Technologies

APS/WALH

LADERA DAM 5 AND DAM 9 ARROYOS: APS PROJECTS

FINAL DESIGN ANALYSIS REPORT

APRIL 2012

Prepared for:

ALBUQUERQUE PUBLIC SCHOOLS

AND

WESTERN ALBUQUERQUE LAND HOLDINGS, LLC.

Prepared By:

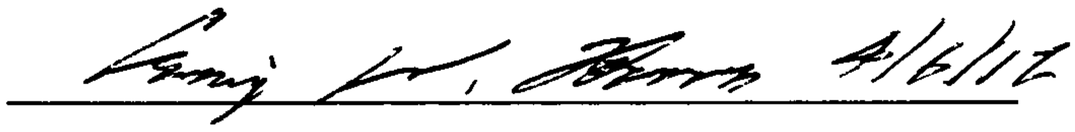
BOHANNAN HUSTON, INC.

COURTYARD I

7500 JEFFERSON STREET NE

ALBUQUERQUE, NM 87109

PREPARED BY:



Craig W. Hoover, P.E. Date

Bohannan Huston

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EXHIBITS

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1 INTRODUCTION

1.1 PURPOSE

Bohannan Huston Inc. (BHI) was contracted by Western Albuquerque Land Holding LLC. (WALH) and Albuquerque Public Schools (APS) to provide analysis and design of the proposed drainage improvements from the 2011 West I-40 Drainage Management Plan (DMP) Update (Bohannan Huston, Inc., December 2011) required for development of the APS Recreational Site (APS Stadium Site) and APS Education Site (School Site). These drainage improvements are referred to as APS Projects Drainage Improvements in the 2011 West I-40 DMP Update.

This report builds on the APS Projects Drainage Improvements, which established existing and proposed developed drainage conditions for the development of the APS Stadium and School Sites. Details are provided regarding the locations, sizes, and configurations of proposed drainage improvements. This report has been prepared to provide the foundation for the design for the drainage facilities that will need to be constructed with the development of both the APS Stadium and School Sites.

1.2 BACKGROUND

APS has purchased two sites (each approximately 110 acres) from WAHL with the intention of developing a Stadium and a School site for the community. The APS Stadium and School Sites are located within the Ladera Watershed on Albuquerque's west mesa. More specifically, the Stadium Site generally is within the Ladera Dam 5 watershed while the School Site is generally within the Ladera Dam 9 watershed. The APS Stadium Site will be located on the southwest corner of the intersection of Arroyo Vista and Tierra Pintada Blvd. The School Site will be located north of the Stadium Site on the north side of Arroyo Vista Blvd. Both of these sites will cover approximately 220 acres in total. See Exhibits 1 and 2 for location of proposed sites and contributing basins.

1.3 KEY REPORT ELEMENTS

The key elements of this report include the following:

- Hydrologic modeling
- Ponds and inlet and outlet structures
- Storm drain pipes and appurtenances
- Diversion channels
- Erosion Control

- Water Quality Best Management Practices (BMPs)

2 HYDROLOGIC MODELING

Hydrologic modeling was performed using the Arid Land Hydrologic Model (AHYMO, Aug 97) in accordance with the City of Albuquerque Development Process Manual Section 22.2. This model requires inputs for basin area, land treatments related to pervious and impervious area, routing, precipitation and time to peak. The hydrology in this Design Analysis Report is taken from the 2011 West I-40 DMP Update. For this analysis the interim and proposed fully developed conditions were modeled to ensure that these facilities are properly sized for both conditions. Interim conditions represent existing conditions plus the development of the two APS sites. A basin map of the area including the two proposed APS sites is shown in Exhibit 1.

2.1 RAINFALL

The design storms for this Design Analysis Report are the 6-hour, 100-year event for conveyance facilities and the 24-hour, 100-year event for detention (pond) facilities. The rainfall values were determined from the NOAA 14 atlas. Three different rainfall values were determined for various watersheds within these hydrologic models. They include the Amole watershed, Ladera watershed above Dam 12, and Ladera watershed below dam 12 including the West Bluff. Only the rainfall parameters from the Ladera watershed above Dam 12 (which includes all of the Ladera system upstream of Dam 12 and the Amole watershed (a portion of which will ultimately be diverted into the Ladera Watershed) have direct impact on the design of the drainage facilities within this report. The rainfall values used in the AHYMO computer runoff models are listed in Table 1.

Table 1 – Rainfall Depths for Design Storm Events

NOAA 14 ATLAS		
PRECIPITATION DURATION	**AMOLE WATERSHED**	**LADERA WATERSHED ABOVE DAM 12**
	100 - Year	100 - Year
1 hr	1.81 in	1.78 in
6 hr	2.31 in	2.28 in
24 hr	2.72 in	2.71 in

2.2 LAND TREATMENTS

Land treatment types are used to classify an area's hydrologic properties. Table A-4 in Section 22.2 of the DPM defines the land conditions associated with four treatment types: A, B, C, and D. Type A, which is the most pervious, is associated with undisturbed land. Type D, which is most impervious, is used for paved areas and roofs.

Land treatments were assigned to sub-basins based on proposed land usage according to the procedure outlined in the COA Development Process Manual, Section 22.2. Land treatments percentages were established by land use occurring in a basin relative to the 2006 WAHL Master Plan. Land treatments percentages for the APS Stadium Site and Schools Site were determined from the proposed conceptual design plans for the two sites. Table 2 below shows the percentage of each land treatment type (A, B, C, and D) for the four land use categories, for fully developed conditions as shown on Exhibit 2. For interim conditions land treatments see Exhibit 1.

Table 2 – Treatment Types

Basin ID	Area (ac)	Area (sq. mi.)	Developed Land Treatments (%)				Time to Peak (hr)
			%A	%B	%C	%D	
OS.1	219.3	0.34	50.00%	25.00%	25.00%	0.00%	0.139
OS.4	101.8	0.16	15.00%	75.00%	10.00%	0.00%	0.134
OS.5A	67.6	0.11	50.00%	25.00%	25.00%	0.00%	0.154
OS.5B	98.6	0.15	50.00%	25.00%	25.00%	0.00%	0.133
UD.1B	81.0	0.13	1.01%	28.03%	28.03%	42.93%	0.133
UD.1C	56.2	0.09	0.00%	23.40%	23.40%	53.20%	0.133
UD.2	87.7	0.14	0.00%	46.00%	20.00%	34.00%	0.155
UD.2A	79.8	0.12	0.00%	61.00%	17.00%	22.00%	0.221
UD.3	24.9	0.04	0.00%	7.60%	12.80%	79.60%	0.133
UD.4A	16.7	0.03	0.00%	16.40%	0.00%	83.60%	0.133
UD.4D	20.7	0.03	0.00%	0.00%	18.00%	82.00%	0.133
UD.4C	58.5	0.09	0.00%	28.90%	57.40%	13.70%	0.133
UD.5A	99.4	0.16	0.00%	23.40%	23.40%	53.20%	0.157
UD.5B	53.6	0.08	0.00%	35.00%	35.00%	30.00%	0.164
UD.5C	54.4	0.09	0.00%	23.40%	23.40%	53.20%	0.133
UD.5E	119.7	0.19	0.00%	23.40%	23.40%	53.20%	0.176
L7.1A	3.6	0.01	0.00%	16.70%	33.30%	50.00%	0.133
L9.1A	78.9	0.12	0.00%	30.46%	30.46%	39.08%	0.212
L9.2A	61.4	0.10	0.00%	23.40%	23.40%	53.20%	0.133

2.3 TIME TO PEAK

The AHYMO program utilizes the time to peak for each contributing drainage basin. The time to peak is defined as the time it takes for the runoff hydrograph at the outlet of the basin to reach its peak; it is estimated as two thirds of the time of concentration. The time of concentration is defined as the time it takes for runoff to travel from the farthest upstream point in a basin to the basin outfall. This study utilized the SCS Upland Method to calculate time of concentration as presented in the DPM Section 22.2. Time to peak values for contributing basins are shown in Table 2. Time to peak calculations are included in Appendix A.

2.4 ROUTING

The Muskingum-Cunge method was used for all flow routing, consistent with previous studies in the area, and in accordance with locally adopted policies.

2.5 SEDIMENT BULKING

A uniform bulking factor of 2.5% bulking was applied to all developed basins within the study area while the bulking factor varies for open spaces and undeveloped areas from 5% to 23% percent depending upon the locations, slopes, and soils in accordance with the 2000 West I-40 DMP bulking factors.

3 PROPOSED DRAINAGE IMPROVEMENTS

The development of the APS Stadium and School Sites will require drainage improvements to protect proposed site improvements and allow flows from offsite drainage basins to reach the existing drainage facilities within the study area. Ponds, storm drain pipes, and diversion channels will collect and transport flow around the APS Stadium and School Site. At all points of discharge from the system either in an arroyo, an existing dam, or a proposed pond, erosion protection will be used. Where appropriate, the drainage improvements are envisioned to be multi-use facilities that combine other uses with the basic flood control function. Also, water quality best management practices (BMP's) should be designed to maximize the sediment and debris trapping facilities. Storm water quality inlets and manholes will be a standard element of each storm drain system designed for these improvements. Proposed drainage improvements are shown in Exhibit 1, for interim conditions, and Exhibit 2 for developed conditions.

3.1 PONDS

The proposed Pond 5S, as shown on Exhibit 3, will be built to divert flow that historically flowed through the Dam 5 Arroyo which currently flows through the Proposed APS Stadium Site. The pond will manage runoff from basins from UD.2a, UD.5a, UD.5b, UD.5c, UD.5e, OS.5a, OS.5b, and L9.1a. There are two primary inflows into the dam. The first will come from the proposed Pond 5S Intake that will redirect flow from its historic flow path and divert the flow into the new pond facility. The second will be a 54" and 66" pipe that will enter the pond from the north and will divert flows from Basin L9.1a under Arroyo Vista and into the pond. The pond will be designed for the 24 hour, 100-yr event. Per the DPM this requires Pond 5S to drain within a 24 period, unless discharge is limited by downstream constraints. Based on the interim condition inflow and outflow hydrographs Pond 5S meets this requirement and respectively drains within 6 hours. For the developed condition inflow and outflow hydrographs Pond5S does not meet the requirement of 24 hours and respectively drains within 60 hours. However this is due to both upstream and downstream constraints. Pond 5S drains within 60 hours because of significant increase in inflow volume and duration resulting from the planned future Petroglyph Diversion upstream of the Pond. This upstream diversion also includes detention facilities to attenuate flows over a greater amount of time to not overwhelm the existing Ladera System of Dams. Based on these constraints Pond 5S is sufficiently designed for both the interim and developed condition. Pond 5S inflow and outflow hydrographs for interim and developed conditions can be found in Appendix A. The pond will also be designed as a multi-use facility that will accommodate soccer fields (or other similar low impact recreational facilities) within the pond's flood pool. Development of the sports fields will occur in the future and is subject to AMAFCA review and approval at that time.

The pond is planned as two separate detention chambers that will be connected by an earthen channel. The lower chamber will serve to contain more frequent runoff events, slightly over the 10-year storm, allowing the proposed ball fields, located in the upper chamber, to remain dry in most storm events. The earthen channel will work as an equalizer connecting the two chambers while minimizing the amount of earthwork required to achieve the total required 100-year pond volume. The lower level with an invert at elevation 5433.5 feet and a pond outlet invert at 5436 feet is designed to accommodate 1.3 acre-feet of sediment storage plus approximately 11 acre-feet of storage for more frequent storm events. See Section 3.5 and Appendix A for additional information on sediment storage and the pond's stage storage curve. The upper level, which lies south of the lower level, is planned

to accommodate the additional runoff in larger less frequent events and provides an additional 21.7 acre-feet of storage volume. The total 100-year volume will be approximately 31.7 acre-feet (including sediment storage) and is sufficient to control the 100-year runoff for both interim and fully developed conditions. The top of each chamber will be located at elevation 5449 feet. The bottom of the lower pond will be at an elevation of 5433.5 feet and the upper pond will have a bottom elevation of 5443.5 feet. The pond's embankments will typically have side slopes of 3:1 (horizontal to vertical) or flatter with a 15 foot wide top for maintenance access.

The pond outlet, shown on Exhibits 3 and 5, is 136 linear feet of 54" and 210 linear feet of 48" reinforced concrete pipe (RCP) which discharges to a proposed storm drain pipe in Arroyo Vista that is part of the storm drain system that will convey the flow from Pond 5S and Arroyo Vista to Ladera Dam 5. The pond outlet begins as a 54" pipe that is reduced to a 48" pipe to optimize the pond outlet size and hydraulics. The inlet principal spillway invert is at 5436 with a slope of 2.87 %. The maximum 100-year discharge from the pond, via the pond outlet pipe is 244 for interim conditions and 262 for fully developed conditions. These flow rates were determined using the orifice equation, given inlet control conditions. Stage-storage calculations can be found in Appendix B. The pond will also include a lined emergency spillway directed toward the historic Dam 5 Arroyo flow path along the east side of Pond 5S. The emergency spillway will be sized to pass the 6 hour 100-year flow rate assuming the principal spillway is completely plugged. See Appendix B for the emergency spillway analysis. The spillway is planned as a concrete lined spillway (concrete slope paving) with a trapezoidal cross section producing a relatively wide and shallow flow cross section. The anticipated water depth over the spillway will be approximately 1.7 feet. A narrow and deeper spillway configuration was also explored to reduce the cost of the spillway. However, since the top of the pond cannot be raised and still allow the pond grading to fit with the Stadium Site grading this would mean the invert of the pond would have to be lowered. A cost sensitivity analysis showed the cost of the additional earthwork (excavation) to lower the pond would equal or slightly exceed the cost of additional spillway width. As a result of this analysis a spillway water depth of approximately 1.7 feet is recommended. The spillway will be covered with an earthen cap approximately 18" thick that is graded with a dip section in the center of the spillway to direct overflow to the center and allow the earthen cap to be washed off the spillway in the event of a spill. This will allow the spillway to be hidden from view since it is located in a highly visible location at the entrance to the Stadium Site of off Vista Arroyo Blvd. This approach of covering the spillway

with an earthen cap has been successfully implemented on other pond and dam emergency spillways including ponds at High Desert, the Black Arroyo Dam, the Little Window Detention Facility, and the Las Ventanas Dam. See Exhibit 4 for final dimensions of the spillway. The final pond configuration including final grading, side slopes, and appurtenances are shown on Exhibits 3 and 4. A drainage easement for the pond will be granted to AMAFCA and the pond will be maintained by AMAFCA with respect to the flood control function. Future ball fields or other multi-use elements will be subject to maintenance agreements to be determined and are not presently proposed as part of AMAFCA's maintenance responsibility.

3.2 STORM DRAIN

Three storm drain reaches of varying lengths will be used to convey the flows that are collected in Pond 5S and storm drain inlets in Arroyo Vista and Tierra Pintada Blvd. The first storm drain (Reaches 1 and 2), shown on Exhibits 5 through 8, will collect flows from Pond 5S and convey these flows within Arroyo Vista right of way through a 48" and 54" diameter RCP that will outlet to Ladera Dam 5. The second storm drain (Reach 3), shown on Exhibit 9, diverts flow from the 54" storm drain through a 36" storm drain that will connect to an existing 66" storm drain, Structure 'S1', that crosses Tierra Pintada. This flow will then be conveyed to the existing Storm Cloud Subdivision Storm Drain that ultimately drains to the existing Ladera Dam 9.

Detailed hydraulic analysis for the storm drains, including HGL calculations and inlet locations are provided in a separate design analysis report in support of the roadway design for Arroyo Vista Blvd. and Tierra Pintada Blvd.

The storm drain system, within City street right of way, will be City owned and maintained. The upstream intake structure at Pond 5S and the outfall structure to Ladera Dam 5 will be maintained by AMAFCA as part of their maintenance of the two respective detention facilities.

3.2.1 STORM DRAIN FROM POND 5S TO LADERA DAM 5 (REACHES 1 AND 2)

This storm drain will be a combination of a 48" and 54" diameter storm drain capable of conveying the interim flow rate of 261 cubic feet per second (cfs) and the proposed conditions peak 100-year flow rate of 264 cfs from Pond 5S plus flows from Arroyo Vista Blvd. The storm drain will convey flows from Pond 5S,basin UD.4A (which includes Arroyo Vista Blvd.), and UD.4D to Ladera Dam 5 and the Storm Cloud Subdivision storm drain (via the Storm Cloud Diversion). The storm drain will be approximately 3,400 feet in length and

will follow the proposed and existing Arroyo Vista Blvd alignment and will ultimately discharge to the north side of the Ladera Dam 5. The storm drain was divided up into two reaches. Reach 1 conveys flow from Ponds 5S eastward to the intersection of the Storm Cloud Diversion storm drain (intersection of Arroyo Vista Blvd. and Tierra Pintada Blvd.). This reach will convey a maximum flow rate of 264 cfs in the developed condition. Reach 2 runs from the intersection of Storm Cloud Diversion storm drain and will outlet its flows into Ladera Dam 5. This reach will convey a maximum flow rate of 222 cfs in the developed condition.

3.2.2 STORM CLOUD DIVERSION STORM DRAIN (REACH 3)

This storm drain will be a 36" diameter storm drain capable of conveying 42 cfs. The storm drain, located within Tierra Pintada right of way, will divert flow from the storm drain from Pond 5S to more effectively utilize the capacity within the existing Storm Cloud Subdivision Storm Drain, while reducing the size of the storm drain to Ladera Dam 5. This storm drain will discharge to the existing 66" storm drain (Structure 'S-1') located within Tierra Pintada that discharges to Ladera Dam 9. Complete analysis of the Storm Cloud Diversion along with the capacity of Structure 'S-1' is provided in a separate design analysis report in support of the roadway design for Arroyo Vista Blvd. and Tierra Pintada Blvd.

3.2.3 STORM DRAIN FLOW SPLITTER

At the intersection of Arroyo Vista Blvd. and Tierra Pintada Blvd., a manhole junction will split the storm drain from Pond 5S (Reach 1). The flow sent to either Ladera Dam 5 (Reach 2) or to the Storm Cloud Diversion (Reach 3) will be controlled by the HGL in each of the two downstream pipe reaches (Reaches 2 and 3). Additional detailed hydraulic analysis for the flow splitter and the storm drains, including HGL calculations and inlet locations is provided in a separate design analysis report in support of the roadway design for Arroyo Vista Blvd. and Tierra Pintada Blvd.

3.3 EARTHEN CHANNELS

Two earthen channels will collect flows and convey them to Pond 5S. The Pond 5S Intake, shown on Exhibit 10, will convey flows from the existing Dam 5 Arroyo into the proposed Pond 5S. Because of the location of the proposed Arroyo Vista Blvd. this channel is needed to redirect flow from the existing Dam 5 Arroyo alignment to Pond 5S.

The Dam 9 Arroyo Diversion, shown on Exhibits 11 and 12, will protect the APS School Site by diverting flow that historically would have drained through the School Site.

The Dam 9 Arroyo presently crosses the School Site and is collected by a roadside ditch along Tierra Pintada that drains to the Storm Cloud Subdivision which in turn outfalls to Ladera Dam 9. Exhibits 1 and 2 show the locations of these proposed earthen channels.

3.3.1 POND 5S INTAKE

The Pond 5S Intake will convey flows from the existing Dam 5 Arroyo into Pond 5S. The Dam 5 Arroyo needs to be redirected into Pond 5S to both control runoff and also protect the proposed Arroyo Vista Blvd. roadway section. This earthen intake channel will divert all of the Dam 5 Arroyo runoff into Pond 5S and will include an erosion control structure. The Dam 5 Arroyo Intake, apart from the erosion control structure, will be a temporary facility that will no longer be necessary once Arroyo Vista Blvd. is extended further to the west and flows in the existing Dam 5 Arroyo are conveyed in the ultimate storm drain planned in the roadway as shown in Exhibit 2. This future storm drain, per the 2011 West I-40 DMP update, will outfall to the Pond 5S. Based on planning and analysis completed as part of this DAR, it is proposed that this storm drain will connect to the proposed 66" RCP crossing Arroyo Vista, and utilize the proposed grouted boulder rundown that will convey the proposed Ladera Dam 9 Diversion into Pond 5S.

The Pond 5s Intake will be a trapezoidal earthen channel with approximately 3:1 (horizontal to vertical) side slopes. The north bank of the channel will include dumped riprap to protect the Arroyo Vista Blvd. roadway embankment. Based on estimated channel velocities of approximately 9 feet per second (fps), the dumped riprap will consist of rock with a mean size of 9". The channel bottom width will vary to match the existing channel's bottom width, provided a minimum bottom width of 20 feet is achieved. The intake channel will have a minimum depth from of 3 to 4 feet, based on calculations using Manning's Equation along with the freeboard calculated from the City of Albuquerque's DPM. The intake channel will be designed to carry a maximum flow rate of approximately 542 cfs. The final channel configuration including final grading, side slopes, and appurtenances are shown on Exhibit 10.

3.3.2 LADERA DAM 9 ARROYO DIVERSION

The Ladera Dam 9 Arroyo Diversion channel will convey flows from basins L9.1A, UD.5b, and OS.5A to Pond 5S through an earthen channel that will extend approximately 1,200 feet to the north of Pond 5S and Arroyo Vista Blvd. The flow in this channel will then be collected in an interim intake structure that will route flow through a 54" and 66" RCP under Arroyo Vista Blvd. that will outlet to the northwest corner of Pond 5S. See Exhibit 3.

The storm drain will outfall at the same location as the planned Dam 5 Arroyo Intake and as such share a common, grouted boulder erosion control structure. The intake structure to be located on the north side of Arroyo Vista will consist of a small depression at the inlet of the 54" RCP combined with the roadway embankment to convey the flow from the diversion channel into the 54" RCP. Grouted boulder bank protection along with a concrete pad is planned for upstream end of the pipe to protect the pipe and roadway from potential scour and erosion. .

The diversion channel will be designed to have a 30 foot bottom width and have side slopes of 6:1 (horizontal to vertical). The downstream side of the channel will also have a 15 foot wide berm/maintenance road and fill slope tying to existing ground at a slope of 6:1 (horizontal to vertical). The upstream side of the channel will also have a 15 foot wide maintenance road and a cut slope tying to existing ground at a slope of 3:1 (horizontal to vertical). The channel is planned to convey a maximum flow rate of approximately 186 cfs (Developed peak flow rate from basin L9.1a).

Based on the topography, the channel and associated flow rates comprise four distinct reaches. Table 3 summaries the lengths, slopes, flow rates, and velocities for these different reaches of the channel. The slope in all but the most upstream reach will be flat enough that the velocity will be less than 2.5 fps. Two grouted boulder drop structures will be required to maintain the flat slopes. In the upper reach, the velocity is higher than 2.5 fps and will erosion protection such as gravel mulch or cobble. Based on preliminary velocities in these reaches of approximately 5 fps, the riprap lining will consist of 6" diameter rock on average. See Exhibits 11 and 12 for plan and profiles for the proposed Dam 9 Diversion.

Table 3 – Dam 9 Diversion Reaches

Reach	Description	Flow Rate (cfs)	Slope (%)	Velocity (fps)	Channel Depth Including Freeboard (feet)
1	Station 15+55 to Station 14+00	37	4.6	4.5	3.0
2	Station 12+00 to Station 9+00	104	0.2	2.3	3.0
3	Station 9+00 to Station 4+50	132	0.2	2.5	3.0
4	Station 4+50 to Station 3+50	165	0.15	2.4	3.0

A drainage easement for the Ladera Dam 9 Arroyo diversion channel and appurtenances will be granted to AMAFCA and the channel and appurtenances will be maintained by AMAFCA.

3.4 EROSION CONTROL MEASURES

Erosion protection will be provided at the combined Dam 9 Arroyo Diversion and Dam 5 Arroyo Intake into Pond 5S as well as the proposed storm drain outfall to Ladera Dam 5. At Pond 5S a grouted boulder structure is planned. The final dimensions and configuration of the structure are shown on Exhibit 10. At the storm drain outfall to Ladera Dam 5 a riprap plunge pool similar to the Stormcloud storm drain outfall to Ladera Dam 9 is planned. The final dimensions of the riprap plunge pool are shown on Exhibit 13. These erosion protection measures will mitigate the potential effects of concentrating flows and discharging "hungry" water at these locations.

3.5 BMPS

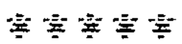
Since nearly all of the upstream off site runoff for both the Stadium and School Sites is directed to and controlled by Pond 5S this is the ideal location for a regional water quality BMP. A pond outlet riser with inclined ports, following AMAFCA standards is proposed to serve as this BMP. This ported riser will be sized such that the 54" outlet pipe controls the pond discharge rate while the riser serves to trap floatable debris. Ported riser calculations can be found in Appendix B. The pond will also be constructed with approximately 2.5 feett of dead storage to trap sediment. This depth equates to approximately 1.3 acre-feet of sediment storage which is equivalent to two years of estimated average annual sediment based on an average sediment yield of 0.71 acre-feet/square mile/year. Two years of sediment storage for the interim conditions, as discussed with AMAFCA staff, is reasonable since under fully developed conditions the sediment load will be dramatically reduced by both stabilization of upstream surfaces and construction of additional upstream detention facilities that include sediment storage. The sediment yield is based on a sediment yield study conducted for AMAFCA by Dr. Richard Heggen for the Black Arroyo watershed which established a sediment yield of 1.0 acre-feet/square mile/year. Given the estimated average sediment bulking factors developed for the Black Arroyo Watershed (17%) compared to the contributing portions of the Amole and Ladera Watersheds (12%), a factor of (12/17) was applied resulting in the aforementioned average annual sediment yield of 0.71 acre-feet/square mile/year. See Appendix A for sediment yield calculations.

4 CONCLUSION

This Design Analysis Report establishes the design criteria for the pond, earthen channels, storm drain pipes, erosion control measures, and BMPs required for the

development of the APS Stadium and School Sites. Preliminary locations, alignments, and sizes of these structures are also provided within this report.

Appendix



APPENDICES

APPENDIX A – HYDROLOGIC CALCULATIONS

APPENDIX B – HYDRAULIC CALCULATIONS

APPENDIX C – AHYMO INPUT AND SUMMARY FILES FROM THE 2011 WEST I-40 DMP UPDATE

APPENDIX D – CD CONTAINING AHYMO INPUT, OUTPUT & SUMMARY FILES

APPENDIX A – HYDROLOGIC CALCULATIONS

Basin ID	Area (ac)	Area (sq. mi.)	Developed Land Treatments (%)				Time to Peak (hr)
			%A	%B	%C	%D	
OS.1	219.3	0.34	50.00%	25.00%	25.00%	0.00%	0.139
OS.4	101.8	0.16	15.00%	75.00%	10.00%	0.00%	0.134
OS.5A	67.6	0.11	50.00%	25.00%	25.00%	0.00%	0.154
OS.5B	98.6	0.15	50.00%	25.00%	25.00%	0.00%	0.133
UD.1B	81.0	0.13	1.01%	28.03%	28.03%	42.93%	0.133
UD.1C	56.2	0.09	0.00%	23.40%	23.40%	53.20%	0.133
UD.2	87.7	0.14	0.00%	46.00%	20.00%	34.00%	0.155
UD.2A	79.8	0.12	0.00%	61.00%	17.00%	22.00%	0.221
UD.3	24.9	0.04	0.00%	7.60%	12.80%	79.60%	0.133
UD.4A	16.7	0.03	0.00%	16.40%	0.00%	83.60%	0.133
UD.4D	20.7	0.03	0.00%	0.00%	18.00%	82.00%	0.133
UD.4C	58.5	0.09	0.00%	28.90%	57.40%	13.70%	0.133
UD.5A	99.4	0.16	0.00%	23.40%	23.40%	53.20%	0.157
UD.5B	53.6	0.08	0.00%	35.00%	35.00%	30.00%	0.164
UD.5C	54.4	0.09	0.00%	23.40%	23.40%	53.20%	0.133
UD.5E	119.7	0.19	0.00%	23.40%	23.40%	53.20%	0.176
L7.1A	3.6	0.01	0.00%	16.70%	33.30%	50.00%	0.133
L9.1A	78.9	0.12	0.00%	30.46%	30.46%	39.08%	0.212
L9.2A	61.4	0.10	0.00%	23.40%	23.40%	53.20%	0.133

Calculation of Time to Peak
Revised DPM procedure
10/10/2011

Description	Var.	Unit	EA.7	EA.8	EA.9	EA.11	EA.13	EA.18	L12.1	L12.2	L12.3	L12.4
Basin												
Basin Area	A	Acres	48.7	272.7	163.8	387.2	175.8	22.4	142.0	727.0	212.0	385.0
Total Reach	L	Feet	3870.0	5250.0	3950.0	3980.0	5100.0	2050.0	7300.0	3500.0	6500.0	8625.0
Overland Reach	L1	Feet	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0
Overland K	K1		0.7	0.7	0.7	0.7	1	0.7	1	1	1	1
Overland Slope	S1	Percent	0.20	0.57	1.01	0.53	6.75	0.20	1.00	17.00	3.00	2.10
Adj. Overland Slope	S1'	Percent	0.200	0.570	1.010	0.530	5.406	0.200	1.000	6.328	3.000	2.100
Gully Reach	L2	Feet	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0
Gully K	K2		2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Gully Slope	S2	Percent	0.200	0.570	0.700	0.530	4.680	0.200	0.940	6.060	0.940	2.310
Adj. Gully Slope	S2'	Percent	0.200	0.570	0.700	0.530	4.562	0.200	0.940	5.217	0.940	2.310
Arroyo Reach	L3	Feet	1870.0	3250.0	1950.0	1980.0	3100.0	50.0	5300.0	1500.0	4500.0	6625.0
Arroyo K	K3		3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
Arroyo Slope	S3	Percent	0.200	0.700	1.010	2.400	0.690	0.200	0.550	1.800	0.530	0.850
Adj. Arroyo Slope	S3'	Percent	0.200	0.700	1.010	2.400	0.690	0.200	0.550	1.800	0.530	0.850
Lca	Lca	Feet	1900.0	1750.0	1980.0	1940.0	2550.0	1900.0	2550.0	0.0	3000.0	3750.0
Base Discharge	Qb	cfs	100.0	100.0	100.0	100.0	100.0	100.0	245.0	1592.0	414.0	734.0
Ground Slope S	S	Percent	0.200	0.650	0.884	1.460	2.417	0.200	0.660	5.485	0 783	1.179
Adjusted Slope S'	S'	Percent	0.200	0.650	0.884	1.460	2.417	0.200	0.660	5.001	0.783	1.179
K	K		1.940	2.092	1.934	1.426	1.856	1.477	2.491	1.881	2.357	2.484
K'	K'		1.940	2.092	1.934	1.426	1.832	1.477	2.491	1.775	2.357	2.484
K"	K"		15.470	8.578	7.357	5.725	4.450	15.470	10.006	5.091	10.097	9.122
K'"	K'"		10.604	5.880	5.042	3.924	3.050	10.604	6 858	3.490	6.921	6.253
Kn	Kn		0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.033	0.023	0.023
Orig. TC	TC	Hrs.	1.239	0.632	0.603	0.642	0.394	0.862	0.545	0.221	0.546	0.478
Adjusted TC	TC'	Hrs.	1.239	0.632	0.603	0.642	0.394	0.862	0.545	0.125	0.546	0.478
Time Lag	Lg	Hrs.	-	-	-	-	-	-	-	-	-	-
Time to Peak	TP	Hrs.	**0.826**	**0.421**	**0.402**	**0.428**	**0.262**	**0.575**	**0.363**	**0.147**	**0.364**	**0.319**

Note:
Minimum Tp=0.133 hours used in
AHYMO model.

Description	Var.	Unit	L12.5	L12.6	L12.7	L12.8	*L12.9W	L12.11	*L12.12W	*L12.14W	L12.15	*L12.16W
Basin												
Basin Area	A	Acres	468.0	605.0	676.0	270.0		175.0			281.0	
Total Reach	L	Feet	9300.0	7100.0	12000.0	8150.0		4900.0			3250.0	
Overland Reach	L1	Feet	400.0	400.0	400.0	400.0		400.0			400.0	
Overland K	K1		1	1	1	1		1			1	
Overland Slope	S1	Percent	1.25	1.25	5.35	0.15		0.45			1.00	
Adj. Overland Slope	S1'	Percent	1.25	1.25	4.94	0.15		0.45			1.00	
Gully Reach	L2	Feet	1600.0	1600.0	1600.0	1600.0		1600.0			1600.0	
Gully K	K2		2.000	2.000	2.000	2.000		2.000			2.000	
Gully Slope	S2	Percent	1.000	0.690	2.060	0.310		0.380			0.380	
Adj. Gully Slope	S2'	Percent	1.000	0.690	2.060	0.310		0.380			0.380	
Arroyo Reach	L3	Feet	7300.0	5100.0	10000.0	6150.0		2900.0			1250.0	
Arroyo K	K3		3.000	3.000	3.000	3.000		3.000			3.000	
Arroyo Slope	S3	Percent	1.330	0.390	0.570	0.520		0.590			0.330	
Adj. Arroyo Slope	S3'	Percent	1.330	0.390	0.570	0.520		0.590			0.330	
Lca	Lca	Feet	5100.0	4050.0	6000.0	3875.0		2500.0			0.0	
Base Discharge	Qb	cfs	531.0	1080.0	703.0	348.0		223.0			372.0	
Ground Slope S	S	Percent	1.270	0.506	0.928	0.461		0.510			0.437	
Adjusted Slope S'	S'	Percent	1.270	0.506	0.928	0.461		0.510			0.437	
K	K		2.526	2.469	2.421	2.260		2.176			2.029	
K'	K'		2.526	2.469	2.418	2.260		2.176			2.029	
K"	K"		8.292	14.925	10.202	12.759		11.192			13.256	
K'"	K'"		5.684	10.230	6.993	8.746		7.671			9.086	
Kn	Kn		0.023	0.023	0.023	0.023		0.023			0.023	
Orig. TC	TC	Hrs	0.504	0.644	0.574	0.677		0.706			0.673	
Adjusted TC	TC'	Hrs.	0.504	0.644	0.574	0.677		0.706			0.673	
Time Lag	Lg	Hrs.	-	-	-	-	-	-			-	
Time to Peak	TP	Hrs.	**0.357**	**0.429**	**0.383**	**0.451**	**0.133**	**0.471**	**0.030**	**0.294**	**0.449**	**0.285**

*** Tp values taken from West I-40 DMP (2000)**

Note:
Minimum Tp=0.133 hours used in
AHYMO model.

Calculation of Time to Peak
Revised DPM procedure
10/1/2011

Description	Var.	Unit	OS.1	OS.4	OS.5	OS.5A	OS.5B	OS.6	ST.1	ST.2A	ST.2B	ST.3
Basin												
Basin Area	A	Acres	219.3	101.8	68.0	68.0	68.0	205.1	51.9	29.3	79.8	71.8
Total Reach	L	Feet	3567.9	3596.2	2016.9	3216.6	2934.1	2957.3	2490.0	2400.0	2000.0	3200.0
Overland Reach	L1	Feet	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0
Overland K	K1		1	1	1	1	1	1	1	1	1	1
Overland Slope	S1	Percent	8.70	10.00	2.50	7.50	6.20	13.75	2.80	5.00	8.75	4.10
Adj. Overland Slope	S1'	Percent	5.720	5.847	2.500	5.555	5.261	6.118	2.800	4.760	5.726	4.097
Gully Reach	L2	Feet	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0	1600.0
Gully K	K2		2.000	2.000	7.800	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Gully Slope	S2	Percent	5.000	5.000	9.000	2.500	5.200	6.870	2.800	2.900	5.938	4.100
Adj. Gully Slope	S2'	Percent	4.760	4.760	5.753	2.500	4.867	5.433	2.800	2.900	5.176	4.097
Arroyo Reach	L3	Feet	1567.9	1596.2	16.9	1216.6	934.1	957.3	490.0	400.0	0.0	1200.0
Arroyo K	K3		3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
Arroyo Slope	S3	Percent	4.470	5.000	1.200	5.000	3.960	4.200	2.800	1.100	1.100	4.100
Adj. Arroyo Slope	S3'	Percent	4.000	4.760	1.200	4.760	3.960	4.189	2.800	1.100	1.100	4.097
Lca	Lca	Feet	1125.0	1600.0	1200.0	870.0	650.0	1500.0	830.0	1200.0	980 0	1570.0
Base Discharge	Qb	cfs	100.0	276.2	175.4	73.0	129.7	488.0	76.5	77.1	77.1	323.2
Ground Slope S	S	Percent	5.182	5.556	7.646	4.067	4 942	6.936	2.800	2.950	6.500	4.100
Adjusted Slope S'	S'	Percent	4.858	5.032	5.579	4.066	4.727	5.448	2.800	2.950	5.345	4.097
K	K		2.116	2.112	2.234	1.914	1.976	1.974	1.826	1.801	1.692	2.000
K'	K'		2.036	2.066	2.485	1.852	1.946	1.917	1.826	1.791	1.668	2.000
K"	K"		3.139	3.703	3.241	3.242	3.335	3.943	3.940	3.844	2.856	4.222
K'"	K'"		2.151	2.538	2.221	2.222	2.286	2.703	2.700	2.635	1.957	2.894
Kn	Kn		0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
Orig. TC	TC	Hrs.	0.206	0.201	0.091	0.231	0.186	0.158	0.226	0.215	0.129	0 219
Adjusted TC	TC'	Hrs.	0.209	0.175	0.106	0.199	0.164	0.130	0.226	0.215	0.123	0.152
Time Lag	Lg	Hrs.	-	-	-	-	-	-	-	-	-	-
Time to Peak	TP	Hrs.	**0.139**	**0.134**	**0.133**	**0.154**	**0.133**	**0.133**	**0.151**	**0.144**	**0.133**	**0.146**

Note:
Minimum Tp=0.133 hours used in
AHYMO model.

Description	Var.	Unit	ST.4A	ST.4B	ST.5	ST.6	ST.7	UD.1B	*UD.1C	UD.2	UD.2A	UD.3
Basin												
Basin Area	A	Acres	78.2	34.6	30.5	34.5	82.5	81.0	56.2	87.7	79.8	24.9
Total Reach	L	Feet	2608.75	1640.0	1119.11	1400.21	1950.0	1990		3921	2879	1603
Overland Reach	L1	Feet	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0	400.0
Overland K	K1		1	1	1	1	1	1	1	1	1	1
Overland Slope	S1	Percent	0.25	6.20	2.50	2.50	2.90	6.03		8.00	2.00	1.93
Adj. Overland Slope	S1'	Percent	0.250	5.261	2.500	2.500	2 900	5.207	0.000	5.632	2.000	1.934
Gully Reach	L2	Feet	1600.0	1240.0	719.1	1000.2	1550.0	1590.0	-400.0	1600.0	1600.0	1203.0
Gully K	K2		2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	1.000	2.000
Gully Slope	S2	Percent	4.680	8.870	4.680	4.680	2.900	6.030		4.94	4.81	1.93
Adj. Gully Slope	S2'	Percent	4.562	5.739	4.562	4.562	2.900	5.207		4.724	4.649	1.934
Arroyo Reach	L3	Feet	608.8	0.0	1.0	1.0	0.0	0.0	0.0	1921.0	879.0	0.0
Arroyo K	K3		3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
Arroyo Slope	S3	Percent	3.300	4.200	3.300	3.300	2.900	6.030		3.59	2.62	1.93
Adj. Arroyo Slope	S3'	Percent	3.300	4.189	3 300	3.300	2.900	5.207	0.000	3.592	2.617	1.934
Lca	Lca	Feet	1901.0	1300.0	1902.0	1903.0	975.0	1000.0		1274.0	1300.0	800.0
Base Discharge	Qb	cfs	426.5	426.5	131.63	197.62	197.62	100.0	100.0	100.0	100.0	0.0
Ground Slope S	S	Percent	3.679	8.219	3.904	4.060	2.900	6.030		4.591	3.751	1.934
Adjusted Slope S'	S'	Percent	3.679	5.662	3.904	4.059	2.900	5.207		4.500	3.751	1.934
K	K		1.061	1.551	1.351	1.435	1.660	1.665		2.180	1.246	1.601
K'	K'		1.057	1.591	1.344	1.426	1.660	1.665		2.114	1.232	1.601
K"	K"		4.683	3.775	3 679	3.882	4.593	3.032		3.261	3.572	0.000
K'"	K'"		3.210	2.588	2.522	2.661	3.148	2.078		2.235	2.448	0.000
Kn	Kn		1.021	0.021	2.021	3.021	0.021	0.021		0.021	0.021	0.021
Orig. TC	TC	Hrs.	0.356	0.102	0.116	0.135	0.192	0.135		0.233	0.331	0.200
Adjusted TC	TC'	Hrs.	0.356	0.074	0.116	0.073	0.192	0.117		0.230	0.331	0.200
Time Lag	Lg	Hrs.	-	-	-	-	-	-		-		-
Time to Peak	TP	Hrs.	**0.237**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.155**	**0.221**	**0.133**

*** Tp values taken from West I-40 DMP (2006)**

Note:
Minimum Tp=0.133 hours used in
AHYMO model.

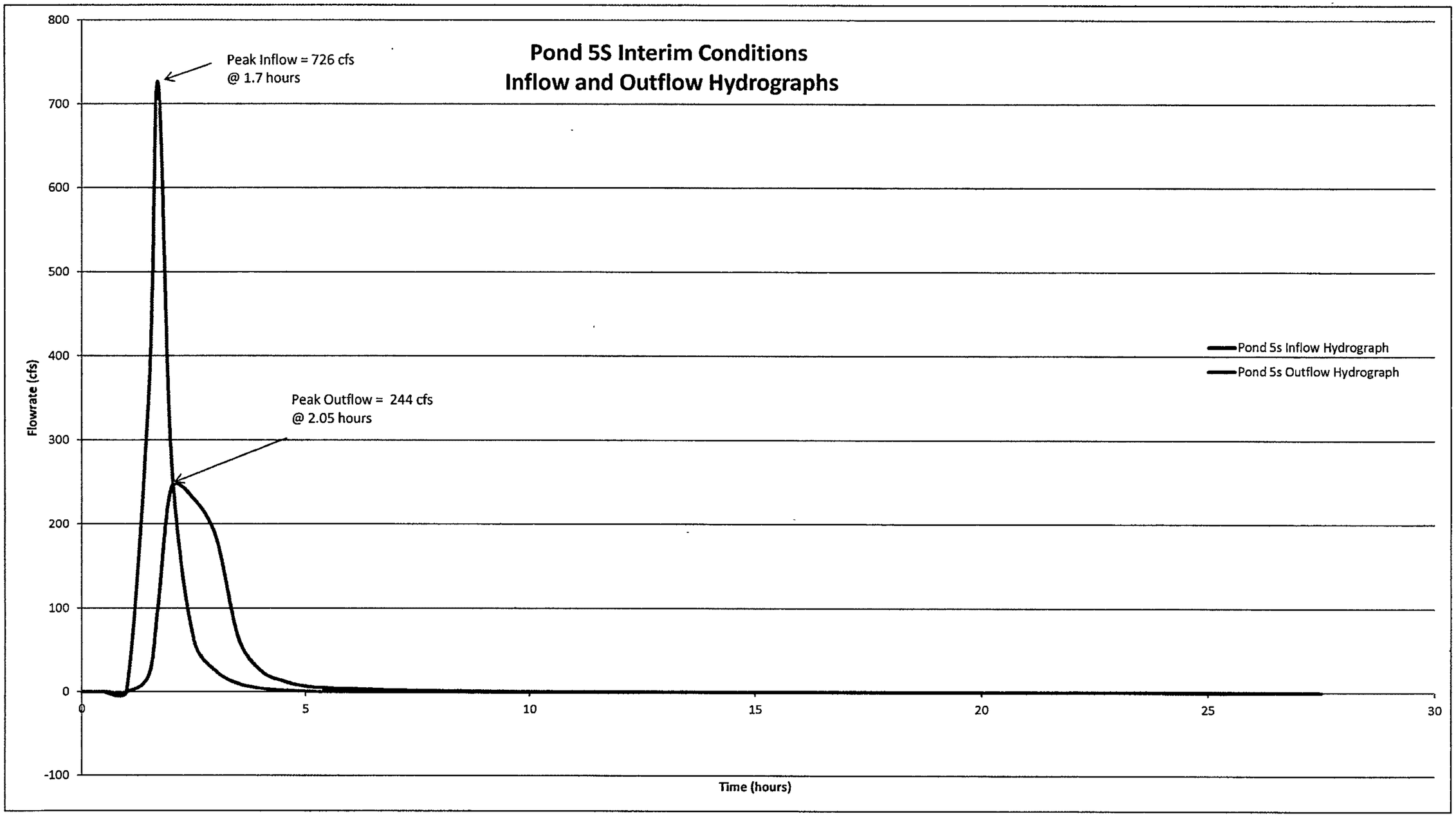
Calculation of Time to Peak
Revised DPM procedure
10/1/2011

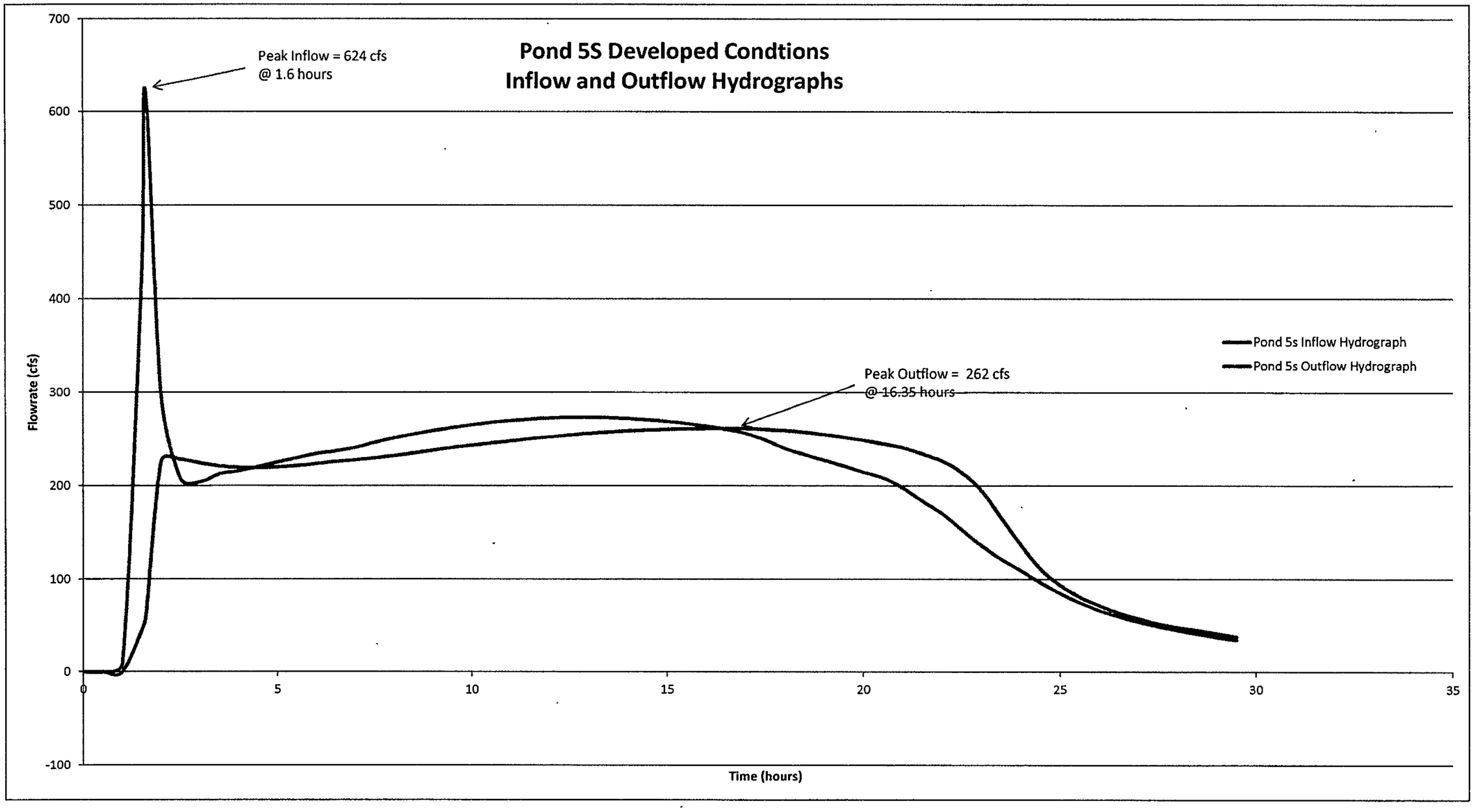
Description	Var.	Unit	UD.4A	UD.4D	UD.4C	UD.5A	UD.5B	UD.5C	UD.5E
Basin									
Basin Area	A	Acres	16.7	20.7	70.0	79.9	53.6	54.4	119.70
Total Reach	L	Feet	1733	1998	2156	2500	2461	2094.55	3400
Overland Reach	L1	Feet	400.0	400.0	400.0	400.0	400.0	400.0	400.0
Overland K	K1		1	1	1	1	1	1	1
Overland Slope	S1	Percent	4.04	2.37	3.34	2.60	2.25	8.70	0.86
Adj. Overland Slope	S1'	Percent	4.040	2.370	3.340	2.600	2.250	5.720	0.860
Gully Reach	L2	Feet	1333.0	1598.0	1600.0	1600.0	1600.0	1600.0	1600.0
Gully K	K2		2.000	3.000	2.000	2.000	2.000	2.000	2.000
Gully Slope	S2	Percent	4.040	4.040	3.34	2.600	6.125	3.700	5.900
Adj. Gully Slope	S2'	Percent	4.040	4.040	3.340	2.600	5.238	3.700	5.163
Arroyo Reach	L3	Feet	0.0	0.0	156.0	500.0	461.0	94.6	1400.0
Arroyo K	K3		3.000	3.000	3.000	3.000	3.000	3.000	3.000
Arroyo Slope	S3	Percent	4.040	2.000	3.34	2.600	6.074	3.200	5.900
Adj. Arroyo Slope	S3'	Percent	4.040	2.000	3 340	2.600	5.221	3.200	5.163
Lca	Lca	Feet	1050.0	1050.0	1050.0	1900.0	1366.0	1300.0	1500.0
Base Discharge	Qb	cfs	1.0	1.0	1.0	100.0	300.0	322.9	100.0
Ground Slope S	S	Percent	4.040	3.706	3.340	2.600	5.486	4.632	5.307
Adjusted Slope S'	S'	Percent	4.040	3.706	3.340	2.600	5.001	4.530	4.920
K	K		1.625	1.978	1.722	1.829	1.611	1.710	1.549
K'	K'		1.625	1.978	1.722	1.829	1.610	1.638	1.550
K"	K"		1.503	1.569	1.653	4.291	3.770	4.014	3.119
K"'	K"'		1.030	1.075	1.133	2.941	2.584	2.752	2.138
Kn	Kn		0.021	0.021	0.021	0.021	0.021	0.021	0.021
Orig. TC	TC	Hrs.	0.147	0.146	0.190	0.235	0.181	0.158	0.265
Adjusted TC	TC'	Hrs.	0.159	0.146	0.190	0.235	0.118	0.099	0.199
Time Lag	Lg	Hrs.	-	-	-	-	-	-	-
Time to Peak	TP	Hrs.	**0.133**	**0.133**	**0.133**	**0.157**	**0.133**	**0.133**	**0.176**

Note:
Minimum Tp=0.133 hours used in AHYMO model.

Description	Var.	Unit	L7.1A	L9.1A	L9.2A
Basin					
Basin Area	A	Acres	6.00	53.60	61.40
Total Reach	L	Feet	1000	3064	2917
Overland Reach	L1	Feet	400.0	400.0	400.0
Overland K	K1		0.7	1	1
Overland Slope	S1	Percent	3.00	12.25	9.25
Adj. Overland Slope	S1'	Percent	3.000	6.017	5.778
Gully Reach	L2	Feet	600.0	1600.0	1600.0
Gully K	K2		2.000	2.000	2 000
Gully Slope	S2	Percent	3.670	4.688	4.313
Adj. Gully Slope	S2'	Percent	3.670	3.670	4.286
Arroyo Reach	L3	Feet	0.0	1064.0	917.0
Arroyo K	K3		3.000	3.000	3.000
Arroyo Slope	S3	Percent	3.800	0.200	2.726
Adj. Arroyo Slope	S3'	Percent	3.800	0.200	2.726
Lca	Lca	Feet	500.0	1802.0	1200.0
Base Discharge	Qb	cfs	13.0	100.0	100.0
Ground Slope S	S	Percent	3.402	4.116	4.491
Adjusted Slope S'	S'	Percent	3.402	4.113	4.427
K	K		1.114	1.183	1.961
K'	K'		1.114	1.100	1.879
K"	K"		2.598	3.412	3.288
K"'	K"'		1.781	2.338	2.254
Kn	Kn		0.021	0.021	0.021
Orig. TC	TC	Hrs.	0.135	0.355	0.195
Adjusted TC	TC'	Hrs.	0.135	0.179	0.171
Time Lag	Lg	Hrs.	-	-	-
Time to Peak	TP	Hrs.	**0.133**	**0.212**	**0.133**

Note:
Minimum Tp=0.133 hours used in AHYMO model.


Pond 5S Interim Conditions
Inflow and Outflow Hydrographs
Peak Inflow = 726 cfs
@ 1.7 hours
Peak Outflow = 244 cfs
@ 2.05 hours
Pond 5s Inflow Hydrograph
Pond 5s Outflow Hydrograph
Flowrate (cfs)
Time (hours)
800
700
600
500
400
300
200
100
0
-100
0
5
10
15
20
25
30


Pond 5S Developed Condtions
Inflow and Outflow Hydrographs
Peak Inflow = 624 cfs
@ 1.6 hours
Peak Outflow = 262 cfs
@ 16.35 hours
Pond 5s Inflow Hydrograph
Pond 5s Outflow Hydrograph
Flowrate (cfs)
Time (hours)
700
600
500
400
300
200
100
0
-100
0
5
10
15
20
25
30
35

; VENTANAS DRAINAGE FACILITY N
ESTIMATE OF SEDIMENT STORAGE
AUG. 17, 1995

FROM BLACK ARROYO DAM:
(OBTAINED FROM "FINAL, BLACK ARROYO SEDIMENT ISSUES", BHI, MAY 1990):
DRAINAGE AREA = 10 SQ MILES.
AVERAGE ANNUAL SEDIMENT ACCUMULATION: 1 AC-FT/ SQ MILE/ YR.
100-YR EXISTING DEVELOPMENT SEDIMENT BULKING FACTOR = 17% (DETERMINED AFTER ANALYZING SEDIMENT ESTIMATES FOR CALABACILLAS DAM).
100-YR EXISTING DEVELOPMENT CLEAR WATER VOLUME = 323 AC-FT.

GET RATIO OF BLACK ARROYO'S 100-YR TO 5-YR ACCUM. AVG ANN:

A. 100-YR SED VOL TRAPPED IN BLACK ARROYO DAM = (.17 x 323) =	43.9 AC-FT
B. 5-YR ACCUM. AVG ANN. (1 AC-FT/ SQ MI/ YR) = (1 x 10 x 5) =	50 AC-FT
TOTAL =	94 AC-FT

RATIO OF A TO B = (43.9/50) = 0.88

FROM LAS VENTANAS (LVDF NO. 1):
DRAINAGE AREA = 2 SQ MILES.
FULL DEVELOPMENT SEDIMENT BULKING FACTOR = 2.5% (PER RECOMMENDATION BY DR. HEGGEN, "SEDIMENT ISSUES IN THE PIEDRAS MARCADAS WATERSHED", OCT. 1992).
100-YR FULL DEVELOPMENT VOLUME WITH 2.5% SEDIMENT BULKING = 185 AC-FT.

OPTION 1 -- 2.5% 100-YR BULKING FACTOR

A. TRAPPED 100-YR FULLY DEVELOPED VOLUME = (.025 x 185) =	4.6 AC-FT
B. 5-YR ACCUM. AVG ANN. (1 AC-FT/ SQ MI/ YR) = (1 x 2 x 5) =	10 AC-FT
TOTAL =	14.6 AC-FT

RATIO OF A TO B = (4.6/10) = 0.46
COMPARED TO BLACK ARROYO DAM, THIS RATIO IS LOW--APPROX. 1/2 BLACK ARROYO'S.

OPTION 2 -- RATIO OF 100-YR TO AVERAGE ANNUAL FROM BLACK ARROYO

A. TRAPPED 100-YR VOLUME = (.88 x 10) =	8.8 AC-FT
B. 5-YR ACCUM. AVG ANN. (1 AC-FT/ SQ MI/ YR) = (1 x 2 x 5) =	10 AC-FT
TOTAL =	18.8 AC-FT

RECOMMEND:
DUE TO UNKNOWNS IN SEDIMENT VOLUME DETERMINATION,
SUGGEST WE DESIGN LVDF NO. 1 FOR A SEDIMENT STORAGE OF 19 AC-FT.

USE 20 AC-FT PER AMAFCA

Pond 5S 3 Year Accumulation Average Annual

Basin	Bulking Factor	Area (mi^2)	Bulking Factor X Area
UD.5A	1.12	0.15539027	0.174037098
UD.5E	1.12	0.18721429	0.20968001
OS.5A	1.12	0.105864	0.118567683
OS.5B	1.12	0.15405701	0.172543853
UD.5B	1.12	0.08424684	0.094356457
UD.5C	1.12	0.08519165	0.095414652
L91.A	1.1	0.12435886	0.136794744
Average Bulking Factor		0.89632292	1.117225133

Black Arroyo Dam Sediment Average Annual accumulation is = 1 ac-ft/ sq mi/yr
Black arroyo sediment bulking factor is = 1.17
Pond 5s Sediment Average Annual Accumulation = Pond 5s Average Bulking Factor/ Black Arroyo Sediment Bulking Factor
Pond 5s Sediment Average Annual Accumulation = (12%/17%) = 0.705882

Pond 5S 2-YR Accumulation Average Annual =(.705 ac-ft/sq mi/ yr) = .70582 X .896322 X 2 = 1.27 ac-ft

APPENDIX B – HYDRAULIC CALCULATIONS

Pond 5S Stage Discharge Curve

Number of barrells		1
Outlet Diameter (feet):		4.5
Invert		5436

Storage	Elevation	Head	Orifice Head	Weir Length	Orifice Area	Weir Q	Orifice Q	Control Q
(ac-ft)	(ft)	(ft)		(ft)	(ft)			
1.0	**5437**	1	-1.25	4.42	3.53	5.7	0.0	**5.7**
2.0	**5438**	2	-0.25	6.57	7.07	24.1	0.0	**24.2**
3.1	**5439**	3	0.75	8.60	10.60	58.1	50.1	**50.1**
4.3	**5440**	4	1.75	11.08	14.14	115.2	102.1	**102.1**
5.6	**5441**	5	2.75	14.14	15.90	205.5	143.9	**143.9**
6.9	**5442**	6	3.75	14.14	15.90	270.1	168.1	**168.1**
8.3	**5443**	7	4.75	14.14	15.90	340.4	189.2	**189.2**
9.8	**5444**	8	5.75	14.14	15.90	415.9	208.1	**208.1**
11.5	**5445**	9	6.75	14.14	15.90	496.2	225.5	**225.5**
15.1	**5446**	10	7.75	14.14	15.90	581.2	241.6	**241.6**
21.5	**5447**	11	8.75	14.14	15.90	670.5	256.7	**256.7**
29.0	**5448**	12	9.75	14.14	15.90	764.0	271.0	**271.0**

APS/WALH POND 5S
PORTED RISER TOWER DESIGN

POND 5S

DESIGN PARAMETERS

Peak Discharge Rate = 262 cfs, 100yr

Bottom of Pond = 5436 feet
Orifice Coefficient = 0.62
Weir coefficient = 3.32
Max. WSE (from AHYMO) = 5447.29 feet

Primary			Secondary		
Length:	0	in , W2	Length:	69	in, 4.5'
Width:	0	in W1	Width:	0	in, W1
Riser Opening Area:	0	in^2	Riser Opening	0	in^2

Calculation of Length of Weir:

	(In)	(ft)
Total Perimeter of Primary Grate	0	0.00
Total Perimeter of Secondary Grate:	192	16.00
Edges:	0.00	0.00
Total Perimeter of Grate:	192.00	16.00
Area Reduction:	0.55	0.55
(ex. 0.55 equals only 55% us	105.6	8.8

Riser Port Height = 6 in
Length of Riser @ 45°Cut = 8.5 in 0.71 ft
Riser Port Length = 1.75 ft
Area = 0.875

		ORIFICE FLOW															WEIR FLOW					
		OPENING	NUMBER			ROW #1	ROW #1	ROW #2	Row #2	ROW #3	Row #3	ROW #4	Row #4	ROW #5	Row #5	CUM. PORT	TOWER OPENING			TOTAL	ADJUSTED	WSE Above
	WATER	ROW	OF	OPENING	OPENING	OPENING	Flow	OPENING	Flow	OPENING	Flow	OPENING	Flow	OPENING	Flow	FLOW	WEIR	WEIR	FLOW	FLOW	FLOW	Pond
	ELEVATION	NUMBER	OPENINGS	DIAMETER	AREA	HEAD	Rate	HEAD	Rate	HEAD	Rate	HEAD	Rate	HEAD	Rate	RATE	LENGTH	HEAD	RATE	RATE	RATE	Bottom
	(ft)			(in)	(sf)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(cfs)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
POND INVERT	5436.00					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5436.0	0.0	0.0				0	0.0	5436.00
Bottom of Row 1	5436.00	0	18	6	3.53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5436.0	0.0	0.0				0	0.0	5436.00
Middle of Row 1	5436.25	1	18	6	3.53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5436.3	0.0	0.0				0	0.0	5436.25
Top of Row 1	5436.50	1	18	6	3.53	0.25	8.8	0.0	0.0	0.0	0.0	0.0	0.0	5436.5	0.0	8.8				9	6.6	5436.50
	5436.50	1	18	6	3.53	0.25	8.8	0.0	0.0	0.0	0.0	0.0	0.0	5436.5	0.0	8.8				9	6.6	5436.50
Bottom of Row 2	5437.00	2	8		7.00	0.75	15.2	0.0	0.0	0.0	0.0	0.0	0.0	5437.0	0.0	15.2				15	11.4	5437.00
	5437.00	2	8		7.00	0.75	15.2	0.0	0.0	0.0	0.0	0.0	0.0	5437.0	0.0	15.2				15	11.4	5437.00
Middle of Row 2	5437.35	2	8		7.00	1.10	18.5	0.0	0.0	0.0	0.0	0.0	0.0	5437.4	0.0	18.5				18	13.9	5437.35
Top of Row 2	5437.71	2	8		7.00	1.46	21.2	0.35	20.7	0.0	0.0	0.0	0.0	5437.7	0.0	42.0				42	31.5	5437.71
Bottom of Row 3	5438.21	3	8		7.00	1.96	24.6	0.85	32.2	0.0	0.0	0.0	0.0	5438.2	0.0	56.8				57	42.6	5438.21
	5438.00	3	8		7.00	1.75	23.3	0.65	28.0	0.0	0.0	0.0	0.0	5438.0	0.0	51.3				51	38.4	5438.00
Middle of Row 3	5438.56	3	8		7.00	2.31	26.7	1.21	38.3	0.0	0.0	0.0	0.0	5438.6	0.0	65.0				65	48.8	5438.56
Top of Row 3	5438.92	3	8		7.00	2.67	28.7	1.56	43.5	0.4	20.7	0.0	0.0	5438.9	0.0	93.0				93	69.7	5438.92
	5439.00	3	8		7.00	2.75	29.2	1.65	44.7	0.4	23.0	0.0	0.0	5439.0	0.0	96.9				97	72.7	5439.00
Bottom of Row 4	5439.42	4	8		7.00	3.17	31.3	2.06	50.0	0.9	32.2	0.0	0.0	5439.4	0.0	113.5				113	85.1	5439.42
Middle of Row 4	5439.77	4	8		7.00	3.52	33.0	2.42	54.1	1.2	38.3	0.0	0.0	5439.8	0.0	125.4				125	94.1	5439.77
	5440.00	4	8		7.00	3.75	34.1	2.65	56.7	1.4	41.8	0.2	16.7	5440.0	0.0	149.1				149	111.9	5440.00
Top of Row 4	5440.13	4	8		7.00	3.88	34.6	2.77	58.0	1.6	43.5	0.4	20.7	5440.1	0.0	156.9				157	117.6	5440.13
	5441.00	4	8		7.00	4.75	38.3	3.65	66.5	2.4	54.4	1.2	38.6	5441.0	0.0	197.8				198	148.4	5441.00
TOP OF RISER	5441.50	4	0			5.25	40	4.15	71	2.94	60	1.73	46	5441.50	0.0	216.7				217	162.5	5441.50
	5442.00	4	0			5.75	42	4.65	75	3.44	65	2.23	52	5442.00	0.0	233.8	8.800	0.50	10	244	185.7	5442.00
	5443.00		0			6.75	46	5.65	83	4.44	73	3.23	63	5443.00	0.0	264.4		1.50	54	318	252.0	5443.00
	5444.00		0			7.75	49	6.65	90	5.44	81	4.23	72	5444.00	0.0	291.6		2.50	115	407	334.2	5444.00
	5445.00		0			8.75	52	7.65	96	6.44	88	5.23	80	5445.00	0.0	316.3		3.50	191	508	428.6	5445.00
	5446.00		0			9.75	55	8.65	102	7.44	95	6.23	87	5446.00	0.0	339.2		4.50	279	618	533.3	5446.00
100-Yr Crest Elev	5447.00		0			10.75	58	9.65	108	8.44	101	7.23	94	5447.00	0.0	360.6		5.50	377	737	647.3	5447.00
	5448.00		0			11.75	60	10.65	114	9.44	107	8.23	100	5448.00	0.0	380.8		6.50	484	865	769.8	5448.00

Assumptions:
1. This analysis assumes that 75% of the calculated Total Outflow is the actual Adjusted Flow Rate to account for any potential plugging of the Ported Riser.

Notes:
1. Orifice Equation Flow Rate= Q=Cd*A*(2*g*H)^0.5
2. Weir Flow Rate Equation = Q=CLH^1.5
3. Weir Flow Equation in this spreadsheet is for a broad crest weir (King, Handbook of Hydraulics) Assuming a weir coefficient of 3.32, H = 6' max
   Water Resources Engineering by Mays gives the following equation for sharp crested weirs: Q=Cd*(2/3)*(2g)^(1/2)*L*H^3/2, they suggest a coefficient of 0.62.
4. Revision 1 - eliminated primary grate (shortened structure by 3'-8")

Diameter (ft) = 4.5

Pipes-only Elevation (ft)	WeirHead (ft)	OrificeHead (ft)	Weir Length (in)	Orifice Area (in)	Weir Q	Orifice Q	Control Q
5436	0	-2.25	0	0.00	0.0	0	0
5437	1	-1.25	4.417944105	3.53	5.7	0.0	5.74
5438	2	-0.25	6.567548906	7.07	24.1	0.0	24.15
5439	3	0.75	8.597849563	10.60	58.1	50.1	50.11
5440	4	1.75	11.07863476	14.14	115.2	102.1	102.05
5441	5	2.75	0	15.90	205.5	143.9	143.92
5442	6	3.75	0	15.90	270.1	168.1	168.07
5443	7	4.75	0	15.90	340.4	189.2	189.15
5444	8	5.75	0	15.90	415.9	208.1	208.11
5445	9	6.75		15.90	496.2	225.5	225.49
5446	10	7.75		15.90	581.2	241.6	241.61
5447	11	8.75		15.90	670.5	256.7	256.73
5448	12	9.75		15.90	764.0	271.0	271.00

Ports-only Elevation	Q for the ports
5436.0	0.0
5437.0	11.4
5438.0	31.5
5439.0	72.7
5440.0	111.9
5441.0	148.4
5442.0	185.7
5443.0	252.0
5444.0	334.2
5445.0	428.6
5446.0	533.3
5447.0	647.3
5448.0	769.8

Controlling Elevation	Control Q
5436.0	0.0
5437.0	5.7
5438.0	24.2
5439.0	50.1
5440.0	102.1
5441.0	143.9
5442.0	168.1
5443.0	189.2
5444.0	208.1
5445.0	225.5
5446.0	241.6
5447.0	256.7
5448.0	271.0

Emergency Spillway

WEIR COEFFICIENT = 2.630 X-SECTION DISTANCE = 0.250

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	1.7	3.0	106.0	0.0			
2.0	14.0	0.0	4.0	120.0	1.7			

WSEL FT.	DEPTH INC FT.	FLOW AREA SQ.FT.	FLOW RATE (CFS)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS
0.100	0.100	9.282	7.706	0.830	93.647
0.200	0.200	18.729	21.951	1.172	95.294
0.300	0.300	28.341	40.611	1.433	96.941
0.400	0.400	38.118	62.964	1.652	98.588
0.500	0.500	48.059	88.607	1.844	100.235
0.600	0.600	58.165	117.283	2.016	101.882
0.700	0.700	68.435	148.808	2.174	103.529
0.800	0.800	78.871	183.049	2.321	105.176
0.900	0.900	89.471	219.902	2.458	106.824
1.000	1.000	100.235	259.285	2.587	108.471
1.100	1.100	111.165	301.133	2.709	110.118
1.200	1.200	122.259	345.395	2.825	111.765
1.300	1.300	133.518	392.025	2.936	113.412
1.400	1.400	144.941	440.988	3.043	115.059
1.500	1.500	156.529	492.254	3.145	116.706
1.600	1.600	168.282	545.798	3.243	118.353

Q_{100} (Developed) = 4161 cfs

Maximum height of water over the spillway ≈ 1.45'

Q_{100} (Interim) = 128 cfs - 250 for gutter s/w

Maximum height of water over the spillway ≈ 0.65'

Emergency Spillway Analysis
(developed Conditions)

```
5* ADD DAM 5 ARROYO AND UD.2A*
 *
 ADD HYD          ID=9   HYD=ARYDAM5&L91.A
              ID=9     ID=22
 PRINT HYD        ID=9    CODE=1

                        HYDROGRAPH FROM AREA ARYDAM5&L91.A


    RUNOFF VOLUME =    1.23344 INCHES    =    430.4912 ACRE-FEET
    PEAK DISCHARGE RATE =    623.60 CFS  AT   1.600 HOURS   BASIN AREA =  6.5441 SQ. MI.



 *S* ADD DAM 5 ARROYO AND UD.2*
 *S TOTAL FLOW INTO DAM 5 POND ON SOCCER FIELDS
 *
 *ADD HYD          ID=9   HYD=ARYDAM5&L91.A
 *              ID=9     ID=91
 *PRINT HYD        ID=9    CODE=1
```

Pond modeled with the pond outlet @ 100% Blockage

Outflow is based on proposed Emergency Spillway over calculations

Peak flow over the Emergency Spillway is calculated @ 461 cfs

(See Page 2)

```
 *S* ROUTE FLOW THROUGH DAM 5 POND ON SOCCER FIELDS ****
 *S* OUTLET MODELED AS A 4.5' PIPE
 ROUTE RESERVOIR    ID=10   HYD=DAM5S
              INFLOW ID=9  CODE=10
              OUTFLOW        STORAGE        ELEV
              (CFS)          (AC-FT)        (FT)
                   0.1              0              5436
                   0.2              1              5437
                   0.3              2              5438
                   0.4            3.1              5439
                   0.5            4.3              5440
                   0.6            5.6              5441
                   0.7              7              5442
                   0.8            8.4              5443
                   0.9           10.4              5444
                     1           13.7              5445
                   1.1           18.4              5446
                   1.2           24.4              5447
                     7           31.7            5447.4
                   117           31.7              5448
                   301           31.7            5448.5
                   545           31.7              5449

 * * * * * * * * * * * * * * * * * * *

  TIME    INFLOW   ELEV     VOLUME   OUTFLOW
  (HRS)   (CFS)    (FEET)   (AC-FT)  (CFS)

   .00      .00  5435.00    -1.000      .00
   .50      .00  5436.00      .000      .10
  1.00     8.36  5436.05      .049      .10
  1.50   421.25  5439.00     3.106      .40
  2.00   296.43  5446.60    22.003     1.16
  2.50   207.37  5447.40    31.697     7.00
  3.00   203.90  5447.41    31.700     8.98
  3.50   212.66  5447.46    31.700    17.74
  4.00   215.84  5447.48    31.700    20.92
  4.50   220.25  5447.50    31.700    25.33
  5.00   224.96  5447.53    31.700    30.04
  5.50   229.62  5447.55    31.700    34.70
```

(2)

6.00	234.13	5447.58	31.700	39.21
6.50	234.21	5447.58	31.700	39.29
7.00	237.44	5447.59	31.700	42.52
7.50	242.59	5447.62	31.700	47.66
8.00	247.18	5447.65	31.700	52.25
8.50	251.24	5447.67	31.700	56.32
9.00	254.82	5447.69	31.700	59.90
9.50	257.95	5447.71	31.700	63.03
10.00	260.66	5447.72	31.700	65.75
10.50	262.99	5447.73	31.700	68.07
11.00	264.77	5447.74	31.700	69.85
11.50	265.77	5447.75	31.700	70.85
12.00	266.14	5447.75	31.700	71.22
12.50	265.98	5447.75	31.700	71.06
13.00	265.31	5447.75	31.700	70.39
13.50	264.01	5447.74	31.700	69.09
14.00	262.20	5447.73	31.700	67.29
14.50	259.91	5447.72	31.700	65.00
15.00	257.16	5447.70	31.700	62.24
15.50	253.93	5447.68	31.700	59.01
16.00	248.91	5447.66	31.700	54.00
16.50	240.71	5447.61	31.700	45.79
17.00	233.22	5447.57	31.700	38.31
17.50	226.81	5447.54	31.700	31.89
18.00	220.10	5447.50	31.700	25.18
18.50	213.24	5447.46	31.700	18.32
19.00	206.33	5447.42	31.700	11.41
19.50	192.80	5447.40	31.695	7.00
20.00	176.77	5447.40	31.698	7.00
20.50	160.12	5447.40	31.692	6.99
21.00	138.91	5447.40	31.699	7.00
21.50	120.96	5447.40	31.694	6.99
22.00	105.76	5447.40	31.700	7.01
22.50	90.57	5447.40	31.694	7.00
23.00	77.37	5447.40	31.700	7.08
23.50	66.66	5447.40	31.696	7.00
24.00	57.80	5447.40	31.700	7.00
24.50	50.31	5447.40	31.697	7.00
25.00	44.08	5447.40	31.700	7.04
25.50	38.91	5447.40	31.698	7.00
26.00	34.59	5447.40	31.700	7.00
26.50	30.96	5447.40	31.699	7.00
27.00	27.89	5447.40	31.700	7.01
27.50	25.26	5447.40	31.699	7.00

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
28.00	23.70	5447.40	31.700	7.00
28.50	22.95	5447.40	31.700	7.00
29.00	22.20	5447.40	31.700	7.00
29.50	21.44	5447.40	31.700	7.00

PEAK DISCHARGE = 461.064 CFS - PEAK OCCURS AT HOUR 12.05
MAXIMUM WATER SURFACE ELEVATION = 5448.828
MAXIMUM STORAGE = 31.7000 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=10 CODE=10

HYDROGRAPH FROM AREA DAM5S

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	6.000	39.2	12.000	71.2	18.000	25.2	24.000	7.0

.500	.1	6.500	39.3	12.500	71.1	18.500	18.3	24.500	7.0
1.000	.1	7.000	42.5	13.000	70.4	19.000	11.4	25.000	7.0
1.500	.4	7.500	47.7	13.500	69.1	19.500	7.0	25.500	7.0
2.000	1.2	8.000	52.3	14.000	67.3	20.000	7.0	26.000	7.0
2.500	7.0	8.500	56.3	14.500	65.0	20.500	7.0	26.500	7.0
3.000	9.0	9.000	59.9	15.000	62.2	21.000	7.0	27.000	7.0
3.500	17.7	9.500	63.0	15.500	59.0	21.500	7.0	27.500	7.0
4.000	20.9	10.000	65.7	16.000	54.0	22.000	7.0	28.000	7.0
4.500	25.3	10.500	68.1	16.500	45.8	22.500	7.0	28.500	7.0
5.000	30.0	11.000	69.8	17.000	38.3	23.000	7.1	29.000	7.0
5.500	34.7	11.500	70.9	17.500	31.9	23.500	7.0	29.500	7.0

RUNOFF VOLUME = 1.14271 INCHES = 398.8264 ACRE-FEET
PEAK DISCHARGE RATE = 461.06 CFS AT 12.050 HOURS BASIN AREA = 6.5441 SQ. MI.

Emergency Spillway Analysis
(Interim Conditions)

(1)

S ADD DAM 5 ARROYO BASIN L9.1A*
*
ADD HYD ID=9 HYD=ARYDAM5&L91.A
ID=9 ID=8
PRINT HYD ID=9 CODE=1

HYDROGRAPH FROM AREA ARYDAM5&L91.A

RUNOFF VOLUME = .65391 INCHES = 35.7401 ACRE-FEET
PEAK DISCHARGE RATE = 726.17 CFS AT 1.700 HOURS BASIN AREA = 1.0248 SQ. MI.

Pond is modeled with the pond outlet @ 100% Blockage.
Outflow is based on proposed emergency spillway

S ROUTE FLOW THROUGH DAM 5 POND ON SOCCER FIELDS ****
s POND 5S
S OUTLET MODELED AS A 4.5' PIPE
ROUTE RESERVOIR ID=10 HYD=POND5s
INFLOW ID=9 CODE=10

Peak flow over the emergency spillway is calculated @ 128 cfs (See Page 2)

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEV (FT)
0.1	0	5436
0.2	1.00	5437
0.3	2.00	5438
0.4	3.1	5439
0.5	4.3	5440
0.6	5.6	5441
0.7	7.0	5442
0.8	8.4	5443
0.9	10.4	5444
1.0	13.7	5445
1.1	18.4	5446
1.2	24.4	5447
7	31.7	5447.4
117	31.7	5448
301	31.7	5448.5
545	31.7	5449

* * * * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	5435.00	-1.000	.00
.50	.00	5436.00	.000	.10
1.00	.91	5436.01	.006	.10
1.50	358.36	5437.87	1.866	.29
2.00	277.46	5447.15	27.082	3.33
2.50	62.29	5447.98	31.700	114.02
3.00	24.64	5447.60	31.700	43.95
3.50	10.01	5447.43	31.700	12.27
4.00	4.22	5447.40	31.662	6.97
4.50	1.93	5447.39	31.497	6.84
5.00	1.01	5447.38	31.275	6.66
5.50	.63	5447.36	31.036	6.47
6.00	.49	5447.35	30.796	6.28
6.50	.10	5447.34	30.552	6.09
7.00	.03	5447.32	30.307	5.89
7.50	.01	5447.31	30.068	5.70
8.00	.00	5447.30	29.836	5.52
8.50	.00	5447.29	29.612	5.34

9.00	.00	5447.27	29.395	5.17
9.50	.00	5447.26	29.185	5.00
10.00	.00	5447.25	28.981	4.84
10.50	.00	5447.24	28.785	4.68
11.00	.00	5447.23	28.594	4.53
11.50	.00	5447.22	28.410	4.39
12.00	.00	5447.21	28.232	4.24
12.50	.00	5447.20	28.059	4.11
13.00	.00	5447.19	27.892	3.97
13.50	.00	5447.18	27.731	3.85
14.00	.00	5447.17	27.574	3.72
14.50	.00	5447.17	27.423	3.60
15.00	.00	5447.16	27.277	3.49
15.50	.00	5447.15	27.135	3.37
16.00	.00	5447.14	26.998	3.26
16.50	.00	5447.14	26.865	3.16
17.00	.00	5447.13	26.737	3.06
17.50	.00	5447.12	26.612	2.96
18.00	.00	5447.11	26.492	2.86
18.50	.00	5447.11	26.376	2.77
19.00	.00	5447.10	26.263	2.68
19.50	.00	5447.10	26.154	2.59
20.00	.00	5447.09	26.049	2.51
20.50	.00	5447.08	25.947	2.43
21.00	.00	5447.08	25.848	2.35
21.50	.00	5447.07	25.752	2.27
22.00	.00	5447.07	25.660	2.20
22.50	.00	5447.06	25.571	2.13
23.00	.00	5447.06	25.484	2.06
23.50	.00	5447.05	25.400	1.99
24.00	.00	5447.05	25.319	1.93
24.50	.00	5447.05	25.241	1.87
25.00	.00	5447.04	25.165	1.81
25.50	.00	5447.04	25.091	1.75
26.00	.00	5447.03	25.020	1.69
26.50	.00	5447.03	24.951	1.64
27.00	.00	5447.03	24.885	1.59
27.50	.00	5447.02	24.820	1.53

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
28.00	.00	5447.02	24.758	1.48
28.50	.00	5447.02	24.698	1.44
29.00	.00	5447.01	24.639	1.39
29.50	.00	5447.01	24.583	1.35

PEAK DISCHARGE = 127.502 CFS PEAK OCCURS AT HOUR 2.40
MAXIMUM WATER SURFACE ELEVATION = 5448.028
MAXIMUM STORAGE = 31.7000 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=10 CODE=10

HYDROGRAPH FROM AREA POND5s

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	6.000	6.3	12.000	4.2	18.000	2.9	24.000	1.9
.500	.1	6.500	6.1	12.500	4.1	18.500	2.8	24.500	1.9
1.000	.1	7.000	5.9	13.000	4.0	19.000	2.7	25.000	1.8
1.500	.3	7.500	5.7	13.500	3.8	19.500	2.6	25.500	1.7
2.000	3.3	8.000	5.5	14.000	3.7	20.000	2.5	26.000	1.7
2.500	114.0	8.500	5.3	14.500	3.6	20.500	2.4	26.500	1.6
3.000	43.9	9.000	5.2	15.000	3.5	21.000	2.4	27.000	1.6

(3)

3.500	12.3	9.500	5.0	15.500	3.4	21.500	2.3	27.500	1.5
4.000	7.0	10.000	4.8	16.000	3.3	22.000	2.2	28.000	1.5
4.500	6.8	10.500	4.7	16.500	3.2	22.500	2.1	28.500	1.4
5.000	6.7	11.000	4.5	17.000	3.1	23.000	2.1	29.000	1.4
5.500	6.5	11.500	4.4	17.500	3.0	23.500	2.0	29.500	1.3

RUNOFF VOLUME = .20521 INCHES = 11.2157 ACRE-FEET
PEAK DISCHARGE RATE = 127.50 CFS AT 2.400 HOURS BASIN AREA = 1.0248 SQ. MI.

nalyzer Report

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rainage Structure Analyzer

lvert Hydraulic Analysis

ate: Wednesday, March 07, 2012 9:29:06 AM

==========

Input Data

---

ape	Circular	
aterial	Precast NEW CUL	
Roughness	0.013000	
Entrance Edge	Groove end w/ headwall	
umber of Barrels	1	
ength	302.0000	ft
lope	2.0800%	
Tailwater	8.0000	ft
let Control Equation	Entrance Loss	
ze (W x T):	54.00 x 4.5000	
low Rate	186.0000	cfs

tput Results

---

low Rate	186.0000	cfs
Control	Inlet	
apacity	283.6114	cfs
anning's Velocity	19.0136	ft/s
eadwater	7.2769	ft
Critical Depth	3.9300	ft
rmal Depth	2.6580	ft
ze (W x T):	54.00 x 4.5000	

alyzer Report

Dam 9 Diversion Reach 1

==========

rainage Structure Analyzer

annel Hydraulic Analysis

ate: Wednesday, March 07, 2012 9:49:54 AM

==========

Input Data

---

ape	Trapezoidal
aterial	Bare Soil
Roughness	0.030000
Bottom Width	30.0000 ft
eft Slope	16.6667%
ight Slope	16.6667%
ed Slope	4.6000%
Flow Rate	37.0000 cfs

tput Results

Flow Rate	37.0000 cfs
epth	0.2710 ft
elocity	4.3171 ft/s
op Width	33.2520 ft
Critical Depth	0.3520 ft

per Critical

Reach 2

ıalyzer Report

==========

Drainage Structure Analyzer

ıannel Hydraulic Analysis

Date: Wednesday, March 07, 2012 9:50:19 AM

==========

Input Data

ıape	Trapezoidal	
aterial	Bare Soil	
Roughness	0.030000	
Bottom Width	30.0000	ft
eft Slope	16.6667%	
ight Slope	16.6667%	
Bed Slope	0.2000%	
Flow Rate	104.0000	cfs

ıtput Results

Flow Rate	104.0000	cfs
epth	1.2305	ft
elocity	2.2609	ft/s
op Width	44.7656	ft
Critical Depth	0.6860	ft

ubcritical

Reach 3

nalyzer Report

==========

Trainage Structure Analyzer

hannel Hydraulic Analysis

Date: Wednesday, March 07, 2012 9:50:33 AM

==========

Input Data

---

iape	Trapezoidal
aterial	Bare Soil
Roughness	0.030000
Bottom Width	30.0000 ft
eft Slope	16.6667%
ight Slope	16.6667%
Bed Slope	0.2000%
Flow Rate	132.0000 cfs

itput Results

Flow Rate	132.0000 cfs
epth	1.4180 ft
elocity	2.4175 ft/s
op Width	47.0156 ft
Critical Depth	0.7980 ft

ubcritical

Reach 4

alyzer Report

==========

rainage Structure Analyzer

annel Hydraulic Analysis

ate: Wednesday, March 07, 2012 9:51:43 AM

==========

Input Data

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ape	Trapezoidal	
aterial	Bare Soil	
Roughness	0.030000	
Bottom Width	30.0000	ft
eft Slope	16.6667%	
ight Slope	16.6667%	
Bed Slope	0.1500%	
Flow Rate	165.0000	cfs

tput Results

Flow Rate	165.0000	cfs
epth	1.7227	ft
elocity	2.3746	ft/s
op Width	50.6719	ft
Critical Depth	0.9180	ft

ubcritical

Riprap Sizing (d_{50})

Update Date: 11/31/11
Updated By: Jonathan Ellison

Methodology: Urban Storm Drainage Criteria Manual (Volume 1) June 2001, Revised April 2008, Urban Drainage and Flood Control District

Equations:

1. Riprap Sizing Equation (MD-13)

$$\frac{VS^{0.17}}{(d_{50})^{0.5}(G_s-1)^{0.66}} = 4.5$$

V = mean channel velocity (ft/sec)
S = longitudinal channel slope (ft/ft)
d_{50} = mean rock size (ft)
G_s = specific gravity of stone (minimum = 2.5(

Note:
Equation MD-13 is applicable for sizing riprap for channel lining. This equation is not intended for use in sizing riprap for rundowns or culvert outlet protection.

Calculation:

	V (fps)	S (ft/ft)	G_s	d_{50} (ft)	d_{50} (in)	
Dam 9 Diversion	4.8	0.007	2.6	0.11	1.36	— use 6" rock
Dam 5 Arrroyo Intake	9.2	0.04	2.6	0.75	9.03	- use 9" rock

APPENDIX C – AHYMO INPUT AND SUMMARY FILES FROM THE 2011 WEST I-40 DMP UPDATE

```
'S  AHYMO FILE FOR WEST I-40 DMP REVISED
'S  DEVELOPED CONDITIONS, 24HR, 100YR.
    WITH SEDIMENT BULKING & WITHOUT SEDIMENT REDUCTION AT PONDS.

'S  FILE: OPT4_FINAL.TXT
    DATE REVISED: 04/04/12

'  COPIED FROM FILES: WI40R10.TXT

   EDITED AHYMO FILES FROM:
          1.  WEST I40DMP REVISION BY BHI, DEVELOPED CONDITIONS 2006
'
   ******* 98TH STREET **************
   ********************************************************************************
'S*                              COMPUTE FLOW THROUGH LADERA DAMS 1-4                *
'C********************************************************************************
   !YR
   AINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=0.683
'                RAIN SIX=0.930  RAIN DAY=1.129  DT=.05
   0YR
   AINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.160
'                RAIN SIX=1.429  RAIN DAY=1.736  DT=.05
'  00YR
   INFALL           TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.77
                 RAIN SIX=2.26  RAIN DAY=2.63  DT=.05
'S* ROUTE FLOW FROM DAM 0 THROUGH AN EARTHEN CHANNEL
   * ROUTE THROUGH UD.1B
   )MPUTE RATING CURVE ID=1     VS NO=1     NO SEGS=1
                 MIN ELEV=0     MAX ELEV=5
                 CH SLP=.04    FP SLP=.04
                 N=.030        DIST=50
                 DIST    ELEV    DIST    ELEV    DIST    ELEV
                  0       5       15       0       35      0
                  50      5
   )UTE MCUNGE        ID=12  HYD=L0.1_1  INFLOW ID=87  DT=0HR  L=1533.98
                 NS=0  SLOPE=0.04  MATCODE=0  REGCODE=0  CCODE=0
   INT HYD          ID=12     CODE=10



   **** COMPUTE BASIN UD.1B ****
'
COMPUTE NM HYD       ID=15 HYD NO=UD.1B DA=0.1266
                PER A=1.01 PER B=28.03 PER C=28.03 PER D=42.93
                     TP=0.133 RAIN=-1
 . INT HYD           ID=15 CODE=1

    DIVERT 25% FOR SURGE POND CONDITION
   VIDE HYD          ID=15 PER=-75  ID I=15 HYD=UD.1B
'                        ID II=88 HYD=SURGE
'  RINT HYD          ID=15  CODE=1
   RINT HYD          ID=88 CODE=1
'

   ** ADD DAM 0 TO UD.1B *****
   D HYD            ID=22   HYD=DAM1IN
               ID=15     ID=12
   INT HYD          ID=22    CODE=1



    ROUTE FLOW TO DAM 1
    ROUTE WITH 54" PIPE
```

```
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1  SLP=0.053
                        DIA=54 IN  N=0.013
  )UTE MCUNGE       ID=16   HYD=RTUD.1b  INFLOW ID=22   DT=0 HR  L=1133
            NS=0    SLOPE=0.053    MATCODE=0  REGCODE=0  CCODE=0
RINT HYD            ID=16 CODE=1


*S**** COMPUTE BASIN UD.2 ****
  *
  )MPUTE NM HYD      ID=5 HYD NO=UD.2 DA=.1291
            PER A=0 PER B=46 PER C=20 PER D=34
                 TP=.155 RAIN=-1
  INT HYD          ID=5 CODE=1


  * DIVIDE BASIN INTO PONDS 1, AND 2-3
DIVIDE HYD          ID=5 RATIO=-0.33   ID I=20  HYD = PD1
                                       ID II=21 HYD= PD2&3
  INT HYD           ID=20 CODE=1

'S*** ADD 33% OF UD.2 TO DAM 1 INLET FLOW ****
   ** TOTAL DAM 1 INFLOW *****
   D HYD          ID=22   HYD=DAM1IN
            ID=20     ID=16
RINT HYD          ID=22    CODE=1



   ROUTE FLOW THROUGH POND #1
'S  OUTLET PIPE CHANGED TO 1 2.18' PIPE
 )UTE RESERVOIR    ID=27  HYD=POND1
            INFLOW ID=22   CODE=10
            OUTFLOW        STORAGE        ELEV
            (CFS)          (AC-FT)        (FT)
                              0.0             0.0             5418.0
                              17.8            9.5             5420.0
                              34.8            19.7            5422.0
                              45.1            30.8            5424.0
                              53.5            43.3            5426.0
                              57.3            50.0            5427.0

  INT HYD          ID=27    CODE=10


  * DIVIDE UD.2 REMAINDER FLOW FOR PONDS #2,&3

 . /IDE HYD          ID=21 RATIO=-0.5  ID I=95  HYD = PD2
                                       ID II=24 HYD= PD3
  INT HYD           ID=95 CODE=1
  INT HYD           ID=24 CODE=1


   ** ADD PART OF BASIN UD.2 TO DAM 1 OUTLET FLOW ****
 ** DAM 2 INLET FLOW ***
ADD HYD          ID=26   HYD=DAM2IN
            ID=95     ID=27
   NT HYD        ID=26    CODE=1


   ROUTE FLOW THROUGH POND #2
```

```
  * POND CHANGED TO HAVE A 2-1.35' OUTLETS TO REDUCE FLOW TO #3
ROUTE RESERVOIR    ID=10  HYD=POND2
            INFLOW ID=26  CODE=10
            OUTFLOW        STORAGE        ELEV
            (CFS)          (AC-FT)        (FT)
                              0.00              0              5402
                              18.44             5.26           5404
                              29.30             10.85          5406
                              37.10             16.79          5408
                              43.52             23.1           5410
                              49.10             29.77          5412
                              535               40.52          5415
?INT HYD        ID=10   CODE=10



  *** ADD UD.2 AND TO DAM 2 OUTLFLOW ****
 D HYD          ID=33  HYD=UD.2&UD.2A
            ID=24     ID=10
?INT HYD        ID=33   CODE=1


  **** COMPUTE BASIN UD.3 ****
'S*
 OMPUTE NM HYD      ID=34 HYD NO=UD.3 DA=0.0560
            PER A=0.00 PER B=11.0 PER C=11.7 PER D=77.3
                  TP=0.133 RAIN=-1
?INT HYD          ID=34 CODE=1

  ** ADD UD.3 AND ROUTED UD.2 UD.2A AND DAM 2 OUTFALL ****
ADD HYD          ID=39  HYD=UD.2&UD.2A
            ID=34     ID=33
 INT HYD         ID=39   CODE=1



 DAM REMOVED TO SEE AFFECTS ON LADERA SYSTEM- LEM 2/9/06
'S  ROUTE FLOW THROUGH POND #3
 ?OND OUTLET CHANGED TO 1- 1.9' OUTLET PIPE
 UTE RESERVOIR    ID=10  HYD=POND3
            INFLOW ID=39  CODE=10
            OUTFLOW        STORAGE        ELEV
            (CFS)          (AC-FT)        (FT)
                              0              0.0            5374.0
                              11             4.15           5375.5
                              24             9.99           5377.5
                              33.0           16.19          5379.5
                              39.6           22.76          5381.5
                              45.2           29.71          5383.5
                              260.0          33.5           5385.5
                              863.0          44.78          5387.5
                              1064.0         55.83          5388.0
RINT HYD        ID=10  CODE=10


 **** COMPUTE BASIN UD.4C ****

 OMPUTE NM HYD      ID=34 HYD NO=UD.3 DA=0.0995
            PER A=0 PER B=28.9 PER C=57.4 PER D=13.7
                  TP=0.133 RAIN=-1
 INT HYD          ID=34 CODE=1
```

```
   *** ADD BASIN UD.4B&C AND POND 3 OUTFLOW  ****
*S*** TOTAL INFLOW TO POND #4 ****
  )D HYD          ID=42   HYD=UD.4B&C
                ID=34     ID=10
PRINT HYD         ID=42    CODE=1


     ROUTE FLOW THROUGH POND #4
*S   POND OUTLET 1-2' OUTLET PIPE
   )UTE RESERVOIR     ID=43  HYD=POND4
                INFLOW ID=42  CODE=10
                OUTFLOW         STORAGE         ELEV
                (CFS)           (AC-FT)         (FT)
                        0                       0                       5349
                        10                      2.47                    5350
                        23                      7.65                    5352
                        35                      13.16                   5354
                        45                      19.03                   5356
                        1450                    25.25                   5358
                        3040                    31.81                   5360
   IINT HYD         ID=43    CODE=10



*^  SKIP FROM DAM 4 UP TO TOP OF LADERA WATERSHED
   ********************************************************************************
     CALCULATE RUNOFF BEGINNING AT THE TOP OF LADERA L12 WATERSHED.
*S  UPPER LADERA BASINS START AT DOUBLE EAGLE II AIRPORT & DRAIN TO DAM12
                REGION B2



  COMPUTE HYDROGRAPH FOR BASIN L12.1
COMPUTE NM HYD      ID=1      HYD=L12.1   DA=0.2219 SQ MI
              PER A=0  PER B=0  PER C=65  PER D=35
              TP=-0.363    RAIN=-1
PRINT HYD         ID=1      CODE=10

   EDIMENT BULK       CODE=1   BULK FACTOR=1.040

'S  COMPUTE HYDROGRAPH FOR BASIN L12.2
   MPUTE NM HYD      ID=2      HYD=L12.2   DA=1.1359 SQ MI
              PER A=39  PER B=4  PER C=38  PER D=19
              TP=-0.147    RAIN=-1
   INT HYD         ID=2      CODE=10

  COMBINED FLOW FROM BASINS L12.1 AND L12.2 IN DE II AIRPORT AREA.  THERE ARE
'S  PONDS W/COMBINED VOLUME OF ALMOST 30 ACRE-FT IN THESE BASINS.  THESE
    PONDS ULTIMATELY DISCHARGE TO A 70 ACRE-FT PLAYA THAT IS BISECTED BY
    PASEO DEL VOLCAN.  IF PLAYA DOES NOT OVERFLOW, THEN THE BASINS CAN BE
'S  CONSIDERED TO BE NON-CONTRIBUTING.  PONDS AND PLAYA NOT IN MODEL.
   D HYD          ID=4      HYD=L12.2_1
              ID=1      ID=2
  INT HYD         ID=4      CODE=10

   EDIMENT BULK       CODE=1   BULK FACTOR=1.025

'S  COMPUTE HYDROGRAPH FOR BASIN L12.3
   MPUTE NM HYD      ID=1      HYD=L12.3   DA=0.3313 SQ MI
              PER A=0  PER B=3  PER C=38  PER D=59
```

```
          TP=-0.364   RAIN=-1
PRINT HYD       ID=1     CODE=10

  ROUTE L12.3 THROUGH L12.6
 TYPICAL CROSS SECTION A TRANSITIONS TO E
COMPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
          MIN EL=0   MAX EL=3.0
          CH SLP=0.006 FP SLP=0.006
          N=0.030     DIST=400
          DIST   ELEV   DIST   ELEV   DIST   ELEV
          0     3     180    2     200    0
          220    2     400    3
ROUTE MCUNGE       ID=49  HYD=L12.3_1  INFLOW ID=1  DT=0HR  L=5400
          NS=0   SLOPE=0.006   MATCODE=0  REGCODE=0  CCODE=0
 OMPUTE RATING CURVE  ID=2   VS NO=1   SEG NO=1
          MIN EL=0   MAX EL=4.0
          CH SLP=0.0013 FP SLP=0.0013
          N=0.030     DIST=48
          DIST   ELEV   DIST   ELEV   DIST   ELEV
          0     4     10     3     19     0
          29    0     38     3     48     4
 OUTE MCUNGE       ID=50  HYD=L12.3_1  INFLOW ID=49  DT=0HR  L=1600
          NS=0   SLOPE=0.0013   MATCODE=0  REGCODE=0  CCODE=0
 RINT HYD        ID=50    CODE=10

 3 COMPUTE HYDROGRAPH FOR BASIN L12.5
COMPUTE NM HYD     ID=1     HYD=L12.5   DA=0.7313 SQ MI
          PER A=36  PER B=5  PER C=43  PER D=16
          TP=-0.357   RAIN=-1
PRINT HYD       ID=1     CODE=10

  ROUTE L12.5 THROUGH L12.4
 TYPICAL CROSS SECTION A
COMPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
          MIN EL=0   MAX EL=3.0
          CH SLP=0.0022 FP SLP=0.0022
          N=0.030     DIST=400
          DIST   ELEV   DIST   ELEV
          0     3     180    2    200    0
          220    2     400    3
ROUTE MCUNGE       ID=51  HYD=L12.4_1  INFLOW ID=1  DT=0HR  L=1850
          NS=0   SLOPE=0.0022   MATCODE=0  REGCODE=0  CCODE=0
 INT HYD        ID=51    CODE=10

'S
  COMPUTE HYDROGRAPH FOR BASIN L12.4
 OMPUTE NM HYD     ID=1     HYD=L12.4   DA=0.6016 SQ MI
          PER A=8  PER B=2  PER C=44  PER D=46
          TP=-0.319   RAIN=-1
 INT HYD        ID=1     CODE=10

'S  ADD L12.4 AND L12.5
 D HYD         ID=2     HYD=L12.4_2
          ID=1     ID=51
PRINT HYD       ID=2     CODE=10

  ROUTE COMBINED (L12.4 AND L12.5) THROUGH L12.6
 YPICAL CROSS SECTION A
COMPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
          MIN EL=0   MAX EL=3.0
          CH SLP=0.0059 FP SLP=0.0059
          N=0.030     DIST=400
          DIST   ELEV   DIST   ELEV
          0     3     180    2     200    0
```

```
          220    2     400    3
ROUTE MCUNGE        ID=51  HYD=L12.6_1  INFLOW ID=2  DT=0HR  L=5250
          NS=0   SLOPE=0.0059   MATCODE=0  REGCODE=0  CCODE=0
 RINT HYD          ID=51    CODE=10
*
*C  COMPUTE HYDROGRAPH FOR BASIN L12.6
 OMPUTE NM HYD     ID=1     HYD=L12.6   DA=0.9453 SQ MI
          PER A=2  PER B=4  PER C=29  PER D=65
          TP=-0.429    RAIN=-1
 RINT HYD          ID=1      CODE=10

*  ADD (L12.4-5) & L12.6
ADD HYD           ID=2      HYD=L12.6_2
          ID=1      ID=51
 RINT HYD          ID=2      CODE=10
*
   ADD (L12.4-6) & L12.3
 D HYD           ID=4      HYD=L12.6_3
          ID=2      ID=50
PRINT HYD         ID=4      CODE=10

   ROUTE COMBINED (L12.3, L12.4, L12.5, AND L12.6) THROUGH L12.7
* TYPICAL CROSS SECTION E, 2 SLOPES
 OMPUTE RATING CURVE  ID=1    VS NO=1   SEG NO=1
          MIN EL=0    MAX EL=4.0
          CH SLP=0.0006 FP SLP=0.0006
          N=0.030      DIST=48
          DIST    ELEV    DIST    ELEV
          0      4      10      3      19      0
          29      0      38      3      48      4
 UTE MCUNGE        ID=49  HYD=L12.7_1  INFLOW ID=4  DT=0HR  L=1000
          NS=0   SLOPE=0.0006   MATCODE=0  REGCODE=0  CCODE=0
OMPUTE RATING CURVE  ID=2    VS NO=1   SEG NO=1
          MIN EL=0    MAX EL=4.0
          CH SLP=0.0097 FP SLP=0.0097
          N=0.030      DIST=48
          DIST    ELEV    DIST    ELEV
          0      4      10      3      19      0
          29      0      38      3      48      4
ROUTE MCUNGE        ID=50  HYD=L12.7_1  INFLOW ID=49  DT=0HR  L=1350
          NS=0   SLOPE=0.0097   MATCODE=0  REGCODE=0  CCODE=0
  INT HYD          ID=50    CODE=10

*S  COMPUTE HYDROGRAPH FOR BASIN L12.7
  MPUTE NM HYD     ID=1     HYD=L12.7   DA=1.0563 SQ MI
          PER A=44  PER B=7  PER C=28  PER D=21
          TP=-0.383    RAIN=-1
 INT HYD          ID=1      CODE=10

  ADD (L12.3-6) & L12.7
ADD HYD           ID=3      HYD=L12.7_2
          ID=1      ID=50
  INT HYD          ID=3      CODE=10
*S
*  COMPUTE HYDROGRAPH FOR BASIN L12.8
  MPUTE NM HYD     ID=1     HYD=L12.8   DA=0.4219 SQ MI
          PER A=2  PER B=14  PER C=18  PER D=66
          TP=-0.451    RAIN=-1
  INT HYD          ID=1      CODE=10

*S  ROUTE L12.8 THROUGH L12.7
*  YPICAL CROSS SECTION E
  MPUTE RATING CURVE  ID=1    VS NO=1   SEG NO=1
```

```
              MIN EL=0    MAX EL=4.0
              CH SLP=0.0139 FP SLP=0.0139
              N=0.030      DIST=48
              DIST    ELEV    DIST    ELEV
              0       4       10      3       19      0
              29      0       38      3       48      4
  )UTE MCUNGE         ID=50  HYD=L12.7_3  INFLOW ID=1  DT=0HR  L=575
              NS=0   SLOPE=0.0139   MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD           ID=50    CODE=10

    ADD (L12.3-7) & L12.8
ADD HYD           ID=3      HYD=L12.7_4
             ID=3      ID=50
  RINT HYD          ID=3      CODE=10

*S ROUTE FLOW THROUGH PROPOSED POND AT PASEO DEL VULCAN (PDV)
   PRINCIPAL SPILLWAY 2 - 60" RCP
   OUTE RESERVOIR    ID=50  HYD=PDVPOND
              INFLOW ID=3   CODE=10
*             OUTFLOW          STORAGE          ELEV
              (CFS)            (AC-FT)          (FT)
              0                0                5780.0
*             60.              18.7             5782.0
              194.             38.2             5784.0
              350.             58.4             5786.0
              472.0            79.3             5788.0
*             564.0            101.1            5790.0
              624.0            123.6            5792.0
              712.0            146.9            5794.0
*             766.0            171.0            5796.0
   RINT HYD           ID=50    CODE=10

 S  INCREASE POND SIZE BY 1.5 TIMES.  PRINCIPAL SPILLWAY= 60" RCP
 OUTE RESERVOIR    ID=50  HYD=PDVPOND
              INFLOW ID=3   CODE=10
              OUTFLOW          STORAGE          ELEV
              (CFS)            (AC-FT)          (FT)
              0                0                5780.0
              45               28.1             5782.0
              116              57.3             5784.0
              177              87.6             5786.0
              222              119.0            5788.0
              259              151.7            5790.0
              291              185.4            5792.0
              320              220.4            5794.0
   INT HYD           ID=50    CODE=10

  **********************************************************************************
    DIVERSION TO DAM 5 ARROYO BEGINS
S**********************************************************************************
   DIVERSION TO DAM 5 ARROYO NOT ROUTED TO WEST BLUFF.
   ASSUME STAYS IN PETROGLYPH PARK - 1/31/06 LEM
S**********************************************************************************

   ROUTE PDV POND OUTFLOW SOUTH IN PROPOSED PETROGLYPH DIVERSION
   MPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
              MIN EL=0    MAX EL=5
              CH SLP=0.004  FP SLP=0.004
              N=0.015      DIST=30
              DIST    ELEV    DIST    ELEV    DIST    ELEV    DIST    ELEV
              0       5       10      0       20      0       30      5
   UTE MCUNGE         ID=5  HYD=DIV1  INFLOW ID=50  DT=0HR  L=2500
```

```
          NS=0  SLOPE=0.004  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD        ID=5  CODE=10

 EDIMENT BULK      CODE=1  BULK FACTOR=1.025

*S  COMPUTE HYDROGRAPH FOR BASIN L12.9W
 OMPUTE NM HYD    ID=2    HYD=L12.9W  DA=0.1016 SQ MI
          PER A=34  PER B=26  PER C=16  PER D=24
          TP=-0.133   RAIN=-1
 RINT HYD        ID=2     CODE=10

  FLOW IN PROPOSED PETROGLYPH DIVERSION AT SOUTH END BASIN L12.9W
ADD HYD          ID=4    HYD=DIV2
          ID=2     ID=5
 RINT HYD        ID=4    CODE=10
*
   ROUTE IN PROPOSED PETROGLYPH DIVERSION
 OMPUTE RATING CURVE  ID=1   VS NO=1  SEG NO=1
          MIN EL=0   MAX EL=5
          CH SLP=0.004  FP SLP=0.004
          N=0.015     DIST=30
          DIST   ELEV   DIST   ELEV  DIST  ELEV  DIST  ELEV
          0     5     10    0     20    0     30    5
 OUTE MCUNGE       ID=5  HYD=DIV3  INFLOW ID=4  DT=0HR  L=1500
          NS=0  SLOPE=0.004  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD        ID=5  CODE=10
*
 EDIMENT BULK      CODE=1  BULK FACTOR=1.025

*S  COMPUTE HYDROGRAPH FOR BASIN L12.11
 OMPUTE NM HYD    ID=1    HYD=L12.11  DA=0.2734 SQ MI
          PER A=2  PER B=13  PER C=18  PER D=67
          TP=-0.471   RAIN=-1
PRINT HYD        ID=1     CODE=10

   ROUTE L12.11 THROUGH L12.12W TO PROPOSED PETROGLYPH DIVERSION
COMPUTE RATING CURVE  ID=1   VS NO=1  SEG NO=1
          MIN EL=0   MAX EL=5
          CH SLP=0.0189 FP SLP=0.0189
          N=0.015     DIST=30
          DIST   ELEV   DIST   ELEV  DIST  ELEV  DIST  ELEV
          0     5     10    0     20    0     30    5
 OUTE MCUNGE       ID=49  HYD=L12.12_1  INFLOW ID=1  DT=0HR  L=1900
          NS=0  SLOPE=0.0189  MATCODE=0  REGCODE=0  CCODE=0
 INT HYD        ID=49  CODE=10

 SEDIMENT BULK      CODE=1  BULK FACTOR=1.025

  COMPUTE HYDROGRAPH FOR BASIN L12.12W
  MPUTE NM HYD    ID=2    HYD=L12.12W  DA=0.1415 SQ MI
          PER A=29  PER B=16  PER C=16  PER D=39
          TP=-0.301   RAIN=-1
 INT HYD        ID=2     CODE=10

 D HYD          ID=3    HYD=DIV4
          ID=2     ID=5
 INT HYD        ID=3    CODE=10

  FLOW IN PROPOSED PETROGLYPH DIVERSION AT SOUTH END BASIN L12.12W
  D HYD          ID=2    HYD=DIV5
          ID=3     ID=49
 INT HYD        ID=2    CODE=10
```

```
   ROUTE FLOW THROUGH PROPOSED MIREHAVEN A2 DAM
*S  PRINCIPAL SPILLWAY 1-36" RCP
 OUTE RESERVOIR    ID=30  HYD=MA2POND
                   INFLOW ID=2   CODE=10
                   OUTFLOW        STORAGE        ELEV
*                  (CFS)          (AC-FT)        (FT)
                   0              0              5718
                   18             0.24           5720
*                  80             3.65           5725
                   110            13.37          5730
                   170            35.50          5735
 RINT HYD          ID=30   CODE=10
*S for FINAL2D.HYM increase storage by 3.4x.
   PRINCIPAL SPILLWAY 1-54" RCP
 UTE RESERVOIR    ID=72  HYD=MA2POND
                   INFLOW ID=2   CODE=10
                   OUTFLOW        STORAGE        ELEV
                   (CFS)          (AC-FT)        (FT)
                   0              0              5718
                   28             .82            5720
                   177            12.41          5725
                   265            45.46          5730
                   320            120.70         5735
 INT HYD           ID=72   CODE=10

S  ROUTE IN PROPOSED PETROGLYPH DIVERSION THRU BASIN L12.14W
OMPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
            MIN EL=0   MAX EL=5
            CH SLP=0.004  FP SLP=0.004
            N=0.015      DIST=30
            DIST   ELEV   DIST   ELEV   DIST   ELEV   DIST   ELEV
            0      5      10     0      20     0      30     5
OUTE MCUNGE         ID=5  HYD=DIV6  INFLOW ID=72  DT=0HR  L=1500
            NS=0   SLOPE=0.004   MATCODE=0  REGCODE=0  CCODE=0
 INT HYD           ID=5  CODE=10

 SEDIMENT BULK      CODE=1   BULK FACTOR=1.025

  COMPUTE HYDROGRAPH FOR BASIN L12.14W
     MIREHAVEN "B" ARROYO
OMPUTE NM HYD     ID=2     HYD=L12.14W   DA=0.0869 SQ MI
          PER A=27  PER B=35  PER C=12  PER D=26
          TP=-0.294    RAIN=-1
PRINT HYD         ID=2      CODE=10

  FLOW IN PROPOSED PETROGLYPH DIVERSION AT SOUTH END BASIN L12.14W
ADD HYD           ID=3    HYD=DIV7
             ID=2     ID=5
  NT HYD          ID=3    CODE=10

S  ROUTE IN PROPOSED PETROGLYPH DIVERSION THRU L12.16NW
  MPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
            MIN EL=0   MAX EL=5
            CH SLP=0.004  FP SLP=0.004
            N=0.015      DIST=30
            DIST   ELEV   DIST   ELEV   DIST   ELEV   DIST   ELEV
            0      5      10     0      20     0      30     5
ROUTE MCUNGE        ID=5  HYD=DIV8  INFLOW ID=3  DT=0HR  L=1500
            NS=0   SLOPE=0.004   MATCODE=0  REGCODE=0  CCODE=0
  NT HYD          ID=5  CODE=10

 EDIMENT BULK      CODE=1   BULK FACTOR=1.025
```

```
   COMPUTE HYDROGRAPH FOR BASIN L12.15
COMPUTE NM HYD     ID=1     HYD=L12.15   DA=0.4391 SQ MI
             PER A=2  PER B=21  PER C=23  PER D=54
             TP=-0.449   RAIN=-1
RINT HYD         ID=1      CODE=10
*
   ROUTE L12.15 THRU L12.16W TO PROPOSED PETROGLYPH DIV VIA MIREHAVEN "C"
 OMPUTE RATING CURVE  ID=1    VS NO=1   SEG NO=1
             MIN EL=0    MAX EL=5
             CH SLP=0.0123 FP SLP=0.0123
             N=0.015      DIST=30
             DIST    ELEV    DIST    ELEV   DIST   ELEV   DIST   ELEV
             0       5     10     0     20     0     30     5
 OUTE MCUNGE         ID=50  HYD=L12.16_1  INFLOW ID=1   DT=0HR  L=2400
             NS=0   SLOPE=0.0123   MATCODE=0  REGCODE=0  CCODE=0
*COMPUTE RATING CURVE  ID=1    VS NO=1   SEG NO=1
              MIN EL=0    MAX EL=10
              CH SLP=0.0346  FP SLP=0.0346
              N=0.015      DIST=50
*             DIST    ELEV    DIST    ELEV   DIST   ELEV   DIST   ELEV
              0       10     20     10     30     0     50     10
 OUTE MCUNGE         ID=1  HYD=L12.16_1  INFLOW ID=50  DT=0HR  L=2000
*              NS=0   SLOPE=0.0346   MATCODE=0  REGCODE=0  CCODE=0
 INT HYD           ID=50  CODE=10

 EDIMENT BULK       CODE=1   BULK FACTOR=1.025
*S
  COMPUTE HYDROGRAPH FOR BASIN L12.16W
 OMPUTE NM HYD     ID=4     HYD=L12.16W   DA=0.4468 SQ MI
             PER A=15  PER B=21  PER C=21  PER D=43
             TP=-0.285    RAIN=-1
 INT HYD          ID=4      CODE=10

*  ADD L12.16W TO ROUTED L12.15
 D HYD            ID=3  HYD=L12.16W_1
              ID=4  ID=50
PRINT HYD          ID=3  CODE=1

   ADD L12.15 TO PROPOSED PETROGLYPH DIVERSION
ADD HYD            ID=2  HYD=DIV9
              ID=3  ID=5
  INT HYD          ID=2  CODE=1

's  route flow through new cdam for option 2d_cdam.hym through 60" RCP
   UTE RESERVOIR     ID=4  HYD=cdamPOND
             INFLOW ID=2   CODE=10
             OUTFLOW          STORAGE         ELEV
             (CFS)             (AC-FT)        (FT)
              0                0             5730.0
              54               .86           5732.5
              205              5.87          5737.5
              290              22.13         5742.5
              350              55.21         5747.5
              425              119.5         5752.5
PRINT HYD          ID=4     CODE=10

   ROUTE IN PROPOSED PETROGLYPH DIVERSION TO DAM 5 ARROYO IN BASIN UD.5E
S* PETROGLYPH DIVERSION ADDED BACK IN 2/1/06 TO MODEL GREATEST POSSIBLE FLOWS IN *S* DOWNSTREAM DAMS- LEM
   MPUTE RATING CURVE  ID=1    VS NO=1   SEG NO=1
              MIN EL=0    MAX EL=10
             CH SLP=0.004  FP SLP=0.004
              N=0.015      DIST=50
              DIST    ELEV    DIST    ELEV   DIST   ELEV   DIST   ELEV
```

```
          0     10    20    10    30    0     50    10
ROUTE MCUNGE       ID=72  HYD=DIV10  INFLOW ID=4  DT=0HR  L=3000
          NS=0  SLOPE=0.004  MATCODE=0  REGCODE=0  CCODE=0
 RINT HYD         ID=72  CODE=10

* SEDIMENT BULK      CODE=1   BULK FACTOR=1.025

  ********************************************************************************
*S*                  CALCULATED RUNOFF FOR BASINS LEADING INTO DAM 5
  *                  BASINS CHANGED TO REFLECT DEVELOPED AREA
  ********************************************************************************



  **** COMPUTE BASIN UD.5d ****
  ****THIS BASIN IS ADDED IN AS BASIN L12.16 W***********
*S* ASSUME UD.5D FLOWS OUT OF STUDY AREA AND ONTO PETROGLYPHS****
  OMPUTE NM HYD      ID=79 HYD NO=UD.5d DA=.2681
          PER A=0 PER B=23.4 PER C=23.4 PER D=53.2
               TP=.615 RAIN=-1
*PRINT HYD          ID=79 CODE=1
```

```
*S**** COMPUTE BASIN UD.5A ****
  *
  )MPUTE NM HYD      ID=1 HYD NO=UD.5A DA=.153
          PER A=0 PER B=23.4 PER C=23.4 PER D=53.2
               TP=.157 RAIN=-1
  IINT HYD          ID=1 CODE=1

*S  DIVERT 25% FOR SURGE POND CONDITION
   VIDE HYD         ID=1 PER=-75  ID I=1 HYD=UD.5A
                        ID II=88 HYD=SURGE
 RINT HYD           ID=1  CODE=1
*PRINT HYD          ID=88 CODE=1


'S  ADD PETROGLYPH DIVERSION TO BASIN UD.5A
  D HYD             ID=1  HYD=UD.5ATOT
          ID=72  ID=1
PRINT HYD           ID=1  CODE=1


   ***      ROUTE UD.5A THROUGH OS.5A TO INLET OF DAM 5 ARROYO
COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=27
                         CH SLP=.0497 FP SLP=.0497 N=0.045 DIST=356
                         DIST    ELEV
                         0              27
                         75             17
                         110            7
                         216            0
                         287            7
                         356            17
  UTE MCUNGE      ID=2   HYD=RTUD.5A  INFLOW ID=1   DT=0 HR  L=1676
          NS=0   SLOPE=0.0497   MATCODE=0  REGCODE=0  CCODE=0
PINT HYD            ID=2 CODE=1

  *** COMPUTE BASIN UD.5E ****
'S*
  MPUTE NM HYD      ID=90 HYD NO=UD.5E DA=0.1871
          PER A=0 PER B=23.4 PER C=23.4 PER D=53.2
               TP=0.176 RAIN=-1
PINT HYD          ID=90 CODE=1
```

```
*S  DIVERT 25% FOR SURGE POND CONDITION
 VIDE HYD         ID=90 PER=-75  ID I=90 HYD=UD.5E
                       ID II=88 HYD=SURGE
RINT HYD          ID=90  CODE=1
PRINT HYD         ID=88 CODE=1

 * ASSUME HALF OF BASIN UD.5E FLOWS ONTO OS.5A AND HALF ONTO OS.5B
DIVIDE HYD              ID=90 RATIO=-0.5   ID I=51  HYD = OS.5A
                                           ID II=52 HYD= OS.5B

*
*S****      ROUTE HALF OF UD.5E THROUGH OS.5A TO INLET OF DAM 5 ARROYO
OMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=12
                              CH SLP=.032 FP SLP=.032 N=0.045 DIST=504
                              DIST     ELEV
                              0                10
                              253              0
                              378              10
                              504              12

UTE MCUNGE       ID=1   HYD=ARTUD.5E  INFLOW ID=51   DT=0 HR  L= 1235.63
          NS=0   SLOPE=0.032    MATCODE=0  REGCODE=0  CCODE=0
INT HYD             ID=1 CODE=1


*S****      ROUTE HALF OF UD.5E THROUGH OS.5B TO INLET OF DAM 5 ARROYO
OMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=30
                              CH SLP=.03 FP SLP=.03 N=0.045 DIST=591
                              DIST     ELEV
                              0                30
                              90               20
                              256              10
                              292              0
                              591              10

ROUTE MCUNGE       ID=55   HYD=BRTUD.5E  INFLOW ID=52   DT=0 HR  L= 1078.59
          NS=0   SLOPE=0.03    MATCODE=0  REGCODE=0  CCODE=0
INT HYD             ID=55 CODE=1


 DIMENT BULK       CODE=1   BULK FACTOR=1.12
*** COMPUTE BASIN OS.5A ****

S*
MPUTE NM HYD       ID=3 HYD NO=OS.5A DA=0.1058
              PER A=50 PER B=25 PER C=25 PER D=0
                    TP=0.154 RAIN=-1
INT HYD           ID=3 CODE=1
 DIVIDE BASIN 0S.5A TO ACCOUNT FOR FLOW THAT GOES TO THE DAM 9 DIVERSION********
 DIVIDE BASIN OS.5S WITH 29% GOING TO THE DAM 9 DIVERSION**********
 REMOVED 2/6/12 - NO DIVIDE HYD FOR OS.5A IN DEVELOPED CONDITIONS
IVIDE HYD          ID=3 PER=-71  ID I=3 HYD=OS.5A
                         ID II=36 HYD=DAM9DIV
 PRINT HYD         ID=3  CODE=1

 *** COMPUTE BASIN OS.5B ****

OMPUTE NM HYD      ID=4 HYD NO=OS.5B DA=0.1540
              PER A=50 PER B=25 PER C=25 PER D=0
                    TP=0.133 RAIN=-1
RINT HYD          ID=4 CODE=1
DIMENT BULK       CODE=1   BULK FACTOR=1.025
 ADD ROUTED UD.5E AND OS.5B**
```

```
)D HYD          ID=70  HYD=OS.5BTOT
            ID=4     ID=55
RINT HYD        ID=70   CODE=1



* ADD ROUTED UD.5A AND OS.5A**
)D HYD          ID=5  HYD=UD.5AOS.5A
            ID=2     ID=3
RINT HYD        ID=5   CODE=1

* ADD COMBINED FLOW TO ROUTED UD.5E**
^D HYD          ID=75  HYD=OS.5ATOT
            ID=5     ID=1
RINT HYD        ID=75   CODE=1

* TOTAL INLET FLOW TO DAM 5 ARROYO DAM
)D HYD          ID=6  HYD=DAM5INLET
            ID=70     ID=75
RINT HYD        ID=6   CODE=1


S**** ROUTE FLOW THROUGH PROPOSED DAM 5 ARROYO DAM
     OUTLET PIPE IS A 54" RCP
)UTE RESERVOIR    ID=7  HYD=D5POND
            INFLOW ID=6   CODE=10
            OUTFLOW        STORAGE        ELEV
            (CFS)          (AC-FT)        (FT)
            (CFS)          (AC-FT)        (FT)
                  0.00              0              5780
                  24.04             12.2           5782
                  101.64            24.8           5784
                  164.90            38             5786
                  203.96            51.6           5788
                  236.65            80.3           5790
                  265.35            95.5           5792
                  291.23            111.2          5794


RINT HYD        ID=7    CODE=10

 ROUTE IN DAM 5 ARROYO TO END OF UD.5C
 FOR OPT 4 - DAM 5 ARROYO IS A 48 INCH STORM DRAIN

OMPUTE RATING CURVE  CID=1   VS NO=1   SEG NO=1
            MIN EL=0   MAX EL=10
            CH SLP=0.036  FP SLP=0.036
            N=0.015     DIST=50
            DIST   ELEV   DIST   ELEV  DIST  ELEV  DIST  ELEV
            0      10     20     0    30    0     50    10
ROUTE MCUNGE       ID=8  HYD=D5ARROYO  INFLOW ID=7  DT=0HR  L=2421.12
            NS=0  SLOPE=0.02   MATCODE=0  REGCODE=0  CCODE=0
 RINT HYD         ID=8  CODE=10
COMPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.036
                    DIA=48 IN  N=0.013
 UTE MCUNGE       ID=8  HYD=D5ARROYO  INFLOW ID=7  DT=0HR  L=2421.12
           NS=0  SLOPE=0.036   MATCODE=0  REGCODE=0  CCODE=0
RINT HYD         ID=8  CODE=10


S**** COMPUTE BASIN UD.5C ****
**
 MPUTE NM HYD     ID=11 HYD NO=UD.5C DA=0.085
```

```
            PER A=0 PER B=23.4 PER C=23.4 PER D=53.2
                TP=0.133 RAIN=-1
 RINT HYD        ID=11 CODE=1

'S  DIVERT 25% FOR SURGE POND CONDITION
*DIVIDE HYD        ID=11 PER=-75  ID I=11 HYD=UD.5C
                       ID II=88 HYD=SURGE
  RINT HYD         ID=11  CODE=1

  RINT HYD         ID=88 CODE=1


*C* ADD DAM 5 ARROYO AND UD.5C*

  )D HYD          ID=99   HYD=RTUD.5C
             ID=11   ID=8
  RINT HYD         ID=99   CODE=1


*C  ROUTE IN DAM 5 ARROYO TO END OF UD.5B
  FOR OPT 4 - DAM 5 ARROYO IS A 54 INCH STORM DRAIN

* COMPUTE RATING CURVE  CID=1   VS NO=1   SEG NO=1  MIN EL=0    MAX EL=10
            CH SLP=0.02  FP SLP=0.02    N=0.015      DIST=50
            DIST   ELEV   DIST   ELEV   DIST   ELEV   DIST   ELEV
*           0      10     20     0     30    0     50    10
* ROUTE MCUNGE        ID=8  HYD=D5ARROYO  INFLOW ID=99  DT=0HR  L=3529.63
            NS=0   SLOPE=0.02   MATCODE=0  REGCODE=0  CCODE=0
  'RINT HYD          ID=8  CODE=10
*
  )MPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.02
                       DIA=54 IN  N=0.013
ROUTE MCUNGE        ID=8  HYD=D5ARROYO  INFLOW ID=99  DT=0HR  L=2209
           NS=0   SLOPE=0.02   MATCODE=0  REGCODE=0  CCODE=0
   INT HYD          ID=8  CODE=10

'S**** COMPUTE BASIN UD.5B ****

  )MPUTE NM HYD      ID=9 HYD NO=UD.5B DA=0.082
           PER A=0 PER B=35 PER C=35 PER D=30
               TP=0.164 RAIN=-1
  INT HYD          ID=9 CODE=1

'**** DIVIDE BASIN UD.5B TO ACCOUNT FOR FLOW REACHING THE DAM 9 DIVERSION*****
        DIVIDE 27 PERCENT TO LADERA DAM 9 DIVERSION
   EMOVED 2/6/12 - NO DIVIDE HYD FOR UD.5B IN DEVELOPED CONDITIONS
'DIVIDE HYD         ID=9 PER=-73  ID I=9 HYD=UD.5B
'                       ID II=57 HYD=DAM9DIV
  RINT HYD          ID=9  CODE=1

'S* ADD DAM 5 ARROYO AND UD.5B*

  D HYD          ID=11   HYD=ARYDAM5
            ID=9     ID=8
  INT HYD         ID=11    CODE=1
  ROUTE DAM 5 ARROYO AND UD.5B AND UD.5C IN A 54" STORM DRAIN***
JJMPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.033
                       DIA=54 IN  N=0.013
  UTE MCUNGE        ID=11  HYD=D5ARROYO  INFLOW ID=11  DT=0HR  L=1460
            NS=0   SLOPE=0.033   MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD          ID=11  CODE=10
```

```
    COMPUTE HYDROGRAPH FOR BASIN L9.1A*****
*S  THIS BASIN WILL BE DIVERTED IN TO DAM 5 POND.
  )MPUTE NM HYD     ID=9      HYD=L9.1A   DA=0.123 SQ MI
             PER A=0  PER B=30.46  PER C=30.46  PER D=39.08
             TP=-.212    RAIN=-1
?RINT HYD         ID=9      CODE=10

   ROUTE BASIN L9.1A IN THE PROPOSED DIVERSION STRUCTURE TO DAM 5 POND
*S* TOTAL FLOW IN DAM 9 DIVERSION*
  )MPUTE RATING CURVE  CID=1    VS NO=1   SEG NO=1  MIN EL=0    MAX EL=10
             CH SLP=0.02  FP SLP=0.02    N=0.015      DIST=50
             DIST   ELEV   DIST   ELEV  DIST  ELEV  DIST  ELEV
             0      10     20     0     50    0     60    10
  )UTE MCUNGE         ID=8  HYD=D5ARROYO  INFLOW ID=9  DT=0HR  L=1800.0
             NS=0   SLOPE=0.002   MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD           ID=8  CODE=10
  * ADD FLOWS REACHING DAM 9 DIVERSION*
  EMOVED 2/6/12 - NO DIVIDE HYD FOR OS.5A OR UD.5B
* ADD HYD           ID=10   HYD=UD.5B&OS.5A
*             ID=36     ID=57
  'RINT HYD         ID=10    CODE=1

' TOTAL FLOW IN DAM 9 DIVERSION*
  EMOVED 2/6/12 - NO DIVIDE HYD FOR OS.5A OR UD.5B
  O NOT REACHING DAM 9 DIVERSION IN DEVELOPED CONDITIONS
' ADD HYD           ID=10   HYD=UD.5B&L91.A
'             ID=10     ID=8
  'RINT HYD         ID=10    CODE=1

'S* ADD DAM 5 ARROYO*

   D HYD           ID=9   HYD=UD.5B&L91.A
             ID=8      ID=11
?RINT HYD         ID=9    CODE=1

  '*** COMPUTE BASIN UD.2A ****
'S*
  )MPUTE NM HYD      ID=22 HYD NO=UD.2A DA=0.124
             PER A=0 PER B=61 PER C=17 PER D=22
                  TP=0.221 RAIN=-1
  INT HYD           ID=22 CODE=1

  ADD DAM 5 ARROYO AND UD.2A*

   D HYD           ID=9   HYD=ARYDAM5&L91.A
             ID=9      ID=22
?RINT HYD         ID=9    CODE=1
  * ADD DAM 5 ARROYO AND UD.2*
  TOTAL FLOW INTO DAM 5 POND ON SOCCER FIELDS

'ADD HYD          ID=9   HYD=ARYDAM5&L91.A
             ID=9      ID=91
  RINT HYD         ID=9    CODE=1


  ROUTE FLOW THROUGH DAM 5 POND ON SOCCER FIELDS ****
'S* OUTLET MODELED AS A 4.5' PIPE
  UTE RESERVOIR    ID=10   HYD=DAM5S
             INFLOW ID=9  CODE=10
             OUTFLOW        STORAGE          ELEV
             (CFS)          (AC-FT)          (FT)
                                0                    0                    5436
```

```
                    5.74          1.00          5437
                    24.15         2.00          5438
                    50.11         3.1           5439
                    102.05        4.3           5440
                    143.92        5.6           5441
                    168.07        7.0           5442
                    189.15        8.4           5443
                    208.11        10.4          5444
                    225.49        13.7          5445
                    241.61        18.4          5446
                    256.73        24.4          5447
                    271           31.7          5448
 INT HYD        ID=10  CODE=10


*S  ROUTE COMBINED FLOW IN DAM 5 ARROYO TO end of BASIN UD.4A
    ROUTE WITH 48 INCH PIPE - EDITED TO 48 INCH PIPE (10/31/11)
   OMPUTE RATING CURVE  CID=1   VS NO=1   SEG NO=1
*               MIN EL=0    MAX EL=10
*               CH SLP=0.02  FP SLP=0.02
                N=0.015      DIST=50
                DIST   ELEV   DIST   ELEV   DIST   ELEV   DIST   ELEV
*               0      10     20     0     30     0      50     10
  )MPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.034
                        DIA=48 IN  N=0.013
ROUTE MCUNGE        ID=8  HYD=D5ARROYO  INFLOW ID=10  DT=0HR  L=2006
              NS=0   SLOPE=0.034   MATCODE=0  REGCODE=0  CCODE=0
  !INT HYD          ID=8  CODE=10

*S**** COMPUTE BASIN UD.4A ****

  )MPUTE NM HYD      ID=9 HYD NO=UD.4A DA=0.0261
              PER A=0 PER B=16.4 PER C=0 PER D=83.6
                   TP=0.133 RAIN=-1
   INT HYD          ID=9 CODE=1
 *** COMPUTE BASIN UD.4D ****
*S*
  )MPUTE NM HYD      ID=10 HYD NO=UD.4d DA=0.0323
              PER A=0 PER B=0.0 PER C=28 PER D=72
                   TP=0.133 RAIN=-1
  !INT HYD          ID=10 CODE=1

 ** ADD FLOW UD.4A AND UD.4D ***
*S*** TOTAL DAM 5 INFLOW ***
   D HYD          ID=45   HYD=UD4A&D
              ID=10     ID=9
PRINT HYD         ID=45    CODE=1
   ** ADD FLOW FROM DAM 5 ARROYO UD.4A AND UD.4D ***
   ** TOTAL DAM 5 INFLOW ***
RUD HYD           ID=45   HYD=PD&4D.4A
              ID=8      ID=45
   INT HYD        ID=45    CODE=1

*S*** PROPOSED DIVERSION TO STORM CLOUD SUBDIVISION TO LADERA DAM 9****
   ** DIVERT
   /IDE HYD       ID=45     Q=221.25
              ID=45     HYD=TOPOND5
              ID=69     HYD=TOPOND9
   INT HYD        ID=69     CODE=10
   INT HYD        ID=45     CODE=10

   ROUTE FLOW FROM DIVERSION TO LADERA DAM 5
    MPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.034
```

```
                    DIA=48 IN  N=0.013
ROUTE MCUNGE        ID=8  HYD=UD.4ADAM5  INFLOW ID=45  DT=0HR  L=2006
            NS=0   SLOPE=0.034   MATCODE=0  REGCODE=0  CCODE=0
 RINT HYD          ID=8  CODE=10

*** ADD FLOW FROM DAM 5 ARROYO TO ROUTED POND #4 OUTFLOW ***
  *** TOTAL DAM 5 INFLOW ***
 JD HYD           ID=44   HYD=PD5IN
          ID=8     ID=43
 RINT HYD         ID=44   CODE=1

*S* ROUTE FLOW THROUGH POND 5 ****
 ODELED AS 2- 2.25' AND 1- 4.5' OUTLETS
 UTE RESERVOIR    ID=9   HYD=POND5
          INFLOW ID=44  CODE=10
          OUTFLOW        STORAGE         ELEV
          (CFS)          (AC-FT)         (FT)
                  0.00                0               5330.8
                  14.43               4.2             5331.8
                  107.70              12.9            5333.8
                  242.09              22.1            5335.8
                  286.88              27.8            5337
                  822.00              31.9            5337.8
                  4500.00             42.1            5341.8
                  0.00                0               5330.8
*                 10.25               4.7             5331.8
                  98.67               14.5            5333.8
                  165.09              24.9            5335
                  190.93              35.2            5335.8
*                 224.16              37.8            5337
                  822.00              47.4            5337.8
                  4505.00   59.3                  5338.3

 INT HYD         ID=9    CODE=10


*S  PROPOSED DAM5 DIVERSION
  DIVIDE 65 CFS FROM DAM 5 TO DAM 6; REMAINING TO I-40
 IDE HYD         ID=9     Q=175
          ID=71     HYD=dam5div
          ID=9    HYD=todam6
 INT HYD         ID=71    CODE=10*
 RINT HYD        ID=9     CODE=10

  ROUTE DAM5 SPILLWAY FLOWS SOUTH IN PROPOSED DAM 5 DIVERSION
  OPT 4 - FLOW ROUTED IN 48 INCH STORM DRAIN (10/7/11)
*COMPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
          MIN EL=0   MAX EL=5
          CH SLP=0.01  FP SLP=0.01
          N=0.015      DIST=30
*         DIST   ELEV   DIST   ELEV   DIST   ELEV   DIST   ELEV
          0      5      10     0      20     0      30     5
 OUTE MCUNGE        ID=73  HYD=D5DIV1  INFLOW ID=71  DT=0HR  L=703
*         NS=0   SLOPE=0.01   MATCODE=0  REGCODE=0  CCODE=0
 RINT HYD          ID=73  CODE=10

OMPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.02
                   DIA=48 IN  N=0.013
 UTE MCUNGE        ID=73  HYD=D5DIV1  INFLOW ID=71  DT=0HR  L=2096
          NS=0   SLOPE=0.02   MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD          ID=73  CODE=10
```

```
*^**************************************************************************
  **************************************************************************
 ,*                          CONTINUE ON LADERA DAM SYSTEM                  *
*S*                            LADERA WATERSHED                            *
  **************************************************************************
  *                  DAM SYSTEM FOR DAMS 6-12 TAKEN FROM STORMCLOUD MODEL    *
*S*                  TO ACCOUNT FOR STORMCLOUD AND CROSSINGS DEVELOPMENT     *
*^**************************************************************************
  **************************************************************************

*  RAINFALL FOR LADERA BASINS ABOVE DAM #12
   YR
   AINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=0.683
*                RAIN SIX=0.930  RAIN DAY=1.129  DT=.05
*  0YR
   AINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.160
                 RAIN SIX=1.429  RAIN DAY=1.736  DT=.05
* 100YR
   \INFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.78
                RAIN SIX=2.28  RAIN DAY=2.71  DT=.05
*  RAINFALL TAKEN FROM STORMCLOUD MODEL
**************************************************************************



    COMPUTE HYDROGRAPH FOR BASIN L7.1
   ASIN L7.1A IS THE SAME AS L7.1 IN I-40 DMP, WITH AN INCREASE OF
* 20% IN AREA

    COMPUTE HYDROGRAPH FOR BASIN L7.1A
 ,  BASIN L7.1A IS DIVERTED TO L9.2A
COMPUTE NM HYD     ID=99     HYD=L7.1A   DA=0.0056 SQ MI
                PER A=0  PER B=25  PER C=25  PER D=50
                TP=-0.133    RAIN=-1
PRINT HYD          ID=99     CODE=10


  ROUTE OVERLAND FLOW FROM BASIN L7.1 THROUGH  BASIN L7.2
** TYPICAL CROSS SECTION A
   OMPUTE RATING CURVE  ID=1    VS NO=1   SEG NO=1
                MIN EL=0    MAX EL=3.0
*               CH SLP=0.0028 FP SLP=0.0028
                N=0.030      DIST=400
                DIST    ELEV    DIST    ELEV
                0       3       180     2
*               200     0       220     2
                400     3
   OUTE MCUNGE        ID=50  HYD=L7.2_2  INFLOW ID=1  DT=0HR  L=2100
*               NS=0   SLOPE=0.0028   MATCODE=0  REGCODE=0  CCODE=0
   RINT HYD           ID=50    CODE=10


*C
    COMPUTE HYDROGRAPH FOR BASIN L7.2
   OMPUTE NM HYD     ID=2     HYD=L7.2   DA=0.0406 SQ MI
              PER A=33  PER B=11  PER C=18  PER D=38
              TP=-0.133   RAIN=-1
   INT HYD         ID=2      CODE=10
```

```
  DIVIDE ID=2 INTO 3 THIRDS FOR PONDS 6, 7 AND 8
DIVIDE HYD        ID=2     Q=-.333
                  ID=1     HYD=L7.2_4
                  ID=3     HYD=L7.2_5
PRINT HYD         ID=1     CODE=10
*
     ADD ONE THIRD BASIN L7.2 TO POND 5 OUTFLOW
  ADD 1ST THIRD TO ROUTED FLOW
ADD HYD           ID=10    HYD=TO_DAM6
                  ID=1     ID=9
   RINT HYD       ID=10    CODE=10
*
*  ROUTE FLOW THROUGH POND #6
    CREST=5327.5, TOP=5331.0
   OUTLET MODELED AS A 2-2.0' PIPES
ROUTE RESERVOIR     ID=9   HYD=POND6
                  INFLOW ID=10  CODE=10
                  OUTFLOW         STORAGE         ELEV
                  (CFS)           (AC-FT)         (FT)
                        0.00              0               5321.0
                        34.28             7.24            5323.0
                        59.38             14.92           5325.0
                        76.66             23.04           5327.0
                        80.42             25.07           5327.5
                        2035.00           40.72           5331.0
PRINT HYD         ID=9     CODE=10

     ADD 2ND THIRD TO POND 6 OUTFLOW
 DD HYD           ID=10    HYD=TO_DAM7
                ID=1     ID=9
    INT HYD       ID=10    CODE=10

'S  ROUTE FLOW THROUGH POND #7
    CREST=5306, TOP=5310.0
    OUTLET PIPE MODELED AS A 2-2.0' OUTLET PIPES
 OUTE RESERVOIR     ID=9   HYD=POND7
                  INFLOW ID=10  CODE=10
                  OUTFLOW         STORAGE         ELEV
                  (CFS)           (AC-FT)         (FT)
                  0.00            0               5300.0
                  39.10           5.25            5302.3
                  62.28           10.85           5304.3
                  78.94           16.82           5306.3
                  3424.00         29.78           5310.0
INT HYD           ID=9     CODE=10
```

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                - VERSION:  1997.02c     RUN DATE (MON/DAY/YR) =04/05/2012
INPUT FILE = P:\20110349\WR\AHYMO\Workarea\UPDATE~1\OPT4_F~1.TXT                 USER NO.= AHYMO-S-9702c1BohanHu-AH

                  FROM  TO              PEAK      RUNOFF          TIME TO   CFS     PAGE =   1
            HYDROGRAPH  ID  ID      AREA   DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO. NO.   (SQ MI)   (CFS)     (AC-FT)  (INCHES) (HOURS)  ACRE    NOTATION

*S  AHYMO FILE FOR WEST I-40 DMP REVISED
*S  DEVELOPED CONDITIONS, 24HR, 100YR.
*S  WITH SEDIMENT BULKING & WITHOUT SEDIMENT REDUCTION AT PONDS.
*S
*S  FILE: OPT4_FINAL.TXT
*S  DATE REVISED: 04/04/12
S**************************************************************************
*S*                          COMPUTE FLOW THROUGH LADERA DAMS 1-4                        *
*S**************************************************************************
RAINFALL  TYPE= 2                                                    RAIN24=  2.630
*S* ROUTE FLOW FROM DAM 0 THROUGH AN EARTHEN CHANNEL
*S* ROUTE THROUGH UD.1B
ROUTE MCUNGE        L0.1_1  87  12     1.82213      77.98    112.395     1.15656   3.450    .067 CCODE =     .2
*S**** COMPUTE BASIN UD.1B ****
*S*
COMPUTE NM HYD      UD.1B  -   15     .12660       256.50    10.169     1.50614   1.500    3.166 PER IMP=  42.93
*S  DIVERT 25% FOR SURGE POND CONDITION
*S
*S*** ADD DAM 0 TO UD.1B *****
ADD HYD             DAM1IN 15&12  22     1.94873      256.58    122.564     1.17927   1.500    .206
*S  ROUTE FLOW TO DAM 1
*S* ROUTE WITH 54" PIPE
ROUTE MCUNGE        RTUD.1b  22  16     1.94873      255.88    122.541     1.17905   1.500    .205 CCODE =     .2
*S**** COMPUTE BASIN UD.2 ****
*S*
COMPUTE NM HYD      UD.2  -   5      .12910       217.49     9.130     1.32603   1.500    2.632 PER IMP=  34.00
*S
*S
*S* DIVIDE BASIN INTO PONDS 1, AND 2-3
DIVIDE HYD          PD1   5  20      .04260       71.77      3.013     1.32602   1.500    2.632
                    PD2&3 and  21     .08650       145.72     6.117     1.32602   1.500    2.632
*S*** ADD 33% OF UD.2 TO DAM 1 INLET FLOW ****
*S*** TOTAL DAM 1 INFLOW *****
ADD HYD             DAM1IN 20&16  22     1.99133      327.66    125.554     1.18220   1.500    .257
*S  ROUTE FLOW THROUGH POND #1
*S  OUTLET PIPE CHANGED TO 1 2.18' PIPE
ROUTE RESERVOIR     POND1  22  27     1.99133      52.55     105.273     .99123   17.050    .041 AC-FT=  41.883
*S* DIVIDE UD.2 REMAINDER FLOW FOR PONDS #2,&3
DIVIDE HYD          PD2   21  95      .04325       72.86      3.059     1.32602   1.500    2.632
                    PD3 and  24     .04325       72.86      3.059     1.32602   1.500    2.632
*S*** ADD PART OF BASIN UD.2 TO DAM 1 OUTLET FLOW ****
*S*** DAM 2 INLET FLOW ***
ADD HYD             DAM2IN 95&27  26     2.03458      80.61     108.332     .99835   1.550    .062
*S  ROUTE FLOW THROUGH POND #2
*S* POND CHANGED TO HAVE A 2-1.35' OUTLETS TO REDUCE FLOW TO #3
ROUTE RESERVOIR     POND2  26  10     2.03458      45.21     85.167     .78487   24.750    .035 AC-FT=  25.115
*S*** ADD UD.2 AND TO DAM 2 OUTLFLOW ****
ADD HYD         UD.2&UD.2A 24&10  33     2.07783      75.80     88.225     .79613   1.550    .057
*S**** COMPUTE BASIN UD.3 ****
*S*
♀
                  FROM  TO              PEAK      RUNOFF          TIME TO   CFS     PAGE =  16
            HYDROGRAPH  ID  ID      AREA   DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO. NO.   (SQ MI)   (CFS)     (AC-FT)  (INCHES) (HOURS)  ACRE    NOTATION

COMPUTE NM HYD      UD.3  -   34     .05600       135.78     6.188     2.07177   1.500    3.788 PER IMP=  77.30
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*S*** ADD UD.3 AND ROUTED UD.2 UD.2A AND DAM 2 OUTFALL ****
ADD HYD         UD.2&UD.2A 34&33  39      2.13383      211.23      94.413      .82961    1.500     .155
*S DAM REMOVED TO SEE AFFECTS ON LADERA SYSTEM- LEM 2/9/06
*S  ROUTE FLOW THROUGH POND #3
*s POND OUTLET CHANGED TO 1- 1.9' OUTLET PIPE
ROUTE RESERVOIR       POND3   39   10      2.13383       40.51      70.519      .61965   29.950     .030 AC-FT=   23.888
*S**** COMPUTE BASIN UD.4C ****
*S*
COMPUTE NM HYD        UD.3  -   34       .09950      177.57      5.743     1.08214    1.500    2.789 PER IMP=  13.70
*S*** ADD BASIN UD.4B&C AND POND 3 OUTFLOW  ****
*S*** TOTAL INFLOW TO POND #4 ****
ADD HYD           UD.4B&C 34&10  42      2.23333      183.79      76.261      .64025    1.500     .129
*S   ROUTE FLOW THROUGH POND #4
*S   POND OUTLET 1-2' OUTLET PIPE
ROUTE RESERVOIR       POND4   42   43      2.23333       37.28      61.754      .51846   29.950     .026 AC-FT=   14.500
*S  SKIP FROM DAM 4 UP TO TOP OF LADERA WATERSHED
*S*************************************************************************
*S    CALCULATE RUNOFF BEGINNING AT THE TOP OF LADERA L12 WATERSHED.
*S  UPPER LADERA BASINS START AT DOUBLE EAGLE II AIRPORT & DRAIN TO DAM12
*S                    REGION B2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.1
COMPUTE NM HYD        L12.1  -    1       .22190      253.41      17.717     1.49701    1.750    1.784 PER IMP=  35.00
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.2
COMPUTE NM HYD        L12.2  -    2      1.13590     1698.16      60.795     1.00352    1.500    2.336 PER IMP=  19.00
*S  COMBINED FLOW FROM BASINS L12.1 AND L12.2 IN DE II AIRPORT AREA.  THERE ARE
*S  PONDS W/COMBINED VOLUME OF ALMOST 30 ACRE-FT IN THESE BASINS.  THESE
*S  PONDS ULTIMATELY DISCHARGE TO A 70 ACRE-FT PLAYA THAT IS BISECTED BY
*S  PASEO DEL VOLCAN.  IF PLAYA DOES NOT OVERFLOW, THEN THE BASINS CAN BE
*S  CONSIDERED TO BE NON-CONTRIBUTING.  PONDS AND PLAYA NOT IN MODEL.
ADD HYD           L12.2_1  1& 2   4      1.35780     1798.14      78.511     1.08417    1.500    2.069
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.3
COMPUTE NM HYD        L12.3  -    1       .33130      424.06      32.410     1.83427    1.750    2.000 PER IMP=  59.00
*S  ROUTE L12.3 THROUGH L12.6
ROUTE MCUNGE       L12.3_1    1   49       .33130      385.38      32.488     1.83869    2.500    1.818 CCODE =     .1
ROUTE MCUNGE       L12.3_1   49   50       .33130      339.88      32.004     1.81125    2.650    1.603 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.5
COMPUTE NM HYD        L12.5  -    1       .73130      577.33      37.883      .97130    1.750    1.234 PER IMP=  16.00
*S  ROUTE L12.5 THROUGH L12.4
ROUTE MCUNGE       L12.4_1    1   51       .73130      535.89      38.096      .97676    2.000    1.145 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.4
COMPUTE NM HYD        L12.4  -    1       .60160      753.98      51.040     1.59075    1.700    1.958 PER IMP=  46.00
*S  ADD L12.4 AND L12.5
ADD HYD           L12.4_2  1&51   2      1.33290     1030.26      89.136     1.25388    1.850    1.208
*S  ROUTE COMBINED (L12.4 AND L12.5) THROUGH L12.6
ROUTE MCUNGE       L12.6_1    2   51      1.33290     1013.76      89.209     1.25491    2.300    1.188 CCODE =     .2
*S

                    FROM  TO                PEAK       RUNOFF          TIME TO   CFS     PAGE = 17
             HYDROGRAPH  ID   ID       AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND      IDENTIFICATION  NO.  NO.   (SQ MI)    (CFS)      (AC-FT)   (INCHES)  (HOURS)   ACRE    NOTATION

*S  COMPUTE HYDROGRAPH FOR BASIN L12.6
COMPUTE NM HYD        L12.6  -    1       .94530     1104.20      95.926     1.90269    1.800    1.825 PER IMP=  65.00
*S  ADD (L12.4-5) & L12.6
ADD HYD           L12.6_2  1&51   2      2.27820     1650.50     185.135     1.52369    2.100    1.132
*S  ADD (L12.4-6) & L12.3
ADD HYD           L12.6_3  2&50   4      2.60950     1677.99     217.138     1.56020    2.250    1.005
*S  ROUTE COMBINED (L12.3, L12.4, L12.5, AND L12.6) THROUGH L12.7
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ROUTE MCUNGE       L12.7_1   4  49     2.60950     1536.09    216.600     1.55633   2.350    .920 CCODE =     .2
ROUTE MCUNGE       L12.7_1  49  50     2.60950     1535.34    216.571     1.55612   2.350    .919 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.7
COMPUTE NM HYD     L12.7  -   1      1.05630      778.10     56.406     1.00123   1.750   1.151 PER IMP=  21.00
*S  ADD (L12.3-6) & L12.7
ADD HYD            L12.7_2 1&50  3     3.66580     1808.14    272.976     1.39623   2.150    .771
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.8
COMPUTE NM HYD     L12.8  -   1       .42190      468.68     42.381     1.88347   1.850   1.736 PER IMP=  66.00
*S  ROUTE L12.8 THROUGH L12.7
ROUTE MCUNGE       L12.7_3   1  50      .42190      465.55     42.354     1.88230   1.900   1.724 CCODE =     .1
*S  ADD (L12.3-7) & L12.8
ADD HYD            L12.7_4 3&50  3     4.08770     2149.09    315.330     1.44640   2.150    .821
*S ROUTE FLOW THROUGH PROPOSED POND AT PASEO DEL VULCAN (PDV)
*S  INCREASE POND SIZE BY 1.5 TIMES.  PRINCIPAL SPILLWAY= 60" RCP
ROUTE RESERVOIR    PDVPOND   3  50     4.08770      311.46    304.080     1.39479   3.700    .119 AC-FT=  210.088
*S
*S**************************************************************************
*S   DIVERSION TO DAM 5 ARROYO BEGINS
*S**************************************************************************
*S* DIVERSION TO DAM 5 ARROYO NOT ROUTED TO WEST BLUFF.
*S* ASSUME STAYS IN PETROGLYPH PARK - 1/31/06 LEM
*S**************************************************************************
*S  ROUTE PDV POND OUTFLOW SOUTH IN PROPOSED PETROGLYPH DIVERSION
ROUTE MCUNGE         DIV1   50  5     4.08770      311.45    303.857     1.39377   3.750    .119 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.9W
COMPUTE NM HYD     L12.9W  -   2       .10160      157.18      5.686     1.04925   1.500   2.417 PER IMP=  24.00
*S  FLOW IN PROPOSED PETROGLYPH DIVERSION AT SOUTH END BASIN L12.9W
ADD HYD              DIV2  2& 5  4     4.18930      312.31    309.542     1.38542   3.750    .116
*S  ROUTE IN PROPOSED PETROGLYPH DIVERSION
ROUTE MCUNGE         DIV3   4   5     4.18930      312.31    309.400     1.38478   3.800    .116 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.11
COMPUTE NM HYD     L12.11  -   1       .27340      298.37     27.723     1.90128   1.850   1.705 PER IMP=  67.00
*S  ROUTE L12.11 THROUGH L12.12W TO PROPOSED PETROGLYPH DIVERSION
ROUTE MCUNGE       L12.12_1  1  49      .27340      297.59     27.702     1.89981   1.950   1.701 CCODE =     .1
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.12W
COMPUTE NM HYD     L12.12W -   2       .14150      151.03     10.018     1.32748   1.650   1.668 PER IMP=  39.00
ADD HYD              DIV4  2& 5  3     4.33080      316.27    319.418     1.38290   3.650    .114
*S  FLOW IN PROPOSED PETROGLYPH DIVERSION AT SOUTH END BASIN L12.12W
ADD HYD              DIV5  3&49  2     4.60420      497.85    347.120     1.41360   2.000    .169
*S ROUTE FLOW THROUGH PROPOSED MIREHAVEN A2 DAM

                    FROM  TO              PEAK      RUNOFF          TIME TO   CFS     PAGE =  18
               HYDROGRAPH  ID  ID         AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO. NO.    (SQ MI)     (CFS)     (AC-FT)  (INCHES) (HOURS)  ACRE    NOTATION

*S   PRINCIPAL SPILLWAY 1-36" RCP
*S for FINAL2D.HYM increase storage by 3.4x.
*S   PRINCIPAL SPILLWAY 1-54" RCP
ROUTE RESERVOIR    MA2POND   2  72     4.60420      267.47    346.551     1.41128   7.350    .091 AC-FT=  48.838
*S  ROUTE IN PROPOSED PETROGLYPH DIVERSION THRU BASIN L12.14W
ROUTE MCUNGE         DIV6   72  5     4.60420      267.47    346.402     1.41068   7.400    .091 CCODE =     .2
*S
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.14W
COMPUTE NM HYD     L12.14W -   2       .08690       81.22      5.062     1.09228   1.650   1.460 PER IMP=  26.00
*S  FLOW IN PROPOSED PETROGLYPH DIVERSION AT SOUTH END BASIN L12.14W
ADD HYD              DIV7  2& 5  3     4.69110      267.94    351.465     1.40478   7.350    .089
*S  ROUTE IN PROPOSED PETROGLYPH DIVERSION THRU L12.16NW
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ROUTE MCUNGE        DIV8   3   5     4.69110     267.94    351.315    1.40418   7.400    .089 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.15
COMPUTE NM HYD      L12.15  -   1     .43910      448.31     39.460    1.68497   1.850   1.595 PER IMP=  54.00
*S  ROUTE L12.15 THRU L12.16W TO PROPOSED PETROGLYPH DIV VIA MIREHAVEN "C"
ROUTE MCUNGE      L12.16_1   1  50     .43910      447.53     39.462    1.68505   1.850   1.593 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L12.16W
COMPUTE NM HYD      L12.16W  -   4     .44680      545.97     34.477    1.44682   1.650   1.909 PER IMP=  43.00
*S  ADD L12.16W TO ROUTED L12.15
ADD HYD          L12.16W_1  4&50  3     .88590      887.21     73.939    1.56490   1.750   1.565
*S  ADD L12.15 TO PROPOSED PETROGLYPH DIVERSION
ADD HYD             DIV9  3& 5  2     5.57700     1052.43    425.253    1.42971   1.750    .295
*s  route flow through new cdam for option 2d_cdam.hym through 60" RCP
ROUTE RESERVOIR    cdamPOND   2   4     5.57700      329.17    424.929    1.42862   2.850    .092 AC-FT=  43.726
*S  ROUTE IN PROPOSED PETROGLYPH DIVERSION TO DAM 5 ARROYO IN BASIN UD.5E
*S* PETROGLYPH DIVERSION ADDED BACK IN 2/1/06 TO MODEL GREATEST POSSIBLE FLOWS I
ROUTE MCUNGE        DIV10   4  72     5.57700      329.17    424.674    1.42776   2.900    .092 CCODE =     .2
*S*************************************************************************
*S*                 CALCULATED RUNOFF FOR BASINS LEADING INTO DAM 5
*S*                 BASINS CHANGED TO REFLECT DEVELOPED AREA
*S*************************************************************************
*S**** COMPUTE BASIN UD.5d ****
*S****THIS BASIN IS ADDED IN AS BASIN L12.16 W**********
*S* ASSUME UD.5D FLOWS OUT OF STUDY AREA AND ONTO PETROGLYPHS****
*S**** COMPUTE BASIN UD.5A ****
*S*
COMPUTE NM HYD .    UD.5A  -   1     .15300      296.19     13.694    1.67815   1.500   3.025 PER IMP=  53.20
*S
*S  DIVERT 25% FOR SURGE POND CONDITION
*S
*S  ADD PETROGLYPH DIVERSION TO BASIN UD.5A
ADD HYD          UD.5ATOT 72& 1   1     5.73000      379.25    438.368    1.43445   1.700    .103
 'S****          ROUTE UD.5A THROUGH OS.5A TO INLET OF DAM 5 ARROYO
ROUTE MCUNGE .    RTUD.5A   1   2     5.73000      378.40    438.190    1.43387   1.800    .103 CCODE =     .1
*S**** COMPUTE BASIN UD.5E ****
*S*
COMPUTE NM HYD      UD.5E  -  90     .18710      346.56     16.746    1.67815   1.550   2.894 PER IMP=  53.20
'S  DIVERT 25% FOR SURGE POND CONDITION
♀
                  FROM  TO              PEAK      RUNOFF          TIME TO   CFS     PAGE =  19
          HYDROGRAPH  ID  ID      AREA   DISCHARGE    VOLUME     RUNOFF    PEAK    PER
COMMAND    IDENTIFICATION  NO.  NO.   (SQ MI)   (CFS)     (AC-FT)  (INCHES)  (HOURS)  ACRE   NOTATION

DIVIDE HYD          UD.5E  90  90     .14033      259.92     12.559    1.67815   1.550   2.894
                 SURGE and  88      .04677       86.64      4.186    1.67815   1.550   2.894
*S
'S* ASSUME HALF OF BASIN UD.5E FLOWS ONTO OS.5A AND HALF ONTO OS.5B
DIVIDE HYD          OS.5A  90  51     .07016      129.96      6.280    1.67814   1.550   2.894
                 OS.5B and  52      .07016      129.96      6.280    1.67814   1.550   2.894
*S*
'S****          ROUTE HALF OF UD.5E THROUGH OS.5A TO INLET OF DAM 5 ARROYO
ROUTE MCUNGE       ARTUD.5E  51   1     .07016      127.03      6.268    1.67517   1.700   2.829 CCODE =     .1
*S****          ROUTE HALF OF UD.5E THROUGH OS.5B TO INLET OF DAM 5 ARROYO
ROUTE MCUNGE       BRTUD.5E  52  55     .07016      126.87      6.287    1.68015   1.600   2.825 CCODE =     .2
SEDIMENT BULK                                                                    PK BF =   1.12
*S**** COMPUTE BASIN OS.5A ****
*S*
COMPUTE NM HYD       OS.5A  -   3     .10580      120.87      3.740     .66285   1.550   1.785 PER IMP=   .00
'S**** COMPUTE BASIN OS.5B ****
*S*
COMPUTE NM HYD       OS.5B  -   4     .15400      202.65      5.444     .66285   1.500   2.056 PER IMP=   .00
SEDIMENT BULK                                                                    PK BF =   1.02
```

```
*S* ADD ROUTED UD.5E AND OS.5B**
ADD HYD          OS.5BTOT  4&55  70      .22416      323.88     11.731      .98126    1.500    2.258
*S* ADD ROUTED UD.5A AND OS.5A**
ADD HYD         UD.5AOS.5A  2& 3   5      5.83580      454.23     441.930     1.41989    1.650     .122
*S* ADD COMBINED FLOW TO ROUTED UD.5E**
ADD HYD          OS.5ATOT  5& 1  75      5.90596      577.80     448.199     1.42292    1.650     .153
*S* TOTAL INLET FLOW TO DAM 5 ARROYO DAM
ADD HYD          DAM5INLET 70&75   6      6.13013      828.26     459.930     1.40677    1.600     .211
*S**** ROUTE FLOW THROUGH PROPOSED DAM 5 ARROYO DAM
*S    OUTLET PIPE IS A 54" RCP
ROUTE RESERVOIR      D5POND   6   7      6.13013      271.14     446.534     1.36580   12.800     .069 AC-FT=   99.014
*S  ROUTE IN DAM 5 ARROYO TO END OF UD.5C
*S  FOR OPT 4 - DAM 5 ARROYO IS A 48 INCH STORM DRAIN
ROUTE MCUNGE       D5ARROYO   7   8      6.13013      271.14     446.427     1.36547   12.800     .069 CCODE =     .2
*S
*S**** COMPUTE BASIN UD.5C ****
*S*
COMPUTE NM HYD       UD.5C   -   11      .08500      182.75      7.608     1.67815    1.500    3.359 PER IMP=  53.20
*S
*S  DIVERT 25% FOR SURGE POND CONDITION
*S
*S* ADD DAM 5 ARROYO AND UD.5C*
ADD HYD          RTUD.5C 11& 8  99      6.21513      271.80     454.035     1.36975   12.800     .068
*S  ROUTE IN DAM 5 ARROYO TO END OF UD.5B
*S  FOR OPT 4 - DAM 5 ARROYO IS A 54 INCH STORM DRAIN
ROUTE MCUNGE       D5ARROYO  99   8      6.21513      271.80     453.904     1.36935   12.850     .068 CCODE =     .2
*S
*S**** COMPUTE BASIN UD.5B ****
*S*
COMPUTE NM HYD       UD.5B   -    9      .08200      136.03      5.687     1.30033    1.550    2.592 PER IMP=  30.00
*S* ADD DAM 5 ARROYO AND UD.5B*
ADD HYD          ARYDAM5  9& 8  11      6.29712      321.42     459.591     1.36845    1.550     .080
*S ROUTE DAM 5 ARROYO AND UD.5B AND UD.5C IN A 54" STORM DRAIN***
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	PEAK AREA (SQ MI)	RUNOFF DISCHARGE (CFS)	VOLUME (AC-FT)	TIME TO RUNOFF (INCHES)	CFS PEAK (HOURS)	PAGE = 20 PER ACRE	NOTATION
ROUTE MCUNGE	D5ARROYO	12	11	6.29712	315.63	459.442	1.36801	1.600	.078	CCODE = .1

```
*S  COMPUTE HYDROGRAPH FOR BASIN L9.1A*****
*S  THIS BASIN WILL BE DIVERTED IN TO DAM 5 POND.
COMPUTE NM HYD       L9.1A   -    9      .12300      186.29      9.500     1.44820    1.600    2.367 PER IMP=  39.08
*S ROUTE BASIN L9.1A IN THE PROPOSED DIVERSION STRUCTURE TO DAM 5 POND
*S* TOTAL FLOW IN DAM 9 DIVERSION*
ROUTE MCUNGE       D5ARROYO   9   8      .12300      178.01      9.433     1.43792    1.650    2.261 CCODE =     .1
*S* ADD FLOWS REACHING DAM 9 DIVERSION*
*S* ADD DAM 5 ARROYO*
ADD HYD          UD.5B&L91.A  8&11   9      6.42013      471.66     468.875     1.36935    1.600     .115
*S**** COMPUTE BASIN UD.2A ****
*S*
COMPUTE NM HYD       UD.2A   -   22      .12400      151.94      7.305     1.10459    1.600    1.915 PER IMP=  22.00
*S* ADD DAM 5 ARROYO AND UD.2A*
ADD HYD          ARYDAM5&L91.  9&22   9      6.54413      623.60     476.180     1.36433    1.600     .149
*S* ADD DAM 5 ARROYO AND UD.2*
*S TOTAL FLOW INTO DAM 5 POND ON SOCCER FIELDS
*S* ROUTE FLOW THROUGH DAM 5 POND ON SOCCER FIELDS ****
*S* OUTLET MODELED AS A 4.5' PIPE
ROUTE RESERVOIR      DAM5S   9  10      6.54413      261.46     473.712     1.35726   16.350     .062 AC-FT=   26.821
*S  ROUTE COMBINED FLOW IN DAM 5 ARROYO TO end of BASIN UD.4A
*S  ROUTE WITH 48 INCH PIPE - EDITED TO 48 INCH PIPE (10/31/11)
ROUTE MCUNGE       D5ARROYO  10   8      6.54413      261.46     473.613     1.35698   16.400     .062 CCODE =     .2
*S
*S**** COMPUTE BASIN UD.4A ****
```

```
*S*
COMPUTE NM HYD       UD.4A  -   9      .02610      64.04      2.993     2.14988    1.500    3.834 PER IMP=  83.60
*S**** COMPUTE BASIN UD.4D ****
*S*
COMPUTE NM HYD       UD.4d  -  10      .03230      78.83      3.504     2.03396    1.500    3.813 PER IMP=  72.00
*S*** ADD FLOW UD.4A AND UD.4D ***
*S*** TOTAL DAM 5 INFLOW ***
ADD HYD            UD4A&D 10& 9  45      .05840     142.87      6.496     2.08576    1.500    3.823
*S*** ADD FLOW FROM DAM 5 ARROYO UD.4A AND UD.4D ***
*S*** TOTAL DAM 5 INFLOW ***
ADD HYD            PD&4D.4A  8&45  45     6.60253     263.25    480.109     1.36342    1.800     .062
*S*** PROPOSED DIVERSION TO STORM CLOUD SUBDIVISION TO LADERA DAM 9****
*S*** DIVERT
DIVIDE HYD           TOPOND5   45  45     6.06390     221.25    440.943     1.36342    1.600     .057
                  TOPOND9 and  69      .53862      42.00     39.166     1.36342    1.800     .122
*S ROUTE FLOW FROM DIVERSION TO LADERA DAM 5
ROUTE MCUNGE       UD.4ADAM5  45   8     6.06390     221.25    440.793     1.36296    1.650     .057 CCODE =    .1
*S*** ADD FLOW FROM DAM 5 ARROYO TO ROUTED POND #4 OUTFLOW ***
*S*** TOTAL DAM 5 INFLOW ***
ADD HYD            PD5IN  8&43  44     8.29723     253.60    502.547     1.13565   22.300     .048
*S* ROUTE FLOW THROUGH POND 5 ****
ROUTE RESERVOIR      POND5   44   9     8.29723     252.27    492.157     1.11217   22.400     .048 AC-FT=  23.396
*S  PROPOSED DAM5 DIVERSION
*S  DIVIDE 65 CFS FROM DAM 5 TO DAM 6; REMAINING TO I-40
DIVIDE HYD         dam5div   9  71     6.32807     175.00    375.355     1.11217    2.900     .043
                todam6 and   9      1.96916      77.27    116.802     1.11217   22.400     .061
*S  ROUTE DAM5 SPILLWAY FLOWS SOUTH IN PROPOSED DAM 5 DIVERSION

                    FROM  TO                PEAK      RUNOFF          TIME TO   CFS     PAGE =  21
               HYDROGRAPH  ID  ID       AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO. NO.    (SQ MI)    (CFS)      (AC-FT)   (INCHES) (HOURS)   ACRE    NOTATION

*S  OPT 4 - FLOW ROUTED IN 48 INCH STORM DRAIN (10/7/11)
ROUTE MCUNGE         D5DIV1   71  73     6.32807     175.00    374.728     1.11032    3.000     .043 CCODE =    .1
*S*************************************************************************
*S*************************************************************************
*S*                          CONTINUE ON LADERA DAM SYSTEM                              *
*S*                             LADERA WATERSHED                                        *
*S*************************************************************************
*S*                  DAM SYSTEM FOR DAMS 6-12 TAKEN FROM STORMCLOUD MODEL    *
*S*                   TO ACCOUNT FOR STORMCLOUD AND CROSSINGS DEVELOPMENT    *
*S*************************************************************************
*S*************************************************************************
RAINFALL  TYPE= 2                                                  RAIN24=  2.710
 S  COMPUTE HYDROGRAPH FOR BASIN L7.1
 S  COMPUTE HYDROGRAPH FOR BASIN L7.1A
 S  BASIN L7.1A IS DIVERTED TO L9.2A
COMPUTE NM HYD       L7.1A  -  99      .00560      11.95      .500     1.67290    1.500    3.335 PER IMP=  50.00
 S
 S  COMPUTE HYDROGRAPH FOR BASIN L7.2
COMPUTE NM HYD       L7.2   -   2      .04060      71.62     2.908     1.34275    1.500    2.756 PER IMP=  38.00
 S  DIVIDE ID=2 INTO 3 THIRDS FOR PONDS 6, 7 AND 8
)IVIDE HYD         L7.2_4   2   1      .01352      23.85      .968     1.34274    1.500    2.756
                L7.2_5 and   3      .02708      47.77     1.939     1.34274    1.500    2.756
*S  ADD ONE THIRD BASIN L7.2 TO POND 5 OUTFLOW
 S  ADD 1ST THIRD TO ROUTED FLOW
ADD HYD            TO_DAM6  1& 9  10     1.98268      77.33    117.770     1.11374   22.400     .061
*S  ROUTE FLOW THROUGH POND #6
ROUTE RESERVOIR      POND6   10   9     1.98268      72.10    115.283     1.09022   23.150     .057 AC-FT=  20.897
 S  ADD 2ND THIRD TO POND 6 OUTFLOW
ADD HYD            TO_DAM7  1& 9  10     1.99619      72.16    116.251     1.09193   23.150     .056
*S  ROUTE FLOW THROUGH POND #7
ROUTE RESERVOIR      POND7   10   9     1.99619      68.69    112.037     1.05235   24.250     .054 AC-FT=  13.146
```

```
  AHYMO FILE FOR WEST I-40 DMP REVISED
*S  DEVELOPED CONDITIONS FOR APS SITES CONDITIONS, 24HR, 100YR.
*   WITH SEDIMENT BULKING & WITHOUT SEDIMENT REDUCTION AT PONDS.

  FILE: OPT4A_DAR.TXT
*S  DATE REVISED: 04/04/12

  COPIED FROM FILES: WI40R10.TXT

*  EDITED AHYMO FILES FROM:
        1.  WEST I40DMP REVISION BY BHI, DEVELOPED CONDITIONS 2006
  ********************************************************************************
*S*                              COMPUTE FLOW THROUGH LADERA DAMS 1-4                *
  ********************************************************************************
  !YR
*RAINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=0.683
*                RAIN SIX=0.930  RAIN DAY=1.129  DT=.05
   0YR
 ..AINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.160
*                RAIN SIX=1.429  RAIN DAY=1.736  DT=.05
   00YR
  \INFALL           TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.77
                RAIN SIX=2.26  RAIN DAY=2.63  DT=.05
*
  * ROUTE FLOW FROM DAM 0 THROUGH AN EARTHEN CHANNEL
 J* ROUTE THROUGH UD.1B
COMPUTE RATING CURVE ID=1    VS NO=1    NO SEGS=1
                MIN ELEV=0    MAX ELEV=5
                CH SLP=.04    FP SLP=.04
                N=.030        DIST=50
                DIST    ELEV    DIST    ELEV    DIST    ELEV
                 0       5       15       0       35      0
                 50      5
ROUTE MCUNGE          ID=12  HYD=L0.1_1  INFLOW ID=87  DT=0HR  L=1533.98
                NS=0  SLOPE=0.04  MATCODE=0  REGCODE=0  CCODE=0
  \INT HYD          ID=12    CODE=10



 J'**** COMPUTE BASIN UD.1B ****
'S*
  )MPUTE NM HYD       ID=15 HYD NO=UD.1B DA=0.1266
                PER A=42 PER B=46 PER C=12 PER D=0.00
                TP=0.133 RAIN=-1
  !INT HYD          ID=15 CODE=1

 J  DIVERT 25% FOR SURGE POND CONDITION
'DIVIDE HYD          ID=15 PER=-75  ID I=15 HYD=UD.1B
                        ID II=88 HYD=SURGE
  RINT HYD          ID=15  CODE=1
'PRINT HYD          ID=88 CODE=1


 J '** ADD DAM 0 TO UD.1B *****
ADD HYD           ID=22  HYD=DAM1IN
              ID=15     ID=12
  .INT HYD          ID=22    CODE=1



 J  ROUTE FLOW TO DAM 1
'S* ROUTE WITH 54" PIPE
```

```
)MPUTE RATING CURVE CID=1 VS NO=1 CODE=-1  SLP=0.053
                      DIA=54 IN  N=0.013
ROUTE MCUNGE       ID=16   HYD=RTUD.1b  INFLOW ID=22   DT=0 HR  L=1133
            NS=0   SLOPE=0.053   MATCODE=0  REGCODE=0  CCODE=0
 !INT HYD              ID=16 CODE=1


  **** COMPUTE BASIN UD.2 ****
C*
COMPUTE NM HYD      ID=5 HYD NO=UD.2 DA=.1291
            PER A=62 PER B=18 PER C=20PER D=0
                 TP=.155 RAIN=-1
PRINT HYD          ID=5 CODE=1
*C


C* DIVIDE BASIN INTO PONDS 1, AND 2-3
DIVIDE HYD              ID=5 RATIO=-0.33   ID I=20  HYD = PD1
                                                   ID II=21 HYD= PD2&3
PRINT HYD              ID=20 CODE=1
```

```
*C*** ADD 25% OF UD.2 TO DAM 1 INLET FLOW ****
   *** TOTAL DAM 1 INFLOW *****
..DD HYD          ID=22   HYD=DAM1IN
            ID=20     ID=16
   INT HYD         ID=22    CODE=1


C ROUTE FLOW THROUGH POND #1
ROUTE RESERVOIR    ID=27  HYD=POND1
            INFLOW ID=22   CODE=10
            OUTFLOW         STORAGE        ELEV
            (CFS)           (AC-FT)        (FT)
            0               0              5418.0
             63              5.66          5420.0
             120             11.77         5422.0
             156             18.47         5424.0
             186             25.90         5426.0
             198             29.92         5427.0
PRINT HYD          ID=27    CODE=10
```

```
C* DIVIDE UD.2 REMAINDER FLOW FOR PONDS #2,&3

  /IDE HYD              ID=21 RATIO=-0.5  ID I=95  HYD = PD2
                                          ID II=24 HYD= PD3
PRINT HYD              ID=95 CODE=1
  :INT HYD             ID=24 CODE=1


'S*** ADD PART OF BASIN UD.2 TO DAM 1 OUTLET FLOW ****
   ** DAM 2 INLET FLOW ***
   D HYD          ID=26   HYD=DAM2IN
            ID=95    ID=27
   INT HYD         ID=26    CODE=1


'S ROUTE FLOW THROUGH POND #2
  )UTE RESERVOIR    ID=10   HYD=POND2
            INFLOW ID=26  CODE=10
            OUTFLOW         STORAGE        ELEV
            (CFS)           (AC-FT)        (FT)
```

```
                0           0          5402.0
                27.         5.26        5404.
                55.         10.85       5406.0
                75.         16.79       5408.0
                90.         23.10       5410.0
                105.        29.77       5412.0
                535         40.52       5415


PRINT HYD       ID=10   CODE=10


*S*** ADD UD.2 AND  DAM 2 OUTLFLOW ****
 ?D HYD         ID=33   HYD=UD.2&UD.2A
              ID=24     ID=10
 . .IINT HYD    ID=33   CODE=1

   **** COMPUTE BASIN UD.3 ****
   *
COMPUTE NM HYD      ID=34 HYD NO=UD.3 DA=0.0560
             PER A=0.00 PER B=11 PER C=11.7 PER D=77.3
                  TP=0.133 RAIN=-1
 . .IINT HYD        ID=34 CODE=1

   *** ADD UD.3 AND ROUTED UD.2 UD.2A AND DAM 2 OUTFALL ****
  )D HYD          ID=39   HYD=UD.2&UD.2A
            ID=34     ID=33
  IINT HYD        ID=39   CODE=1



   ROUTE FLOW THROUGH POND #3
  )UTE RESERVOIR    ID=10   HYD=POND3
            INFLOW ID=39  CODE=10
            OUTFLOW         STORAGE         ELEV
            (CFS)           (AC-FT)         (FT)
            0               0.              5374.0
            11              4.15            5375.5
            24              9.99            5377.5
            32              16.19           5379.5
            39              22.76           5381.5
            44              29.71           5383.5
            70              33.5            5384
            863             44.78           5387.5
            1064            55.83           5388

   RINT HYD         ID=10   CODE=10


   *** COMPUTE BASIN UD.4c ****
  ;
 ^OMPUTE NM HYD      ID=34 HYD NO=UD.3 DA=0.0995
             PER A=0 PER B=28.9 PER C=57.4 PER D=13.7
                  TP=0.133 RAIN=-1
 PRINT HYD          ID=34 CODE=1



 'S*** ADD BASIN UD.4B&C AND POND 3 OUTFLOW  ****
   ** TOTAL INFLOW TO POND #4 ****
   D HYD          ID=42   HYD=UD.4B&C
            ID=34     ID=10
   INT HYD         ID=42   CODE=1
```

```
*S  ROUTE FLOW THROUGH POND #4
  )UTE RESERVOIR    ID=43  HYD=POND4
             INFLOW ID=42  CODE=10
             OUTFLOW        STORAGE        ELEV
             (CFS)          (AC-FT)        (FT)
              0.            0.             5349.
              10.           2.47           5350.
              23.           7.65           5352.
              35.           13.16          5354.0
              45.           19.03          5356.0
             1450.          25.25          5358.0
             3040           31.81          5360
  {INT HYD        ID=43   CODE=10

*S**** COMPUTE BASIN UD.5d ****
  * ASSUME UD.5D FLOWS OUT OF STUDY AREA AND ONTO PETROGLYPHS****
  OMPUTE NM HYD      ID=79 HYD NO=UD.5d DA=.2681
*              PER A=0 PER B=23.4 PER C=23.4 PER D=53.2
                TP=.615 RAIN=-1
  RINT HYD         ID=79 CODE=1


  **** COMPUTE BASIN UD.5A ****
  *
COMPUTE NM HYD      ID=1 HYD NO=UD.5A DA=.153
            PER A=50 PER B=25 PER C=25 PER D=0
                 TP=.157 RAIN=-1
rRINT HYD         ID=1 CODE=1
*S
   DIVERT 25% FOR SURGE POND CONDITION
  IVIDE HYD         ID=1 PER=-75  ID I=1 HYD=UD.5A
*                       ID II=88 HYD=SURGE
  RINT HYD         ID=1  CODE=1
  RINT HYD         ID=88 CODE=1
S
*S****      ROUTE UD.5A THROUGH OS.5A TO INLET OF DAM 5 ARROYO
  )MPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=27
                          CH SLP=.0497 FP SLP=.0497 N=0.045 DIST=356
                          DIST    ELEV
                          0               27
                          75              17
                          110             7
                          216             0
                          287             7
                          356             17
ROUTE MCUNGE      ID=2  HYD=RTUD.5A  INFLOW ID=1  DT=0 HR  L=1676
          NS=0   SLOPE=0.0497   MATCODE=0  REGCODE=0  CCODE=0
  INT HYD           ID=2 CODE=1

*S**** COMPUTE BASIN UD.5E ****
  *
  )MPUTE NM HYD      ID=90 HYD NO=UD.5E DA=0.1871
            PER A=50 PER B=25 PER C=25 PER D=0
                 TP=0.176 RAIN=-1
  INT HYD         ID=90 CODE=1


   DIVERT 25% FOR SURGE POND CONDITION
  VIDE HYD         ID=90 PER=-75  ID I=90 HYD=UD.5E
                       ID II=88 HYD=SURGE
  RINT HYD         ID=90  CODE=1
```

```
  RINT HYD          ID=88 CODE=1
 J
*S* ASSUME HALF OF BASIN UD.5E FLOWS ONTO OS.5A AND HALF ONTO OS.5B
  VIDE HYD              ID=90 RATIO=-0.5   ID I=51  HYD = OS.5A
                                           ID II=52 HYD= OS.5B

  *
  ****      ROUTE HALF OF UD.5E THROUGH OS.5A TO INLET OF DAM 5 ARROYO
JOMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=12
                              CH SLP=.032 FP SLP=.032 N=0.045 DIST=504
                              DIST     ELEV
                              0                10
                              253              0
                              378              10
                              504              12

ROUTE MCUNGE       ID=1   HYD=ARTUD.5E  INFLOW ID=51   DT=0 HR  L= 1235.63
            NS=0   SLOPE=0.032    MATCODE=0  REGCODE=0  CCODE=0
 RINT HYD             ID=1 CODE=1

  ****      ROUTE HALF OF UD.5E THROUGH OS.5B TO INLET OF DAM 5 ARROYO
JOMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=30
                              CH SLP=.03 FP SLP=.03 N=0.045 DIST=591
                              DIST     ELEV
                              0                30
                              90               20
                              256              10
                              292              0
                              591              10

  )UTE MCUNGE       ID=55   HYD=BRTUD.5E  INFLOW ID=52   DT=0 HR  L= 1078.59
            NS=0   SLOPE=0.03    MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD             ID=55 CODE=1


5EDIMENT BULK       CODE=1   BULK FACTOR=1.12
'S**** COMPUTE BASIN OS.5A ****

  )MPUTE NM HYD       ID=3 HYD NO=OS.5A DA=0.1058
            PER A=50 PER B=25 PER C=25 PER D=0
                 TP=0.154 RAIN=-1
  INT HYD          ID=3 CODE=1

'S** DIVIDE BASIN 0S.5A TO ACCOUNT FOR FLOW THAT GOES TO THE DAM 9 DIVERSION********
'S** DIVIDE BASIN OS.5a WITH 29% GOING TO THE DAM 9 DIVERSION**********
  /IDE HYD          ID=3 PER=-71  ID I=3 HYD=OS.5A
                         ID II=36 HYD=DAM9DIV
PRINT HYD           ID=3  CODE=1

  *** COMPUTE BASIN OS.5B ****
'S*
)MPUTE NM HYD       ID=4 HYD NO=OS.5B DA=0.1540
            PER A=50 PER B=25 PER C=25 PER D=0
                 TP=0.133 RAIN=-1
PRINT HYD           ID=4 CODE=1

  ADD ROUTED UD.5E AND OS.5B**
ADD HYD           ID=70   HYD=OS.5BTOT
            ID=4     ID=55
  INT HYD          ID=70    CODE=1
```

```
* ADD ROUTED UD.5A AND OS.5A**
)D HYD          ID=5   HYD=UD.5AOS.5A
              ID=2     ID=3
RINT HYD        ID=5   CODE=1

*S* ADD COMBINED FLOW TO ROUTED UD.5E**
*)D HYD         ID=75  HYD=OS.5ATOT
              ID=5     ID=1
RINT HYD        ID=75  CODE=1

* TOTAL INLET FLOW TO DAM 5 ARROYO DAM
)D HYD          ID=6   HYD=DAM5INLET
              ID=70    ID=75
*RINT HYD       ID=6   CODE=1

 ROUTE IN DAM 5 ARROYO TO END OF UD.5C


)MPUTE RATING CURVE  CID=1   VS NO=1   SEG NO=1
              MIN EL=0   MAX EL=10
              CH SLP=0.02  FP SLP=0.02
              N=0.015      DIST=50
              DIST   ELEV   DIST   ELEV  DIST  ELEV  DIST  ELEV
              0      10     20     0     30    0     50    10
 )UTE MCUNGE        ID=8  HYD=D5ARROYO  INFLOW ID=6  DT=0HR  L=2421.12
              NS=0  SLOPE=0.02  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD         ID=8  CODE=10


*** COMPUTE BASIN UD.5C ****
'S*
 )MPUTE NM HYD      ID=11 HYD NO=UD.5C DA=0.085
              PER A=50 PER B=25 PER C=25 PER D=0
                   TP=0.133 RAIN=-1
*INT HYD          ID=11 CODE=1

 DIVERT 25% FOR SURGE POND CONDITION
'DIVIDE HYD         ID=11 PER=-75  ID I=11 HYD=UD.5C
                       ID II=88 HYD=SURGE
 RINT HYD          ID=11  CODE=1
PRINT HYD          ID=88 CODE=1


 ADD DAM 5 ARROYO AND UD.5C*

 D HYD          ID=99  HYD=RTUD.5C
              ID=11  ID=8
PRINT HYD         ID=99  CODE=1

 ROUTE IN DAM 5 ARROYO TO END OF UD.5B


 MPUTE RATING CURVE  CID=1   VS NO=1   SEG NO=1  MIN EL=0   MAX EL=10
              CH SLP=0.02  FP SLP=0.02   N=0.015     DIST=50
              DIST   ELEV   DIST   ELEV  DIST  ELEV  DIST  ELEV
              0      10     20     0     30    0     50    10
 UTE MCUNGE         ID=8  HYD=D5ARROYO  INFLOW ID=99  DT=0HR  L=2421.12
              NS=0  SLOPE=0.02  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD         ID=8  CODE=10

 *** COMPUTE BASIN UD.5B ****
S*
 MPUTE NM HYD      ID=9 HYD NO=UD.5B DA=0.0916
```

```
            PER A=50  PER B=25 PER C=25 PER D=0
                 TP=0.133 RAIN=-1
RINT HYD          ID=9 CODE=1

  **** DIVIDE BASIN UD.5B TO ACCOUNT FOR FLOW REACHING THE DAM 9 DIVERSION*****
*          DIVIDE 27 PERCENT TO LADERA DAM 9 DIVERSION
  VIDE HYD          ID=9 PER=-73  ID I=9 HYD=UD.5B
                       ID II=57 HYD=DAM9DIV
RINT HYD          ID=9  CODE=1

  * ADD DAM 5 ARROYO AND UD.5B*

ADD HYD           ID=10   HYD=ARYDAM5
            ID=9     ID=8
  INT HYD         ID=10    CODE=1
S* TEMPORARY POND LOCATED AT THE INTERSECTION OF UD.5C AND UD.5B ****
** OUTLET MODELED AS A 6' PIPE
  OUTE RESERVOIR    ID=9   HYD=POND5
            INFLOW ID=10  CODE=10
            OUTFLOW         STORAGE         ELEV
      (CFS)         (AC-FT)         (FT)
                0               0               0.0
                6.56            1.1             1.0
                27.16           3.2             2.0
                63.66           5.6             3.0
                102.86          8.1             4.0
                181.84          10              5.0
                267.24          13              6.0
                308.58          17              7.0

RINT HYD          ID=10   CODE=1

_ ROUTE DAM 5 ARROYO AND UD.5B AND UD.5C IN A 48" STORM DRAIN***
OMPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.033
                     DIA=54 IN  N=0.013
  UTE MCUNGE        ID=10  HYD=D5ARROYO  INFLOW ID=10  DT=0HR  L=1460
            NS=0   SLOPE=0.033   MATCODE=0  REGCODE=0  CCODE=0
INT HYD           ID=10  CODE=10

_DIMENT BULK       CODE=1   BULK FACTOR=1.10
S  COMPUTE HYDROGRAPH FOR BASIN L9.1A*****
   THIS BASIN WILL BE DIVERTED IN TO DAM 5 POND.
  MPUTE NM HYD     ID=9      HYD=L9.1A   DA=0.1243 SQ MI
            PER A=50  PER B=25  PER C=25  PER D=0
             TP=-.212    RAIN=-1
  INT HYD         ID=9      CODE=10

S* FLOW FROM BASINS UD.5B AND OS.5A THAT REACH DAM 9 DIVERSION*
  D HYD           ID=9   HYD=L9.1A_UD5.B
            ID=9     ID=57
RINT HYD          ID=9    CODE=1
** FLOW FROM BASINS UD.5B AND OS.5A THAT REACH DAM 9 DIVERSION*
  D HYD           ID=9   HYD=L9.1A_UD5.B_OS.5A
            ID=9     ID=36
RINT HYD          ID=9    CODE=1

  ROUTE BASIN L9.1A IN THE PROPOSED DIVERSION STRUCTURE TO DAM 5 POND
OMPUTE RATING CURVE  CID=1    VS NO=1   SEG NO=1  MIN EL=0    MAX EL=10
            CH SLP=0.02  FP SLP=0.02    N=0.015      DIST=50
            DIST   ELEV   DIST   ELEV  DIST   ELEV  DIST   ELEV
            0      10     20     0     30    0     50    10
ROUTE MCUNGE         ID=8  HYD=D5ARROYO  INFLOW ID=9  DT=0HR  L=1800.0
            NS=0   SLOPE=0.02   MATCODE=0  REGCODE=0  CCODE=0
```

```
   INT HYD          ID=8  CODE=10
*S**** COMPUTE BASIN UD.2A ****
*C*
   )MPUTE NM HYD      ID=22 HYD NO=UD.2A DA=0.124
              PER A=62 PER B=18 PER C=20 PER D=10
                   TP=0.221 RAIN=-1
   !INT HYD          ID=22 CODE=1
   ' ADD DAM 5 ARROYO AND UD.2A
ADD HYD          ID=9   HYD=ARYDAM5&L91.A&UD.2A
             ID=10     ID=22
   !INT HYD         ID=9    CODE=1
   ' ADD DAM 5 ARROYO BASIN L9.1A*
*
   D HYD          ID=9   HYD=ARYDAM5&L91.A
             ID=9     ID=8
PRINT HYD         ID=9    CODE=1

   ' ROUTE FLOW THROUGH DAM 5 POND ON SOCCER FIELDS ****
   ' POND 5S
'S* OUTLET MODELED AS A 4.5' PIPE
)UTE RESERVOIR.   ID=10  HYD=POND5s
          INFLOW ID=9  CODE=10
          OUTFLOW        STORAGE        ELEV
          (CFS)          (AC-FT)        (FT)
                              0              0              5436
                              5.74           1.00           5437
                              24.15          2.00           5438
                              50.11          3.1            5439
                              102.05         4.3            5440
                              143.92         5.6            5441
                              168.07         7.0            5442
                              189.15         8.4            5443
                              208.11         10.4           5444
                              225.49         13.7           5445
                              241.61         18.4           5446
                              256.73         24.4           5447
                              271            31.7           5448
  INT HYD          ID=10  CODE=10


'S  ROUTE COMBINED FLOW IN DAM 5 ARROYO TO end of BASIN UD.4A
    ROUTE WITH 48 INCH PIPE
)MPUTE RATING CURVE  CID=1   VS NO=1   SEG NO=1
          MIN EL=0   MAX EL=10
          CH SLP=0.02  FP SLP=0.02
          N=0.015      DIST=50
          DIST   ELEV   DIST   ELEV  DIST  ELEV  DIST  ELEV
          0      10     20     0     30    0     50    10
 MPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.034
                    DIA=48 IN  N=0.013
ROUTE MCUNGE        ID=8  HYD=D5ARROYO  INFLOW ID=10  DT=0HR  L=2006
          NS=0   SLOPE=0.034   MATCODE=0  REGCODE=0  CCODE=0
  INT HYD          ID=8  CODE=10

SEDIMENT BULK       CODE=1   BULK FACTOR=1.025

   *** COMPUTE BASIN UD.4A ****
S*
  MPUTE NM HYD      ID=9 HYD NO=UD.4A DA=0.0261
          PER A=0.00 PER B=16.4 PER C=0 PER D=83.6
               TP=0.133 RAIN=-1
PRINT HYD          ID=9 CODE=1
   *** COMPUTE BASIN UD.4D ****
```

```
COMPUTE NM HYD      ID=10 HYD NO=UD.4d DA=0.0323
                PER A=0 PER B=0.0 PER C=28 PER D=72
                      TP=0.133 RAIN=-1
  RINT HYD          ID=10 CODE=1
*S*** ADD FLOW UD.4A AND UD.4D ***
  )D HYD            ID=46  HYD=UD4A&D
               ID=10     ID=9
PRINT HYD         ID=46   CODE=1

  *** ADD FLOW UD.4A AND UD.4D AND POND 5S OUTFLOW
  )D HYD            ID=46  HYD=UD4A&D
               ID=8     ID=46
  RINT HYD          ID=46   CODE=1

*S*** PROPOSED DIVERSION TO STORM CLOUD SUBDIVISION TO LADERA DAM 9****
*C*** DIVERT
  VIDE HYD          ID=46     Q=42
               ID=69     HYD=TOPOND9
               ID=45     HYD=todam5
   INT HYD          ID=69    CODE=10
   INT HYD          ID=45     CODE=10
*S ROUTE FLOW FROM DIVERSION TO LADERA DAM 5
COMPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1  SLP=0.034
                      DIA=48 IN  N=0.013
..OUTE MCUNGE         ID=8  HYD=UD.4ADAM5  INFLOW ID=45  DT=0HR  L=2006
            NS=0   SLOPE=0.034   MATCODE=0  REGCODE=0  CCODE=0
  RINT HYD          ID=8  CODE=10

*S*** ADD FLOW FROM DAM 5 ARROYO TO ROUTED POND #4 OUTFLOW ***
*C*** TOTAL DAM 5 INFLOW ***
  )D HYD            ID=44   HYD=PD5IN
               ID=8     ID=43
PRINT HYD         ID=44   CODE=1

  * ROUTE FLOW THROUGH POND 5 ****
ROUTE RESERVOIR     ID=9   HYD=POND5
               INFLOW ID=44  CODE=10
               OUTFLOW         STORAGE          ELEV
               (CFS)           (AC-FT)          (FT)
               0.              0.               5330.8
               25.             4.2              5331.8
               125.            12.9             5333.8
               200.            22.1             5335.8
               222             31.5             5337.0
               455             31.9             5337.8
              3833             52.7             5341.8
PRINT HYD         ID=9    CODE=10
   ROUTE OVERLAND FLOW FROM BASINS L0.1-L5.1 THROUGH  BASIN L7.2
  THIS ACCOUNTS FOR THE TIME IT TAKES FLOW TO GET THROUGH DAMS IN BASIN L7.2
COMPUTE RATING CURVE ID=1     VS NO=1     NO SEGS=1
                     MIN ELEV=0     MAX ELEV=5
                     CH SLP=.017    FP SLP=.029
                     N=.03        DIST=50
                     DIST    ELEV    DIST    ELEV    DIST    ELEV
                      0       5       15       0       35      0
                     50       5
ROUTE MCUNGE         ID=10  HYD=L7.2_1  INFLOW ID=9  DT=0HR  L=2400
                     NS=0  SLOPE=0.017  MATCODE=0  REGCODE=0  CCODE=0
  INT HYD          ID=10   CODE=10

 SEDIMENT BULK       CODE=1   BULK FACTOR=1.025
```

```
    COMPUTE HYDROGRAPH FOR BASIN L7.1
COMPUTE NM HYD     ID=1     HYD=L7.1   DA=0.0078 SQ MI
                   PER A=0  PER B=30  PER C=31  PER D=39
                   TP=-0.133   RAIN=-1
 .RINT HYD         ID=1     CODE=10
*
    ROUTE OVERLAND FLOW FROM BASIN L7.1 THROUGH  BASIN L7.2
  TYPICAL CROSS SECTION A
COMPUTE RATING CURVE  ID=1   VS NO=1   SEG NO=1
                   MIN EL=0   MAX EL=3.0
                   CH SLP=0.0028 FP SLP=0.0028
                   N=0.030     DIST=400
                   DIST   ELEV   DIST   ELEV
                   0      3      180    2
                   200    0      220    2
                   400    3
ROUTE MCUNGE       ID=50  HYD=L7.2_2  INFLOW ID=1  DT=0HR  L=2100
                   NS=0  SLOPE=0.0028  MATCODE=0  REGCODE=0  CCODE=0
  RINT HYD         ID=50    CODE=10
*S
    COMPUTE HYDROGRAPH FOR BASIN L7.2
  OMPUTE NM HYD     ID=2     HYD=L7.2   DA=0.0688 SQ MI
                   PER A=33  PER B=11  PER C=18  PER D=38
                   TP=-0.133   RAIN=-1
  RINT HYD         ID=2     CODE=10

*S  COMBINED FLOW (BASINS L7.1 & L7.2)
  )D HYD           ID=27    HYD=L7.2_3
                     ID=50     ID=2
PRINT HYD          ID=27    CODE=10
*
    DIVIDE ID=27 INTO 3 THIRDS FOR PONDS 6, 7 AND 8
 .VIDE HYD         ID=27    Q=-.333
                     ID=1     HYD=L7.2_4
                     ID=3     HYD=L7.2_5
  RINT HYD         ID=1     CODE=10
*
*   ADD 1ST THIRD TO ROUTED FLOW
  )D HYD           ID=10    HYD=TO_DAM6
                     ID=1     ID=10
PRINT HYD          ID=10    CODE=10
```

```
    ROUTE FLOW THROUGH POND #6
ROUTE RESERVOIR    ID=9   HYD=POND6
                   INFLOW ID=10  CODE=10
                   OUTFLOW        STORAGE        ELEV
                   (CFS)          (AC-FT)        (FT)
                   0.             0.             5321.0
                   63             7.24           5323.0
                   120            14.92          5325.0
                   156            23.04          5327.0
                   162            25.07          5327.5
                   2035           40.72          5331
 RINT HYD          ID=9     CODE=10
*
   ADD 2ND THIRD TO POND OUTFLOW
  )D HYD           ID=10    HYD=TO_DAM7
                     ID=1     ID=9
  RINT HYD         ID=10    CODE=10

*  ROUTE FLOW THROUGH POND #7
ROUTE RESERVOIR    ID=9   HYD=POND7
                   INFLOW ID=10  CODE=10
```

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEV (FT)
0.	0.	5300.0
60.	5.25	5302.3
130.	10.85	5304.3
180.	16.82	5306.3
3424	29.78	5310

RINT HYD ID=9 CODE=10

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                - VERSION:  1997.02c     RUN DATE (MON/DAY/YR) =04/05/2012
INPUT FILE = P:\20110349\WR\AHYMO\Workarea\OPTION~1\DAR\OPT4_I~1.TXT              USER NO.= AHYMO-S-9702c1BohanHu-AH

                  FROM  TO              PEAK      RUNOFF          TIME TO   CFS     PAGE =  1
            HYDROGRAPH  ID  ID        AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO. NO.   (SQ MI)    (CFS)     (AC-FT)  (INCHES) (HOURS)  ACRE    NOTATION

*S  AHYMO FILE FOR WEST I-40 DMP REVISED
*S  DEVELOPED CONDITIONS FOR APS SITES CONDITIONS, 24HR, 100YR.
*S  WITH SEDIMENT BULKING & WITHOUT SEDIMENT REDUCTION AT PONDS.
*S
*S  FILE: OPT4A_DAR.TXT
*S  DATE REVISED: 04/04/12
*****************************************************************************
*S*                          COMPUTE FLOW THROUGH LADERA DAMS 1-4                          *
*S*****************************************************************************
RAINFALL  TYPE= 2                                                  RAIN24=  2.630
*S* ROUTE FLOW FROM DAM 0 THROUGH AN EARTHEN CHANNEL
*S* ROUTE THROUGH UD.1B
```

```
                  FROM  TO              PEAK      RUNOFF          TIME TO   CFS     PAGE =  15
            HYDROGRAPH  ID  ID        AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO. NO.   (SQ MI)    (CFS)     (AC-FT)  (INCHES) (HOURS)  ACRE    NOTATION

ROUTE MCUNGE        L0.1_1  87  12      .58950     539.23     21.113     .67153   1.700   1.429 CCODE =    .2
*S**** COMPUTE BASIN UD.1B ****
*S*
COMPUTE NM HYD      UD.1B  -  15      .12660     148.37      4.011     .59398   1.500   1.831 PER IMP=   .00
*S  DIVERT 25% FOR SURGE POND CONDITION
*S
*S*** ADD DAM 0 TO UD.1B *****
ADD HYD             DAM1IN 15&12  22      .71610     598.24     25.123     .65782   1.700   1.305
*S  ROUTE FLOW TO DAM 1
*S* ROUTE WITH 54" PIPE
ROUTE MCUNGE        RTUD.1b  22  16      .71610     598.24     25.123     .65782   1.700   1.305 CCODE =    .0
*S**** COMPUTE BASIN UD.2 ****
*S*
COMPUTE NM HYD      UD.2  -   5      .12910     125.93      3.900     .56642   1.550   1.524 PER IMP=   .00
*S
*S
*S* DIVIDE BASIN INTO PONDS 1, AND 2-3
)IVIDE HYD          PD1   5  20      .04260      41.56      1.287     .56642   1.550   1.524
                    PD2&3 and  21      .08650      84.38      2.613     .56642   1.550   1.524
*S*** ADD 25% OF UD.2 TO DAM 1 INLET FLOW ****
*S*** TOTAL DAM 1 INFLOW *****
ADD HYD             DAM1IN 20&16  22      .75870     626.76     26.410     .65268   1.650   1.291
'S  ROUTE FLOW THROUGH POND #1
ROUTE RESERVOIR     POND1  22  27      .75870     148.11     26.410     .65268   2.100   .305 AC-FT=  17.001
 S* DIVIDE UD.2 REMAINDER FLOW FOR PONDS #2,&3
)IVIDE HYD          PD2   21  95      .04325      42.19      1.306     .56642   1.550   1.524
                    PD3 and  24      .04325      42.19      1.306     .56642   1.550   1.524
*S*** ADD PART OF BASIN UD.2 TO DAM 1 OUTLET FLOW ****
'S*** DAM 2 INLET FLOW ***
ADD HYD             DAM2IN 95&27  26      .80195     151.68     27.717     .64803   2.050   .296
*S  ROUTE FLOW THROUGH POND #2
ROUTE RESERVOIR     POND2  26  10      .80195      64.52     27.716     .64802   3.750   .126 AC-FT=  13.678
 S*** ADD UD.2 AND  DAM 2 OUTLFLOW ****
ADD HYD         UD.2&UD.2A 24&10  33      .84520      64.66     29.023     .64385   3.700   .120
*S**** COMPUTE BASIN UD.3 ****
 S*
COMPUTE NM HYD      UD.3  -  34      .05600     135.78      6.188    2.07177   1.500   3.788 PER IMP=  77.30
*S*** ADD UD.3 AND ROUTED UD.2 UD.2A AND DAM 2 OUTFALL ****
ADD HYD         UD.2&UD.2A 34&33  39      .90120     178.83     35.211     .73258   1.500   .310
```

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*S  ROUTE FLOW THROUGH POND #3
ROUTE RESERVOIR      POND3  39  10      .90120      32.61      34.921      .72656   6.800    .057 AC-FT=  16.763
*S**** COMPUTE BASIN UD.4c ****
*S*
COMPUTE NM HYD       UD.3  -  34      .09950      177.57      5.743      1.08214   1.500   2.789 PER IMP=  13.70
*S*** ADD BASIN UD.4B&C AND POND 3 OUTFLOW  ****
*S*** TOTAL INFLOW TO POND #4 ****
ADD HYD              UD.4B&C 34&10  42      1.00070      182.67      40.664      .76192   1.500    .285
*S  ROUTE FLOW THROUGH POND #4
ROUTE RESERVOIR      POND4  42  43      1.00070      27.30      40.121      .75175   10.750    .043 AC-FT=   9.623
*S**** COMPUTE BASIN UD.5d ****
*S* ASSUME UD.5D FLOWS OUT OF STUDY AREA AND ONTO PETROGLYPHS****
*S**** COMPUTE BASIN UD.5A ****

                    FROM  TO                PEAK       RUNOFF          TIME TO   CFS     PAGE =  16
           HYDROGRAPH  ID  ID       AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND    IDENTIFICATION  NO.  NO.   (SQ MI)    (CFS)      (AC-FT)   (INCHES)  (HOURS)   ACRE    NOTATION

*S*
COMPUTE NM HYD       UD.5A  -  1      .15300      160.59      4.950      .60662   1.550   1.640 PER IMP=   .00
*S
*S  DIVERT 25% FOR SURGE POND CONDITION
*S
*S****           ROUTE UD.5A THROUGH OS.5A TO INLET OF DAM 5 ARROYO
ROUTE MCUNGE         RTUD.5A  1   2      .15300      156.56      4.923      .60326   1.700   1.599 CCODE =    .1
*S**** COMPUTE BASIN UD.5E ****
*S*
COMPUTE NM HYD       UD.5E  -  90      .18710      183.60      6.053      .60662   1.550   1.533 PER IMP=   .00
*S  DIVERT 25% FOR SURGE POND CONDITION
*S
*S* ASSUME HALF OF BASIN UD.5E FLOWS ONTO OS.5A AND HALF ONTO OS.5B
DIVIDE HYD           OS.5A  90  51      .09355      91.80      3.027      .60662   1.550   1.533
                OS.5B  and  52      .09355      91.80      3.027      .60662   1.550   1.533
*S*
*S****           ROUTE HALF OF UD.5E THROUGH OS.5A TO INLET OF DAM 5 ARROYO
ROUTE MCUNGE         ARTUD.5E  51   1      .09355      90.41      3.037      .60878   1.650   1.510 CCODE =    .2
*S****           ROUTE HALF OF UD.5E THROUGH OS.5B TO INLET OF DAM 5 ARROYO
ROUTE MCUNGE         BRTUD.5E  52   55      .09355      89.56      3.007      .60265   1.700   1.496 CCODE =    .1
SEDIMENT BULK                                                                                  PK BF =   1.12
*S**** COMPUTE BASIN OS.5A ****
*S*
COMPUTE NM HYD       OS.5A  -  3      .10580      120.87      3.740      .66285   1.550   1.785 PER IMP=   .00
*S** DIVIDE BASIN 0S.5A TO ACCOUNT FOR FLOW THAT GOES TO THE DAM 9 DIVERSION****
*S** DIVIDE BASIN OS.5a WITH 29% GOING TO THE DAM 9 DIVERSION**********
DIVIDE HYD           OS.5A  3   3      .07512      85.82      2.656      .66285   1.550   1.785
                DAM9DIV  and  36      .03068      35.05      1.085      .66285   1.550   1.785
*S**** COMPUTE BASIN OS.5B ****
*S*
COMPUTE NM HYD       OS.5B  -  4      .15400      202.65      5.444      .66285   1.500   2.056 PER IMP=   .00
*S* ADD ROUTED UD.5E AND OS.5B**
ADD HYD              OS.5BTOT  4&55  70      .24755      219.13      8.451      .64009   1.550   1.383
*S* ADD ROUTED UD.5A AND OS.5A**
ADD HYD              UD.5AOS.5A  2& 3  5      .22812      202.10      7.578      .62288   1.700   1.384
*S* ADD COMBINED FLOW TO ROUTED UD.5E**
ADD HYD              OS.5ATOT  5& 1  75      .32167      279.44      10.616      .61878   1.700   1.357
*S* TOTAL INLET FLOW TO DAM 5 ARROYO DAM
ADD HYD              DAM5INLET 70&75  6      .56922      474.37      19.066      .62805   1.650   1.302
*S  ROUTE IN DAM 5 ARROYO TO END OF UD.5C
ROUTE MCUNGE         D5ARROYO  6   8      .56922      468.08      19.088      .62876   1.700   1.285 CCODE =    .2
*S
*S**** COMPUTE BASIN UD.5C ****
*S*
COMPUTE NM HYD       UD.5C  -  11      .08500      109.54      3.005      .66285   1.500   2.014 PER IMP=   .00
```

```
*S
*S  DIVERT 25% FOR SURGE POND CONDITION
*S
*S* ADD DAM 5 ARROYO AND UD.5C*
ADD HYD          RTUD.5C 11& 8  99      .65422     525.72     22.093     .63319   1.650   1.256
*S  ROUTE IN DAM 5 ARROYO TO END OF UD.5B

                    FROM  TO              PEAK       RUNOFF          TIME TO   CFS     PAGE =  17
             HYDROGRAPH  ID  ID      AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO.  NO.    (SQ MI)    (CFS)      (AC-FT)   (INCHES)  (HOURS)   ACRE    NOTATION

ROUTE MCUNGE      D5ARROYO  99   8      .65422     521.59     22.020     .63111   1.750   1.246 CCODE =     .1
*S
*S**** COMPUTE BASIN UD.5B ****
*S*
COMPUTE NM HYD       UD.5B  -    9      .09160     118.28     3.238      .66285   1.500   2.018 PER IMP=    .00
*S**** DIVIDE BASIN UD.5B TO ACCOUNT FOR FLOW REACHING THE DAM 9 DIVERSION*****
)IVIDE HYD           UD.5B  9   9      .06687     86.35      2.364      .66285   1.500   2.018
              DAM9DIV and  57      .02473     31.94      .874       .66285   1.500   2.018
*S* ADD DAM 5 ARROYO AND UD.5B*
ADD HYD          ARYDAM5  9& 8  10      .72109     549.34 ·   24.384     .63405   1.700   1.190
'S* TEMPORARY POND LOCATED AT THE INTERSECTION OF UD.5C AND UD.5B ****
*S* OUTLET MODELED AS A 6' PIPE
*S ROUTE DAM 5 ARROYO AND UD.5B AND UD.5C IN A 48" STORM DRAIN***
ROUTE MCUNGE      D5ARROYO  11   10      .72109     542.69     24.474     .63638   1.800   1.176 CCODE =     .2
GEDIMENT BULK                                                                          PK BF =   1.10
*S  COMPUTE HYDROGRAPH FOR BASIN L9.1A*****
'S  THIS BASIN WILL BE DIVERTED IN TO DAM 5 POND.
COMPUTE NM HYD       L9.1A  -    9      .12430     109.49     4.316      .65101   1.600   1.376 PER IMP=    .00
*S* FLOW FROM BASINS UD.5B AND OS.5A THAT REACH DAM 9 DIVERSION*
ADD HYD          L9.1A_UD5.B  9&57   9      .14903     135.59     5.190      .65297   1.550   1.422
*S* FLOW FROM BASINS UD.5B AND OS.5A THAT REACH DAM 9 DIVERSION*
ADD HYD          L9.1A_UD5.B_  9&36   9      .17971     170.64     6.275      .65466   1.550   1.484
*S ROUTE BASIN L9.1A IN THE PROPOSED DIVERSION STRUCTURE TO DAM 5 POND
ROUTE MCUNGE      D5ARROYO  9   8      .17971     169.33     6.282      .65541   1.600   1.472 CCODE =     .2
'S**** COMPUTE BASIN UD.2A ****
*S*
COMPUTE NM HYD       UD.2A  -   22      .12400     114.06     5.229      .79068   1.600   1.437 PER IMP=   9.09
'S* ADD DAM 5 ARROYO AND UD.2A
ADD HYD          ARYDAM5&L91. 10&22   9      .84509     614.28     29.703     .65902   1.750   1.136
*S* ADD DAM 5 ARROYO BASIN L9.1A*
ADD HYD          ARYDAM5&L91.  9& 8   9     1.02480     726.17     35.985     .65839   1.700   1.107
S* ROUTE FLOW THROUGH DAM 5 POND ON SOCCER FIELDS ****
*s* POND 5S
*S* OUTLET MODELED AS A 4.5' PIPE
ROUTE RESERVOIR      POND5s   9   10     1.02480     244.15     35.983     .65836   2.050    .372 AC-FT=  19.407
'S  ROUTE COMBINED FLOW IN DAM 5 ARROYO TO end of BASIN UD.4A
*S  ROUTE WITH 48 INCH PIPE
ROUTE MCUNGE      D5ARROYO  10   8      1.02480     244.14     35.987     .65843   2.100    .372 CCODE =     .2
SEDIMENT BULK                                                                          PK BF =   1.02
*S
*S**** COMPUTE BASIN UD.4A ****
'S*
COMPUTE NM HYD       UD.4A  -    9      .02610      64.04      2.993      2.14988  1.500   3.834 PER IMP=  83.60
*S**** COMPUTE BASIN UD.4D ****
'S*
COMPUTE NM HYD       UD.4d  -   10      .03230      78.83      3.504      2.03396  1.500   3.813 PER IMP=  72.00
*S*** ADD FLOW UD.4A AND UD.4D ***
ADD HYD          UD4A&D 10& 9  46      .05840     142.87      6.496      2.08576  1.500   3.823
'S*** ADD FLOW UD.4A AND UD.4D AND POND 5S OUTFLOW
ADD HYD          UD4A&D  8&46  46     1.08320     260.57     42.483      .70046   2.000    .385
*S*** PROPOSED DIVERSION TO STORM CLOUD SUBDIVISION TO LADERA DAM 9****
'S*** DIVERT
```

```
                    FROM  TO              PEAK      RUNOFF          TIME TO   CFS     PAGE =  18
              HYDROGRAPH  ID  ID      AREA    DISCHARGE    VOLUME    RUNOFF    PEAK    PER
COMMAND     IDENTIFICATION  NO. NO.   (SQ MI)    (CFS)     (AC-FT)   (INCHES) (HOURS)   ACRE    NOTATION

DIVIDE HYD        TOPOND9  46  69      .34344      42.00     13.417     .70046   1.400    .197
                todam5 and  45      .73975     218.57     29.066     .70046   2.000    .472
*S ROUTE FLOW FROM DIVERSION TO LADERA DAM 5
ROUTE MCUNGE      UD.4ADAM5  45  8      .73975     218.49     29.066     .70046   2.050    .472 CCODE =     .1
*S*** ADD FLOW FROM DAM 5 ARROYO TO ROUTED POND #4 OUTFLOW ***
*S*** TOTAL DAM 5 INFLOW ***
ADD HYD           PD5IN  8&43  44      1.72395     234.36     67.136     .73018   2.050    .212
*S* ROUTE FLOW THROUGH POND 5 ****
ROUTE RESERVOIR      POND5  44  9      1.72395     141.55     66.500     .72327   3.150    .128 AC-FT=   14.930
*S  ROUTE OVERLAND FLOW FROM BASINS L0.1-L5.1 THROUGH  BASIN L7.2
ROUTE MCUNGE         L7.2_1  9  10     1.72395     141.52     66.453     .72276   3.200    .128 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L7.1
COMPUTE NM HYD       L7.1  -   1      .00780       15.57      .603      1.44854   1.500   3.119 PER IMP=  39.00
*S  ROUTE OVERLAND FLOW FROM BASIN L7.1 THROUGH  BASIN L7.2
ROUTE MCUNGE         L7.2_2  1  50     .00780       13.04      .598      1.43772   1.800   2.612 CCODE =     .2
*S
*S  COMPUTE HYDROGRAPH FOR BASIN L7.2
COMPUTE NM HYD       L7.2  -   2      .06880      120.16     4.787      1.30469   1.500   2.729 PER IMP=  38.00
*S  COMBINED FLOW (BASINS L7.1 & L7.2)
ADD HYD           L7.2_3 50& 2  27      .07660      120.47     5.385      1.31822   1.500   2.457
*S  DIVIDE ID=27 INTO 3 THIRDS FOR PONDS 6, 7 AND 8
DIVIDE HYD        L7.2_4  27  1      .02551       40.12      1.793      1.31822   1.500   2.457
                L7.2_5 and  3      .05109       80.35      3.592      1.31822   1.500   2.457
*S  ADD 1ST THIRD TO ROUTED FLOW
ADD HYD           TO_DAM6  1&10  10     1.74945     142.04     68.247     .73144   3.200    .127
'S  ROUTE FLOW THROUGH POND #6
ROUTE RESERVOIR      POND6  10  9      1.74945      92.47      67.633     .72487   4.100    .083 AC-FT=   11.211
*S  ADD 2ND THIRD TO POND OUTFLOW
ADD HYD           TO_DAM7  1& 9  10     1.77496      92.77      69.427     .73340   4.100    .082
*S  ROUTE FLOW THROUGH POND #7
ROUTE RESERVOIR      POND7  10  9      1.77496      79.35      68.848     .72728   5.150    .070 AC-FT=   6.798
```

APPENDIX D – CD CONTAINING
AHYMO INPUT, OUTPUT & SUMMARY FILES

Exhibits

EXHIBIT 1 – INTERIM CONDITIONS LOCATION & BASIN MAP

EXHIBIT 2 – DEVELOPED CONDITIONS LOCATION & BASIN MAP

EXHIBIT 3 – POND 5S GRADING PLAN

LEGEND

GROUTED BOULDERS/GROUTED RIPRAP

EMERGENCY SPILLWAY

6" GRAVEL BASE COURSE MAINTENANCE ROAD

Point Table			
	NORTHING	EASTING	ELEVATION
1	1490709.36	1487228.83	5446.00
2	1490739.61	1487243.87	5445.61
3	1490751.13	1487256.77	5448.45
4	1490765.44	1487262.47	5448.45
5	1490773.41	1487264.18	5449.30
6	1490766.38	1487284.66	5449.00
7	1490759.70	1487304.09	5443.44
8	1490728.16	1487300.48	5443.61
9	1490733.24	1487285.71	5449.00
10	1490738.80	1487269.25	5449.33
11	1490732.42	1487255.91	5449.63
12	1490702.85	1487241.10	5449.88
13	1490706.69	1487234.20	5449.00
14	1490737.44	1487249.55	5448.61
15	1490746.01	1487273.13	5448.30
16	1490736.71	1487300.23	5443.65
17	1490740.84	1487288.19	5448.00
18	1490756.95	1487288.05	5448.00
19	1490753.16	1487298.50	5443.49

Point Table			
	NORTHING	EASTING	ELEVATION
20	1491151.65	1487260.25	5449.00
21	1491198.12	1487303.74	5436.00
22	1491207.38	1487305.21	5433.63
23	1491204.89	1487315.96	5433.66
24	1491196.95	1487313.67	5436.00
25	1491164.87	1487329.57	5446.68
26	1491154.61	1487331.19	5449.00
27	1491145.16	1487325.89	5449.00
28	1491146.64	1487307.75	5442.80
29	1491147.81	1487297.82	5442.80

NOTES:

1. TIE GRADING ON EAST SIDE OF POND TO STADIUM SITE GRADING.

Q_{100}= 542 CFS

DRIVEPAD

GROUTED BOULDER RUNDOWN SEE SHEET 37

BUILD 15' WIDE, 6" GRAVEL BASE COURSE MAINTENANCE ROAD SEE SHEET 40 FOR HORIZONTAL AND VERTICAL LAYOUT

AMAFCA DRAINAGE EASEMENT

LOWER POND BOTTOM = 5433.5

54" STORM DRAIN PIPE SEE SHEET 33 & 6

LOWER POND

BUILD 15' WIDE, 6" GRAVEL BASE COURSE MAINTENANCE RAMP SEE SHEET 40

BUILD EMERGENCY SPILLWAY SEE SHEET 39

BUILD PRINCIPAL SPILLWAY SEE SHEET 7

30' X 20' CONCRETE PAD SEE SHEET 41 & 42

BUILD GROUTED TRAINING DIKE D50 = 6" ABOVE GROUND 8:1 SIDE SLOPES, 1' DEEP TOE IN 3' AT 2:1 SIDE SLOPES

GRADING LIMITS

Q_{100}= 30 CFS

AMAFCA DRAINAGE EASEMENT

UPPER POND BOTTOM = 5443.5

BUILD GROUTED RIPRAP RUNDOWN D50 = 6" Q_{100}= 122 CFS V_{100}= 10.1 FPS

SEED AREAS STEEPER THAN 3:1 WITH GRAVEL MULCH PER COA SPEC 1012.4.3.3

GRADING LIMITS

GRADE TOE OF FILL DITCH TO DRAIN TO CULVERTS

N = 1490251.05
E = 1487226.15

Q_{100}= 50 CFS

BUILD GROUTED-RIPRAP RUNDOWN D50 = 6" TRAPEZOIDAL SECTION WITH 15' BOTTOM WIDTH 8:1 SIDE SLOPES 1' DEEP

BUILD UPPER AND LOWER PONDS PER GRADING INFORMATION SHOWN

SEED AREAS STEEPER THAN 3:1 WITH GRAVEL MULCH PER COA SPEC 1012.4.3.3

GRADING LIMITS

UPPER POND

N = 1490254.93
E = 1487282.24

BUILD 55 LF 3-24" CULVERTS @ 5' C.C. WITH 24" END SECTIONS AND 20' X 20' RIPRAP PADS
INV IN = 5446.57
INV OUT = 5446.29
S = 0.5%
D_{50}=6"

BUILD 15' WIDE, 6" GRAVEL BASE COURSE MAINTENANCE ROAD SEE SHEET 40

SEED AREAS STEEPER THAN 3:1 WITH GRAVEL MULCH

STADIUM SITE MAINTENANCE ROAD

SEE SHEET 36B FOR CONTINUATION OF POND 5S AND STADIUM DIVERSION DITCH

GRADING LIMITS

DRIVEPAD

BUILD 15' WIDE, 6" GRAVEL BASE COURSE MAINTENANCE RAMP SEE SHEET 40

SEED AREAS STEEPER THAN 2:1 WITH GRAVEL MULCH

STADIUM DIVERSION DITCH SEE SHEET 36B

SCALE: 1"=50' (HORIZ.)

\20110349\WR\Design\Plans\Lodera Dam 5\20110349_PondsSGPOT.dgn

BRAND$

BHI JOB NO. 20110349

AS-BUILT INFORMATION

	DATE
CONTRACTOR	
WORK STAKED BY	DATE
CONSTRUCTION ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

BENCH MARKS

USC&GS BRASS DISC STAMPED "REWARD 1969"

GEOGRAPHIC POSITION (NAD 83)

N.M. STATE PLANE COORDINATES (CENTRAL ZONE)

N=1487364.063 E=1491190.819

GROUND TO GRID = 0.999675005

DELTA ALPHA = -00°17'12.26"

NAVD 1988 ELEVATION = 5319.688

RECORDED BY DATE

NO.

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY	
		REVISIONS		
		DESIGN	AQC	DATE 04/2012
			ARR	DATE 04/2012
			CWH	DATE 04/2012

DESIGNED BY AQC
DRAWN BY ARR
CHECKED BY CWH

MICRO-FILM INFORMATION

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

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
POND 5S
GRADING PLAN

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

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
650274	J-7,J-8,K-7,K-8	36A	72

EXHIBIT 5 – PAVING PLAN &
PROFILE ARROYO VISTA BLVD.

REFER TO UTILITY PNP SHEETS FOR STORM DRAIN CROSSING INFORMATION

TRACT N-1
WATERSHED SUBDIVISION

CL Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C1	716.22'	5000.00'	08°12'26"	358.72'

CL Tangent Table		
ID	BEARING	LENGTH
T1	S81°01'30"E	1423.35'

STORM DRAIN FLOW TABLE						
ID	Q(cfs)	V(fps)	DEPTH	LENGTH	SIZE	SLOPE
T3	15.09	17.13	0.65'	37.46'	24"	8.64%
T4	15.09	12.78	0.80	23.00'	24"	3.85%
T6	261.52	23.19	3.0'	230.05'	48"	2.97%
T9	261.52	23.19	3.0'	136.00'	54"	2.87%

SD Tangent Table		
ID	BEARING	LENGTH
T2	N81°28'00"W	48.00'
T3	S08°58'30"W	37.46'
T4	N08°58'30"E	23.00'
T5	N81°01'30"W	220.59'
T6	S56°18'58"W	230.05'
T7	N81°01'30"W	261.16'
T8	N86°25'31"W	355.89'
T9	S56°18'58"W	136.00'

10' Trail Point Table		
	STATION	OFFSET
1	58+81.21	83.00' RT
2	59+39.24	74.40' RT
3	59+67.48	70.10' RT
4	60+74.99	69.48' RT
5	61+04.29	73.99' RT
6	61+63.65	83.00' RT
7	61+14.63	81.40' RT

MEDIAN Point Table			
	STATION	OFFSET	ELEVATION
1	60+13.81	75.49' RT	5438.47
2	60+23.69	73.93' RT	5438.14

TEMP. ASPHALT CURB Point Table			
	STATION	OFFSET	ELEVATION
3	59+73.51	4.93' RT	5439.88
4	60+04.34	9.58' LT	5439.20
5	60+35.16	4.93' RT	5437.97
6	60+54.43	14.00' RT	5437.24

Ⓐ FLOWLINE DATA FOR CURB RETURN

PC	39.16	
1	38.84	D = 81°01'30"
2	38.52	R = 30.00'
3	38.65	T = 25.63'
PT	38.76	L = 42.42'
PI	38.31	C = 38.98'

PC STA. 59+61.11, 58.00' RT
PT STA. 59+90.75, 83.32' RT
PI STA. 59+86.75, 58.00' RT
RAD STA. 59+61.11, 88.00' RT

Ⓑ FLOWLINE DATA FOR CURB RETURN

PC	37.16	
1	36.89	D = 98°58'30"
2	36.61	R = 30.00'
3	36.04	T = 35.11'
PT	35.46	L = 51.82'
PI	36.51	C = 45.62'

PC STA. 60+50.94, 92.68' RT
PT STA. 60+80.58, 58.00' RT
PI STA. 60+45.47, 58.00' RT
RAD STA. 60+80.58, 88.00' RT

PARCEL C-1
WESTLAND NORTH

STA. 59+54.21, 3.00' LT
INSTALL 1 – 24" SD PLUG
INV =5433.10

STA. 59+54.24, 14.00' RT
END MEDIAN CURB & GUTTER
BEGIN ASPHALT CURB
FL40.34

FUTURE CURB & GUTTER

TURNAROUND TEMP. PAVEMENT
PER TEMP. PAVEMENT DETAIL
SEE SHEET 5 (HATCHED AREA)

STA. 60+61.55, 14.00' RT
END ASPHALT CURB
BEGIN MEDIAN CURB & GUTTER
FL37.24

STA. 61+70.80, 20.00' RT
INSTALL 1 – 48"x36" SD REDUCER

FUTURE SIDEWALK

FUTURE CURB & GUTTER

SEE SHEET 6
MATCH LINE STA 68+00

MATCH LINE STA 68+00
SEE SHEET 8

59+00 60+00 61+00 62+00 PC62+23.35 63+00 64+00 65+00 66+00 67+00 68+00

R/W

44'F-F
28' MEDIAN
180'-R/W
10' TRAIL
56' F-F
16' MEDIAN

FUTURE CURB & GUTTER
FUTURE SD
R=40'

BUILD 8' SIDEWALK
PER C.O.A. STD.
DWG. 2430

SD MH15
STA. 61+86.80, 20.00' RT
BUILD 6' DIA.
TYPE "E" SD MH

FUTURE CURB & GUTTER

SD MH3
STA. 64+46.92, 25.02' RT

INSTALL TYPE III BARRICADES

R=25' R=25' R=5'

36" SD 24" SD 18" SD 48" SD 48" SD 54" SD

STA. 59+06.21, 58.00' RT
TALL 1 – DOUBLE GRATE
TYPE "A" SD INLET
SEE DETAIL SHEET 50
C.O.A. STD. DWG. 2220
INV = 5437.09
TC = 5441.76

SD MH1
TA. 59+54.21, 20.00' RT

STA. 59+54.21, 58.00' RT
INSTALL 1 – DOUBLE GRATE
TYPE "C" SD INLET
PER C.O.A. STD. DWG.
2201 & 2220
/ = 5435.19 TC = 5440.06

STA. 59+62.48, 70.26' RT
REMOVABLE BOLLARD POST
PER STD DWG 2250

STA. 60+79.99, 69.63' RT
REMOVABLE BOLLARD POST
PER COA STD DWG 2250

STA. 60+52.42, 102.00' RT
BEGIN STD. CURB & GUTTER
BEGIN SIDEWALK
FL37.84

AMAFCA DRAINAGE EASEMENT
DOC:
FILED:

STA. 60+28.12, 102.00' RT
END MEDIAN CURB & GUTTER
FL38.57

STA. 60+18.00, 102.00' RT
END MEDIAN CURB & GUTTER
FL38.87

STA. 59+93.70, 102.00' RT
END STD. CURB & GUTTER
FL39.63

STA. 61+74.80, 20.00' RT
INSTALL 1 – 45° 48"x48" WYE

POND 5S
SEE SHEET 36A

ARROYO VISTA BLVD.

STA. 59+05.61, 268.05' RT
INV = 5436.00'

STA. 60+05.63, 175.89' RT
INSTALL 1 – 54"x48"
SD REDUCER

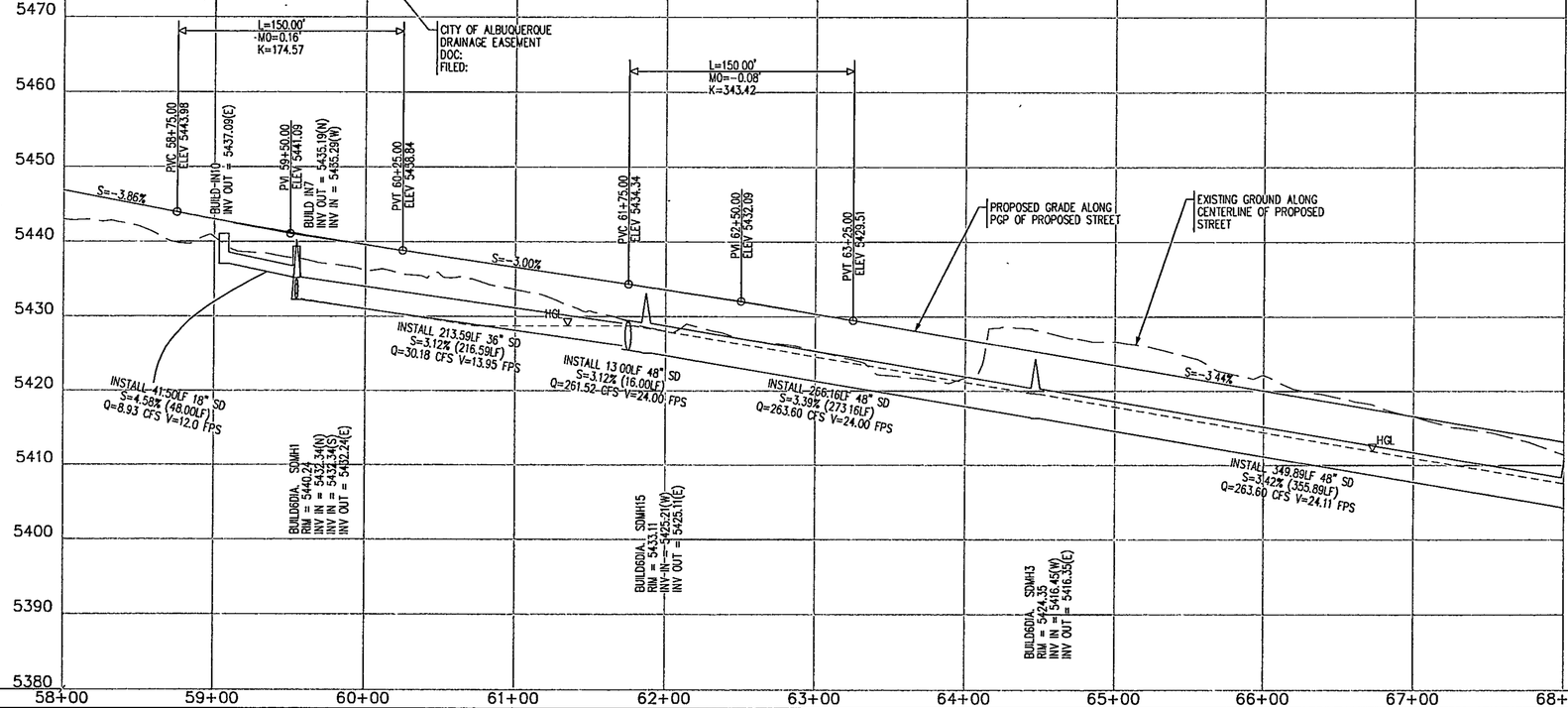
CITY OF ALBUQUERQUE
DRAINAGE EASEMENT
DOC:
FILED:

N

50 25 0 50
SCALE: 1"=50'
(HORIZ.)

NOTE:
Q FLOW RATE SHOWN IN PROFILE IS Q-PEAK

10' TRAIL CURVE TABLE				
ID	ARC	RADIUS	DELTA	TANGENT
C1	58.87'	200.00'	16°51'51"	29.65'
C2	28.67'	100.00'	16°25'34"	14.43'
C3	29.75'	100.00'	17°02'51"	14.99'
C4	60.26'	200.00'	17°15'51"	30.36'



STORM DRAIN ONLY

NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. ALL CURB RETURN RADII SHALL BE 25' UNLESS OTHERWISE SPECIFIED.
3. ALL CURVE DATA AND DIMENSIONS REFER TO FACE OF CURB UNLESS OTHERWISE SPECIFIED.
4. GRADE ELEVATIONS, WHERE NOTED, ARE ALONG FLOWLINE OF CURB UNLESS OTHERWISE SPECIFIED.
5. CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND EMS AT THE END OF EACH SANITARY SEWER SERVICE.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES.
7. ANY ADDITIONAL GRADING REQUIRED TO MATCH PROPOSED STREET GRADES SHALL BE INCIDENTAL TO PAVING ITEMS.
8. CONTRACTOR SHALL PROVIDE THE INSPECTORS, (CITY AND PRIVATE) WITH THE PROPOSED HYDROSTATIC TESTING PLAN. THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN.
9. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
10. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
11. REMOVAL OF THE EXISTING CURB AND GUTTER SHALL BE AS PER COA STD. DWG. 2415A (SAWCUT ONLY).
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED PRIOR TO ACCEPTANCE OF CURB & GUTTER.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
14. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.

KEYED NOTES

1. STD. CURB & GUTTER PER COA STD. DWG. 2415A
2. MEDIAN CURB & GUTTER PER COA STD. DWG. 2415B
3. BUILD 10' ASPHALT TRAIL PER DETAIL SEE SHEET 5
4. BUILD WHEEL CHAIR RAMP PER DETAIL SHEET 50
5. INSTALL 6' CONCRETE VALLEY GUTTER PER COA STD. DWG. 2420
6. 6" MODIFIED EXTRUDED ASPHALT CURB PER COA STD. DWG. 2415B WITH 4" WHITE STRIPE ALONG STREET EDGE OF CURB
7. BUILD 4" TEXTURED MEDIAN PAVEMENT FROM MEDIAN NOSE TO 10' FROM NOSE OR TO 6' MIN. WIDTH F-F AS SHOWN ON PLANS (BAJA RED) MEDIAN NOSES SHALL BE PAINTED YELLOW TO APPROX. 6' BEHIND PC/PT. PER COA STD. DWG. 2408 & 2502
8. EXISTING EDGE OF PAVEMENT CONTRACTOR SHALL INSURE CLEAN EDGE PRIOR TO PAVING. SAWCUT MAY BE NECESSARY.
9. BUILD 6' SIDEWALK PER COA STD. DWG. 2430.
10. PAVEMENT DESIGN SECTION SEE SHEET 5

FOR INFORMATION ON FLOWLINE AND MEDIAN FLOWLINE CALCULATIONS FROM PROFILE GRADE POINT (PGP) SEE CROSS-SECTION DETAIL ON SHEET 5

GENERAL NOTE:
ALL STORM DRAIN MANHOLES SHALL BE 6' DIAMETER TYPE "E" AS PER STANDARD DRAWING 2102 UNLESS OTHERWISE NOTED.

AS-BUILT INFORMATION

NO.	DATE	BY	REMARKS
			CONTRACTOR
			WORK INSPECTED BY
			INSPECTOR'S ACCEPTANCE BY
			FIELD LOCATION BY
			DRAWINGS CORRECTED BY
			RECORDED BY

BENCH MARKS
USC&GS BRASS DISC STAMPED "REWARD 1969"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
N=1487364.063 E=1491190.819
GROUND TO GRID = 0.999675005
DELTA ALPHA = -00°17'12.26"
NAVD 1988 ELEVATION = 5319.688

SURVEY INFORMATION
FIELD NOTES

NO.	DATE	BY

DATE
DATE
DATE
DATE
DATE
DATE
DATE
DATE
DATE

ENGINEER'S SEAL
YOLANDA PADILLA MOYEDA
NEW MEXICO
16035
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	BY	REVISIONS
			DESIGN
		YPM	DESIGNED BY
		ARR	DRAWN BY
		YPM	CHECKED BY

DATE 04/2012
DATE 04/2012
DATE 04/2012

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

CITY OF ALBUQUERQUE
DEPARTMENT OF
MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
PAVING PLAN & PROFILE
ARROYO VISTA BLVD.

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

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
650274	J-7,J-8,K-7,K-8	7	72

20110349\CDP\Plans\PNP\Phase1A\20110349_ppnp02.dgn
/2012

BHI JOB NO. 20110349

SCALE: 1" = 50' (HORIZ.)
1" = 10' (VERT.)

EXHIBIT 6 – PAVING PLAN &
PROFILE ARROYO VISTA BLVD.

CL Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C1	716.22'	5000.00'	08°12'26"	358.72'
C2	715.23'	5012.00'	08°10'35"	358.23'

CL Tangent Table		
ID	BEARING	LENGTH
T2	S81°03'21"E	463.85'

REFER TO UTILITY PNP SHEETS FOR STORM DRAIN CROSSING INFORMATION

TRACT N-1
WATERSHED SUBDIVISION

STA. 73+79.56, 14.00' RT
END MEDIAN CURB & GUTTER
BEGIN ASPHALT CURB
BEGIN TEMP. PAVEMENT
FL 90.37

STA. 76+54.80, 14.00' LT
BEGIN MEDIAN CURB & GUTTER
FL 81.17

STA. 76+54.80, 8.00' LT
BEGIN MEDIAN CURB & GUTTER
FL 81.62

TEMP. PAVEMENT
SEE TEMP. PAVEMENT SECTION
SHEET 5 (HATCHED AREA)

STA. 76+54.80
BEGIN 10' ASPHALT TRAIL
6:1 TO EXISTING GROUND

STA. 76+71.66, 31.83' LT
INSTALL 1 – 24" SD PLUG
INV = 5374.74

PT 76+54.80

FUTURE CURB & GUTTER

R/W

FUTURE TRAIL

PARCEL C-1
WESTLAND NORTH

68+00 69+00 PARCEL 39.57 70+00 71+00 72+00 73+00 74+00 75+00 76+00 77+00

SEE SHEET 7
MATCH LINE STA 68+00

MATCH LINE STA 77+00
SEE SHEET 9

FUTURE CURB & GUTTER

44' F-F
36' MEDIAN
34' F-F
180' R/W

48" SD

TEMP ASPHALT MEDIAN NOSE R=3'

66' F-F MEDIAN

18" SD

10' TRAIL

SD MH5
STA. 72+52.02, 20.00' RT

STA. 76+54.82, 14.83' RT
END TEMP. PAVEMENT

STA. 76+55.77, 58.00' RT
INSTALL 1 – DOUBLE GRATE
TYPE "A" SD INLET
SEE DETAIL SHEET 50 &
C.O.A. STD. DWG. 2220
INV = 5376.19
TC = 5380.86

SD MH4
STA. 68+01.26, 20.00' RT

SD Tangent Table		
ID	BEARING	LENGTH
T10	N87°45'10"W	450.00'
T11	N83°06'27"W	450.00'
T12	N22°50'28"W	60.98'
T13	N81°29'51"W	48.00'

ASPHALT CURB Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C8	171.12'	675.00'	14°31'30"	86.02'
C9	213.74'	693.00'	17°40'18"	107.73'

ASPHALT CURB Point Table			
	STATION	OFFSET	ELEVATION
1	74+65.02	7.86' RT	5387.09
2	75+47.91	10.34' LT	5384.85
3	75+97.39	23.29' LT	5383.28
4	76+47.48	33.04' LT	5381.70

ASPHALT CURB Tangent Table		
ID	BEARING	LENGTH
T3	S89°43'59"W	155.94'

N

50 25 0 50
SCALE: 1"=50'
(HORIZ.)

ARROYO VISTA BLVD.

FROM STA. 55+81.68 TO 77+78.87
CROSS SLOPE TO REMAIN
+2.0% LT & -2.0% RT (STD. CROWN)

NOTE:
Q FLOW RATE SHOWN IN PROFILE IS Q-PEAK

L=150.00'
MO=-0.12'
K=243.20

EXISTING GROUND ALONG CENTERLINE OF PROPOSED STREET

PROPOSED GRADE ALONG PGP OF PROPOSED STREET

L=150.00'
MO=0.18'
K=156.37

PVC 69+58.00
ELEV 5407.76

PVI 70+33.00
ELEV 5405.18

PVT 71+08.00
ELEV 5402.14

PVC 73+75.00
ELEV 5391.32

PVI 74+50.00
ELEV 5388.28

PVT 75+25.00
ELEV 5385.96

S=-3.44%

S=-4.05%

S=-3.09%

HGL

INSTALL 444.00LF 48" SD
S=3.77% (450.00LF)
Q=263.60 CFS V=25.25 FPS

INSTALL 443.00LF 48" SD
S=3.56% (450.00LF)
Q=263.60 CFS V=20.98 FPS

INSTALL 41.50LF 18" SD
S=4.05% (48.00LF)
Q=11.05 CFS V=12.01 FPS

INSTALL 56.98LF 24" SD
S=5.06% (60.98LF)
Q=19.78 CFS V=15.12 FPS

BUILD IN1
INV OUT = 5376.19(E)

BUILD01A, SDMH4
RIM = 5412.27
INV IN = 5404.37(W)
INV OUT = 5404.27(E)

BUILD01A, SDMH5
RIM = 5395.43
INV IN = 5387.53(W)
INV OUT = 5387.43(E)

5430 5420 5410 5400 5390 5380 5370 5360 5350 5340

68+00 69+00 70+00 71+00 72+00 73+00 74+00 75+00 76+00 77+00

STORM DRAIN ONLY

SCALE: 1" = 50' (HORIZ.)
1" = 10' (VERT.)

BHI JOB NO. 20110349

NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. ALL CURB RETURN RADII SHALL BE 25' UNLESS OTHERWISE SPECIFIED.
3. ALL CURVE DATA AND DIMENSIONS REFER TO FACE OF CURB UNLESS OTHERWISE SPECIFIED.
4. GRADE ELEVATIONS, WHERE NOTED, ARE ALONG FLOWLINE OF CURB UNLESS OTHERWISE SPECIFIED.
5. CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND EWS AT THE END OF EACH SANITARY SEWER SERVICE.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES.
7. ANY ADDITIONAL GRADING REQUIRED TO MATCH PROPOSED STREET GRADES SHALL BE INCIDENTAL TO PAVING ITEMS.
8. CONTRACTOR SHALL PROVIDE THE INSPECTORS, (CITY AND PRIVATE) WITH THE PROPOSED HYDROSTATIC TESTING PLAN. THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN.
9. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
10. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
11. REMOVAL OF THE EXISTING CURB AND GUTTER SHALL BE AS PER COA STD. DWG. 2415A (SAWCUT ONLY).
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED PRIOR TO ACCEPTANCE OF CURB & GUTTER.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
14. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.

KEYED NOTES

1. STD. CURB & GUTTER PER COA STD. DWG. 2415A
2. MEDIAN CURB & GUTTER PER COA STD. DWG. 2415B
3. BUILD 10' ASPHALT TRAIL PER DETAIL SEE SHEET 5
4. BUILD WHEEL CHAIR RAMP PER DETAIL SHEET 50
5. INSTALL 6' CONCRETE VALLEY GUTTER PER COA STD. DWG. 2420
6. 6" MODIFIED EXTRUDED ASPHALT CURB PER COA STD. DWG. 2415B WITH 4" WHITE STRIPE ALONG STREET EDGE OF CURB
7. BUILD 4" TEXTURED MEDIAN PAVEMENT FROM MEDIAN NOSE TO 10' FROM NOSE OR TO 6' MIN. WIDTH F-F AS SHOWN ON PLANS (BAJA RED) MEDIAN NOSES SHALL BE PAINTED YELLOW TO APPROX. 6' BEHIND PC/PT. PER COA STD. DWG. 2408 & 2502
8. EXISTING EDGE OF PAVEMENT CONTRACTOR SHALL INSURE CLEAN EDGE PRIOR TO PAVING. SAWCUT MAY BE NECESSARY.
9. BUILD 6' SIDEWALK PER COA STD. DWG. 2430.
10. PAVEMENT DESIGN SECTION SEE SHEET 5

FOR INFORMATION ON FLOWLINE AND MEDIAN FLOWLINE CALCULATIONS FROM PROFILE GRADE POINT (PGP) SEE CROSS-SECTION DETAIL ON SHEET 5

GENERAL NOTE:
ALL STORM DRAIN MANHOLES SHALL BE 6' DIAMETER TYPE "E" AS PER STANDARD DRAWING 2102 UNLESS OTHERWISE NOTED.

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

AS-BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS
USC&GS BRASS DISC STAMPED "REWARD 1969"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
N=1487364.063 E=1491190.819
GROUND TO GRID = 0.999675005
DELTA ALPHA = -00°17'12.26"
NAVD 1988 ELEVATION = 5319.688

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
YOLANDA PADILLA MOTSER
NEW MEXICO
16035
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
	DATE 04/2012		YPM
	DATE 04/2012		ARR
	DATE 04/2012		YPM
		DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
PAVING PLAN & PROFILE
ARROYO VISTA BLVD.

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

CITY PROJECT NO. 650274
ZONE MAP NO. J-7,J-8,K-7,K-8
SHEET 8 OF 72

\20110349\CDP\Plans\PNP\Phase1A\20110349_ppnp03.dgn
5/2012

EXHIBIT 7 – PAVING PLAN &

PROFILE ARROYO VISTA BLVD.

CL Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C3	1167.06'	1012.00'	66°04'29"	658.14'

CL Tangent Table		
ID	BEARING	LENGTH
T2	S81°03'21"E	795.62'

ASPHALT CURB Tangent Table		
ID	BEARING	LENGTH
T4	S89°43'59"W	155.94'

STORM DRAIN FLOW TABLE						
ID	Q(cfs)	V(fps)	DEPTH	LENGTH	SIZE	SLOPE
T14	19.78	18.70	0.74'	37.46'	24"	8.94%
T20	78.83	15.10	1.75'	78.23'	48"	2.00%
T21	78.83	15.10	1.75'	24.01'	48"	2.00%

SD Tangent Table		
ID	BEARING	LENGTH
T14	S08°56'39"W	37.46'
T15	N81°03'21"W	146.31'
T16	N81°03'21"W	37.41'
T17	N81°03'21"W	465.41'
T18	N76°54'13"W	330.33'
T19	S20°32'03"W	321.24'
T20	S13°20'04"W	78.23'
T21	S13°20'04"W	24.01'

MEDIAN Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C15	14.48'	50.00'	16°35'52"	7.29'
C16	13.95'	50.00'	15°59'16"	7.02'
C17	24.52'	50.00'	28°05'37"	12.51'

MEDIAN Point Table			
	STATION	OFFSET	ELEVATION
10	80+13.03	12.07' RT	5371.65
11	80+26.80	14.00' RT	5371.44
12	78+73.33	14.00' LT	5375.08
13	78+73.90	10.08' LT	5375.25
14	78+59.62	8.00' LT	5375.60
15	79+16.79	102.54' RT	5374.07
16	79+27.14	80.59' RT	5373.59
17	79+34.22	83.47' RT	5373.43
18	79+32.57	102.37' RT	5373.77

RAMP Point Table			
	STATION	OFFSET	ELEVATION
11	78+70.05	67.21' RT	5375.56
12	78+67.48	67.21' RT	5375.62
13	78+67.52	69.24' RT	5375.66
14	78+70.05	69.24' RT	5375.60
15	78+81.13	81.21' RT	5375.58
16	78+81.13	85.66' RT	5375.67
17	78+85.58	85.66' RT	5375.56
18	78+85.58	81.21' RT	5375.47
25	79+95.17	62.13' RT	5372.50
26	79+99.24	62.27' RT	5372.40

REFER TO UTILITY PNP SHEETS FOR STORM DRAIN CROSSING INFORMATION

TRACT N-1 WATERSHED SUBDIVISION

TIERRA PINTADA BLVD. SEE SHEET 12

UNIT 1 STORMCLOUD SUBDIVISION

STA. 78+01.36, 58.00' LT
END ASPHALT CURB
BEGIN STD. CURB & GUTTER
FL76.01

TEMP. PAVEMENT
SEE TEMP. PAVEMENT SECTION
SHEET 5 (HATCHED AREA)

STA. 78+71.64, 75.93' LT
REMOVABLE BOLLARD POST
PER COA STD DWG 2250

STA. 79+57.84, 81.57' LT
BEGIN MEDIAN CURB & GUTTER
TIE TO EX. MEDIAN CURB & GUTTER
MATCH EX. PAVEMENT ELEVATION
FL=72.73

SD MH8
STA. 78+87.49, 20.00' RT
BUILD 8' DIA.
TYPE "E" SD MH

STA. 79+39.52, ARROYO VISTA=
STA. 43+71.01, TIERRA PINTADA

EXISTING CURB
EXISTING TRAIL
EXISTING MEDIAN CURB
FUTURE CURB & GUTTER
R/W

STA. 80+13.03, 12.07' RT
BEGIN MEDIAN CURB & GUTTER
TIE TO EX. MEDIAN CURB & GUTTER
MATCH EX. PAVEMENT ELEVATION
FL=71.65

STA. 84+91.27, 2.00' LT
BEGIN 6" HEADER CURB
PER C.O.A. STD. DWG. 2415B

SEE SHEET 8
MATCH LINE STA 77+00

MATCH LINE STA 85+00
SEE SHEET 10

54" SD
48" SD
24" SD
36" SD
R=2'
R=4'
F-F
TRAIL

SD MH6
STA. 77+03.77, 20.00' RT
BUILD 8' DIA.
TYPE "E" SD MH

STA. 77+03.77, 58.00' RT
INSTALL 1 - DOUBLE GRATE
TYPE "C" SD INLET
AS PER COA STD. DWG.
2201 & 2220
INV = 5374.51
TC = 5379.38

PARCEL C-1
WESTLAND NORTH

SD MH2
STA. 78+50.08, 20.00' RT
BUILD 8' DIA.
TYPE "E" SD MH

SD MH16
STA. 78+44.09, 98.00' RT
BUILD 6' DIA.
TYPE "E" SD MH

STA. 78+42.26, 121.94' RT
INSTALL 1 - 48" SD PLUG

STA. 78+60.05, 76.71' RT
REMOVABLE BOLLARD POST
PER COA STD DWG 2250

SEE ADDITIONAL
RAMP POINTS
THIS SHEET

FUTURE
STADIUM ENTRANCE

FUTURE CURB
& GUTTER

STA. 79+68.74, 102.00' RT
BEGIN STD CURB & GUTTER
TIE TO EX. STD. CURB
MATCH EX. PAVEMENT ELEVATION
FL=72.73

STA. 78+91.39, 102.61' RT
END STD CURB & GUTTER
TIE TO EX. STD. CURB
MATCH EX. PAVEMENT ELEVATION
FL=74.42

STA. 80+07.25, 73.92' RT
REMOVABLE BOLLARD POST
PER COA STD DWG 2250

SD MH9
STA. 83+37.49, 20.00' RT

PARCEL C-1
WESTLAND NORTH

ARROYO VISTA BLVD.

N

50 25 0 50
SCALE: 1"=50'
(HORIZ.)

NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. ALL CURB RETURN RADII SHALL BE 25' UNLESS OTHERWISE SPECIFIED.
3. ALL CURVE DATA AND DIMENSIONS REFER TO FACE OF CURB UNLESS OTHERWISE SPECIFIED.
4. GRADE ELEVATIONS, WHERE NOTED, ARE ALONG FLOWLINE OF CURB UNLESS OTHERWISE SPECIFIED.
5. CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND EWS AT THE END OF EACH SANITARY SEWER SERVICE.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES.
7. ANY ADDITIONAL GRADING REQUIRED TO MATCH PROPOSED STREET GRADES SHALL BE INCIDENTAL TO PAVING ITEMS.
8. CONTRACTOR SHALL PROVIDE THE INSPECTORS, (CITY AND PRIVATE) WITH THE PROPOSED HYDROSTATIC TESTING PLAN. THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN.
9. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
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11. REMOVAL OF THE EXISTING CURB AND GUTTER SHALL BE AS PER COA STD. DWG. 2415A (SAWCUT ONLY).
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED PRIOR TO ACCEPTANCE OF CURB & GUTTER.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
14. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.

KEYED NOTES

1. STD. CURB & GUTTER PER COA STD. DWG. 2415A
2. MEDIAN CURB & GUTTER PER COA STD. DWG. 2415B
3. BUILD 10' ASPHALT TRAIL PER DETAIL SEE SHEET 5
4. BUILD WHEEL CHAIR RAMP PER DETAIL SHEET 50
5. INSTALL 6' CONCRETE VALLEY GUTTER PER COA STD. DWG. 2420
6. 6" MODIFIED EXTRUDED ASPHALT CURB PER COA STD. DWG. 2415B WITH 4" WHITE STRIPE ALONG STREET EDGE OF CURB
7. BUILD 4" TEXTURED MEDIAN PAVEMENT FROM MEDIAN NOSE TO 10' FROM NOSE OR TO 6' MIN. WIDTH F-F AS SHOWN ON PLANS (BAJA RED) MEDIAN NOSES SHALL BE PAINTED YELLOW TO APPROX. 6' BEHIND PC/PT. PER COA STD. DWG. 2408 & 2502
8. EXISTING EDGE OF PAVEMENT CONTRACTOR SHALL INSURE CLEAN EDGE PRIOR TO PAVING. SAWCUT MAY BE NECESSARY.
9. BUILD 6' SIDEWALK PER COA STD. DWG. 2430.
10. PAVEMENT DESIGN SECTION SEE SHEET 5

FOR INFORMATION ON FLOWLINE AND MEDIAN FLOWLINE CALCULATIONS FROM PROFILE GRADE POINT (PGP) SEE CROSS-SECTION DETAIL ON SHEET 5

GENERAL NOTE:
ALL STORM DRAIN MANHOLES SHALL BE 6' DIAMETER TYPE "S" AS PER STANDARD DRAWING 2102 UNLESS OTHERWISE NOTED.

AS-BUILT INFORMATION		
CONTRACTOR		DATE
STAKED BY		DATE
INSPECTORS ACCEPTANCE BY		DATE
CERTIFICATION BY (CITY)		DATE
DRAWINGS CORRECTED BY		DATE

BENCH MARKS	
USC&GS BRASS DISC STAMPED "REWARD 1969"	
GEOGRAPHIC POSITION (NAD 83)	
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)	
N=1487364.063 E=1491190.819	
GROUND TO GRID = 0.999675005	
DELTA ALPHA = -0017'12.26"	
NAVD 1988 ELEVATION = 5319.688	

SURVEY INFORMATION FIELD NOTES		
NO.	BY	DATE

MICRO-FILM INFORMATION	
RECORDED BY	DATE
NO.	DATE

ENGINEER'S SEAL

YOLANDA PADILLA MOYERS NEW MEXICO 16035 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
	DESIGNED BY	YPM	DATE 04/2012
	DRAWN BY	ARR	DATE 04/2012
	CHECKED BY	YPM	DATE 04/2012

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

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

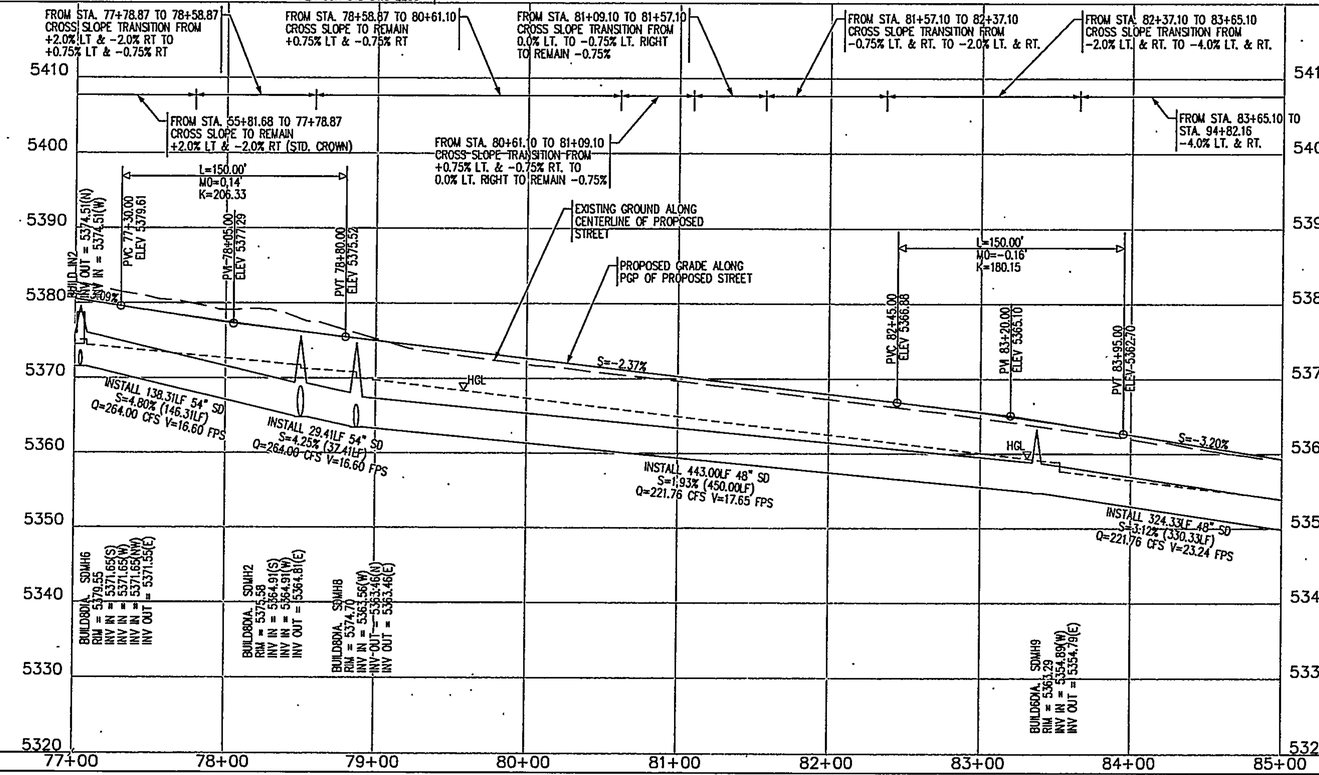
ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
PAVING PLAN & PROFILE
ARROYO VISTA BLVD.

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

CITY PROJECT NO. 650274 | ZONE MAP NO. J-7,J-8,K-7,K-8 | SHEET 9 OF 72

BHI JOB NO. 20110349

SCALE: 1" = 50' (HORIZ.)
1" = 10' (VERT.)



10' TRAIL Point Table		
	STATION	OFFSET
1	77+73.44	83.00' RT
2	78+16.77	79.85' RT
3	78+60.11	76.71' RT
4	78+65.05	76.71' RT
5	80+02.30	73.21' RT
6	80+57.19	81.02' RT
7	81+27.60	86.00' RT
8	78+18.39	73.00' LT
9	78+48.35	74.50' LT
10	78+76.65	76.00' LT

10' TRAIL Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C1	43.49'	300.00'	08°18'21"	21.78'
C2	43.49'	300.00'	08°18'21"	21.78'
C3	70.64'	500.00'	08°05'43"	35.38'
C4	30.01'	300.00'	05°43'55"	15.02'
C5	30.01'	300.00'	05°43'55"	15.02'

10' TRAIL Tangent Table		
ID	BEARING	LENGTH
T1	S81°03'21"E	4.94'
T2	S72°57'38"E	55.44'

STORM DRAIN ONLY

NOTE:
Q FLOW RATE SHOWN IN PROFILE IS Q-PEAK

Ⓒ FLOWLINE DATA FOR CURB RETURN

PC	74.90	D = 95°00'00"
1	74.55	R = 30.00'
2	74.19	T = 32.74'
3	74.27	L = 49.74'
PT	74.34	C = 44.24'
PI	74.12	

PC STA. 78+62.56, 58.00' RT
PT STA. 78+92.44, 90.61' RT
PI STA. 78+95.29, 58.00' RT
RAD STA. 78+62.56, 88.00' RT

Ⓓ FLOWLINE DATA FOR CURB RETURN

PC	73.55	D = 85°00'00"
1	72.48	R = 30.00'
2	72.39	T = 27.49'
3	72.02	L = 44.51'
PT	71.64	C = 40.54'
PI	72.29	

PC STA. 79+70.19, 85.39' RT
PT STA. 80+00.08, 58.00' RT
PI STA. 79+72.59, 58.00' RT
RAD STA. 80+00.08, 88.00' RT

Ⓔ FLOWLINE DATA FOR CURB RETURN

PC	73.95	D = 80°46'54"
1	74.93	R = 35.00'
2	74.92	T = 29.78'
3	75.03	L = 49.35'
PT	74.58	C = 45.36'
PI	73.98	

PC STA. 79+08.08, 87.07' LT
PT STA. 78+71.56, 58.00' LT
PI STA. 79+03.03, 58.00' LT
RAD STA. 78+71.56, 93.00' LT

EXHIBIT 8 – PAVING PLAN &
PROFILE ARROYO VISTA BLVD.

REFER TO UTILITY PNP SHEETS FOR STORM DRAIN CROSSING INFORMATION

Ct. Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C3	1167.06'	1012.00'	66°04'29"	658.14'

SD Tangent Table		
ID	BEARING	LENGTH
T18	N76°54'13"W	330.33'
T22	N62°07'17"W	218.64'
T23	N05°09'41"W	422.53'
T24	N37°24'01"W	48.02'
T25	N76°51'30"W	79.06'

STORM DRAIN FLOW TABLE						
ID	Q(cfs)	V(fps)	DEPTH	LENGTH	SIZE	SLOPE
T18	222.82	14.01	4.5'	422.53'	54"	0.90%

EXISTING TRAIL; EXISTING CURB & GUTTER; EXISTING 30' PNM EASEMENT; R/W; EXISTING GUARD RAIL; EXISTING 100' EL PASO ELECTRIC EASEMENT; EXISTING 100' PNM EASEMENT; EXISTING AMAFCA EASEMENT

STA. 85+02.25, 14.00' LT
BUILD 22' DRIVE PAD PER C.O.A. STD. DWG. 2425

STA. 85+13.23, 2.00' LT
END 6" HEADER CURB PER C.O.A. STD. DWG. 2415B

MATCH LINE STA 85+00 SEE SHEET 9

SD MH10
STA. 86+73.11, 20.00' RT

SD MH11
STA. 88+96.61, 20.00' RT
BUILD 8' DIA.
TYPE "E" SD MH

STA. 92+03.83, 58.00' RT
INSTALL 1 - DOUBLE GRATE TYPE "A" SD INLET
SEE DETAIL SHEET 50 & C.O.A. STD. DWG. 2220
INV = 5335.40
TC = 5340.07

STA. 92+54.77, 58.00' RT
INSTALL 1 - DOUBLE GRATE TYPE "C" SD INLET
AS PER C.O.A. STD. DWG. 2201 & 2220
INV = 5334.38
TC = 5339.25

SD MH14
STA. 93+14.35, 3.49' RT
BUILD 4' DIA.
TYPE "E" SD MH
REMOVE EX. 24" SD PLUG
TIE EX. 24" SD TO NEW MH

STA. 93+91.70, 14.00' LT
BEGIN MEDIAN CURB & GUTTER
TIE TO EX. MEDIAN CURB & GUTTER
MATCH EX. PAVEMENT ELEVATION
FL38.42

MATCH LINE STA 94+00 SEE SHEET 11

CITY OF ALBUQUERQUE DRAINAGE EASEMENT DOC: FILED:

PROPERTY LINE

STA. 92+84.13, 294.71' RT
INV = 5334.00

DAM 5 OUTFALL SEE SHEET 44

ARROYO VISTA BLVD.

SCALE: 1"=50' (HORIZ.)

NOTE:
Q FLOW RATE SHOWN IN PROFILE IS Q-PEAK

FROM STA. 83+65.10 TO STA. 94+82.16
-4.0% LT. & RT.

L=210.00'
MO=0.48'
K=114.50

L=380.00'
MO=-1.11'
K=162.47

EXISTING GROUND ALONG CENTERLINE OF PROPOSED STREET

PROPOSED GRADE ALONG PGP OF PROPOSED STREET

PVC 88+05.00 ELEV 5349.58
PVI 89+10.00 ELEV 5346.22
PVT 90+15.00 ELEV 5344.79
PVC 91+90.00 ELEV 5342.40
BUILD IN5 INV OUT = 5335.40(SE)
BUILD IN11 INV OUT = 5334.38(E)
INV IN = 5334.38(NW)
PVI 93+80.00 ELEV 5339.80

S=-3.20%
S=-1.37%
HGL

INSTALL 324.33LF 48" SD
S=3.12% (330.33LF)
Q=221.76 CFS V=23.24 FPS

INSTALL 211.64LF 48" SD
S=3.16% (218.64LF)
Q=221.76 CFS V=17.65 FPS

INSTALL 41.52LF 18" SD
S=2.46% (48.02LF)
Q=14.05 CFS V=10.15 FPS

INSTALL 74.78LF 24" SD
S=0.71% (79.06LF)
Q=21.91 CFS V=6.90 FPS

EX 24" SD
EX 3-36" RCP

BUILD6DIA. SDMH10
RIM = 5352.56
INV IN = 5344.66(W)
INV OUT = 5344.36(SE)

BUILD8DIA. SDMH11
RIM = 5343.77
INV IN = 5337.06(NW)
INV OUT = 5337.76(S)

BUILD4DIA. SDMH14
RIM = 5340.08
INV IN = 5333.85(W)

5380; 5370; 5360; 5350; 5340; 5330; 5320; 5310; 5300; 5290

85+00; 86+00; 87+00; 88+00; 89+00; 90+00; 91+00; 92+00; 93+00; 94+00

STORM DRAIN ONLY

SCALE: 1" = 50' (HORIZ.)
1" = 10' (VERT.)

BHI JOB NO. 20110349

NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. ALL CURB RETURN RADII SHALL BE 25' UNLESS OTHERWISE SPECIFIED.
3. ALL CURVE DATA AND DIMENSIONS REFER TO FACE OF CURB UNLESS OTHERWISE SPECIFIED.
4. GRADE ELEVATIONS, WHERE NOTED, ARE ALONG FLOWLINE OF CURB UNLESS OTHERWISE SPECIFIED.
5. CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND EMS AT THE END OF EACH SANITARY SEWER SERVICE.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES.
7. ANY ADDITIONAL GRADING REQUIRED TO MATCH PROPOSED STREET GRADES SHALL BE INCIDENTAL TO PAVING ITEMS.
8. CONTRACTOR SHALL PROVIDE THE INSPECTORS, (CITY AND PRIVATE) WITH THE PROPOSED HYDROSTATIC TESTING PLAN. THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN.
9. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
10. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
11. REMOVAL OF THE EXISTING CURB AND GUTTER SHALL BE AS PER COA STD. DWG. 2415A (SAWCUT ONLY).
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED PRIOR TO ACCEPTANCE OF CURB & GUTTER.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
14. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.

KEYED NOTES

1. STD. CURB & GUTTER PER COA STD. DWG. 2415A
2. MEDIAN CURB & GUTTER PER COA STD. DWG. 2415B
3. BUILD 10' ASPHALT TRAIL PER DETAIL SEE SHEET 5
4. BUILD WHEEL CHAIR RAMP PER DETAIL SHEET 50
5. INSTALL 6' CONCRETE VALLEY GUTTER PER COA STD. DWG. 2420
6. 6" MODIFIED EXTRUDED ASPHALT CURB PER COA STD. DWG. 2415B WITH 4" WHITE STRIPE ALONG STREET EDGE OF CURB
7. BUILD 4" TEXTURED MEDIAN PAVEMENT FROM MEDIAN NOSE TO 10' FROM NOSE OR TO 6' MIN. WIDTH F-F AS SHOWN ON PLANS (BAJA RED) MEDIAN NOSES SHALL BE PAINTED YELLOW TO APPROX. 6' BEHIND PC/PT. PER COA STD. DWG. 2408 & 2502
8. EXISTING EDGE OF PAVEMENT CONTRACTOR SHALL INSURE CLEAN EDGE PRIOR TO PAVING. SAWCUT MAY BE NECESSARY.
9. BUILD 6' SIDEWALK PER COA STD. DWG. 2430.
10. PAVEMENT DESIGN SECTION SEE SHEET 5

FOR INFORMATION ON FLOWLINE AND MEDIAN FLOWLINE CALCULATIONS FROM PROFILE GRADE POINT (PGP) SEE CROSS-SECTION DETAIL ON SHEET 5

GENERAL NOTE:
ALL STORM DRAIN MANHOLES SHALL BE 6' DIAMETER TYPE "E" AS PER STANDARD DRAWING 2102 UNLESS OTHERWISE NOTED.

SURVEY INFORMATION
FIELD NOTES BY: DATE: NO.

BENCH MARKS
AS-BUILT INFORMATION
USC&GS BRASS DISC STAMPED "REWARD 1969" CONTRACTOR DATE
GEOGRAPHIC POSITION (NAD 83) STAKED BY DATE
N.M. STATE PLANE COORDINATES INSPECTOR'S COMPLIANCE BY DATE
(CENTRAL ZONE) FIELD VERIFICATION BY DATE
N=1487364.063 E=1491190.819 REVISED/ CORRECTED BY DATE
GROUND TO GRID = 0.999675005 MICRO-FILM INFORMATION
DELTA ALPHA = -00°17'12.26" RECORDED BY DATE
NAVD 1988 ELEVATION = 5319.688 NO.

ENGINEER'S SEAL
YOLANDA PADILLA MOYER NEW MEXICO 16035 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	BY	REMARKS
			REVISIONS
			DESIGN
		YPM	DESIGNED BY DATE 04/2012
		ARR	DRAWN BY DATE 04/2012
		YPM	CHECKED BY DATE 04/2012

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

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
PAVING PLAN & PROFILE
ARROYO VISTA BLVD.

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

CITY PROJECT NO. 650274
ZONE MAP NO. J-7,J-8,K-7,K-8
SHEET 10 OF 72

\20110349\CDP\Plans\PNP\Phase1A\20110349_ppnp05.dgn
/6/2012

EXHIBIT 9 – PAVING PLAN & PROFILE

TIERRA PINTADA BLVD.

SD Tangent Table		
ID	BEARING	LENGTH
T1	S08°56'39"W	119.24'
T2	S24°02'22"W	193.36'
T3	S36°11'49"W	284.07'
T4	S46°12'26"W	375.69'

REFER TO UTILITY PNP SHEETS FOR STORM DRAIN CROSSING INFORMATION

SD MH13
STA. 46+43.29, 62.00' LT
BUILD 4' DIA.
TYPE "E" SD MH

STA. 43+71.01, TIERRA PINTADA STREET=
STA. 79+39.51, ARROYO VISTA BOULEVARD

CONTRACTOR SHALL PROVIDE LEAN FILL BETWEEN EX. 36" WATERLINE AND PROPOSED 36" STORM DRAIN PER C.O.A. SPEC. 207

SD MH18
STA. 44+60.22, 64.31' LT
BUILD 6' DIA.
TYPE "E" SD MH

STA. 46+73.51
END 6' SIDEWALK
PROVIDE 6:1 TIE TO
EXISTING GROUND

STA. 46+73.51, 44.00' LT
END STD. CURB & GUTTER
BEGIN ASPHALT CURB
FL=71.51

TRACT N-1
WATERSHED SUBDIVISION

ASPHALT CURB Tangent Table		
ID	BEARING	LENGTH
T3	N37°12'48"E	91.39'
T4	N46°12'26"E	54.95'
T5	N85°42'37"E	10.17'

SD MH12
STA. 49+13.44, 56.83' LT
BUILD 4' DIA.
TYPE "E" SD MH
ROTATE CONE TO EAST

TEMP. PAVEMENT
SEE TEMP. PAVEMENT SECTION
SHEET 5 (HATCHED AREA)

ASPHALT CURB Point Table			
	STATION	OFFSET	ELEVATION
1	47+61.39	36.17' LT	5370.79
2	48+24.97	31.09' LT	5370.47
3	48+88.69	24.09' LT	5370.12
4	49+52.58	14.70' LT	5369.69
5	50+16.76	2.61' LT	5368.74
6	50+90.71	9.83' RT	5368.48
7	46+98.62	5.62' RT	5370.98
8	47+22.72	1.42' LT	5370.73

ASPHALT CURB Point Table			
	STATION	OFFSET	ELEVATION
9	47+60.32	11.70' LT	5370.43
10	47+99.05	13.19' LT	5370.07
11	48+95.93	2.97' LT	5369.29
12	49+93.18	12.86' RT	5368.44
13	50+24.87	18.30' RT	5368.35
14	50+56.77	22.26' RT	5368.07
15	50+56.57	26.25' RT	5367.95
16	50+01.62	26.25' RT	5368.33
17	49+85.63	20.53' RT	5368.59

ARROYO VISTA BLVD.
SEE SHEET 9

FOR INTERSECTION GEOMETRY
SEE SHEET 9

EX. 8" GAS LINE
(APPROX. LOCATION)

FUTURE CURB & GUTTER

EXISTING CURB & GUTTER

EXISTING TRAIL

STA. 46+73.51, 8.00' RT
END MEDIAN CURB & GUTTER
BEGIN ASPHALT CURB
FL=71.34

STA. 49+77.71, 14.00' RT
END ASPHALT CURB
TIE TO EX. MEDIAN CURB & GUTTER
MATCH EX. PAVEMENT ELEVATION
FL=68.79

STA. 44+54.55, 8.00' RT
BEGIN MEDIAN CURB & GUTTER
TIE TO EX. MEDIAN CURB & GUTTER
MATCH EX. PAVEMENT ELEVATION
FL=72.75

CL Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C1	619.41'	1100.00'	32°15'47"	318.16'

CL Tangent Table		
ID	BEARING	LENGTH
T1	N13°56'39"E	374.10'
T2	N46°12'26"E	819.92'

ASPHALT CURB Curve Table				
ID	ARC	RADIUS	DELTA	TANGENT
C2	50.19'	150.00'	19°10'16"	25.33'
C3	78.62'	150.00'	30°01'44"	40.23'
C4	196.37'	673.00'	16°43'03"	98.89'
C5	262.83'	693.00'	21°43'50"	133.02'
C6	150.05'	675.00'	12°44'11"	75.33'
C7	64.30'	693.00'	05°18'58"	32.17'
C8	17.24'	25.00'	39°30'11"	8.98'

SD MH8
STA. 43+46.55, 50.08' LT
BUILD 8' DIA.
TYPE "E" SD MH

SD MH7
STA. 52+85.21, 54.00' LT
BUILD 8' DIA.
TYPE "E" SD MH
TIE EX. 60" SD TO NEW MH

STA. 51+65.58, 14.00' RT
END ASPHALT CURB
TIE TO EX. MEDIAN CURB & GUTTER
MATCH EX. PAVEMENT ELEVATION
FL=68.22

CONTRACTOR SHALL ENSURE THAT PROPOSED STORM DRAIN IS AT LEAST 3' AWAY FROM EX. 36" WATERLINE (EDGE OF PIPE TO EDGE OF PIPE) AND AT LEAST 1' AWAY FROM 8" GAS LINE (EDGE OF PIPE TO EDGE OF PIPE)

UNIT 1
STORMCLOUD SUBDIVISION

SCALE: 1"=50' (HORIZ.)

TIERRA PINTADA BLVD.

NOTE:
Q FLOW RATE SHOWN IN PROFILE IS Q-PEAK

STA. 43+09.37 TO STA. 45+05.06
CROSS SLOPE TO REMAIN
-2.63% LT & RT

STA. 45+05.06 TO STA. 45+61.06
TRANSITION FROM -2.63% CROSS SLOPE TO -2.00% LT AND RT

STA. 45+61.06 TO STA. 47+37.06
TRANSITION LEFT CROSS SLOPE FROM -2.00% TO 0.00%
RIGHT TO REMAIN -2.00%

STA. 47+37.06 TO STA. 49+13.06
TRANSITION LEFT CROSS SLOPE FROM 0.00% TO +2.00%
RIGHT TO REMAIN -2.00%

STA. 49+13.06 TO STA. 60+95.60
+2.0% LEFT AND -2.0% RIGHT
(STD. CROWN)

PROPOSED GRADE ALONG PGP OF PROPOSED STREET

EXISTING GROUND ALONG CENTERLINE OF PROPOSED STREET

PVT 43+06.52 ELEV 5373.63
PVI 43+71.01 ELEV 5374.11
PVC 50+45.00 ELEV 5369.06
LO 51+13.76 ELEV 5368.80
PVI 51+50.00 ELEV 5368.27
PVT 52+55.00 ELEV 5369.89
PVC 52+80.00 ELEV 5370.27

L=210.00'
MO=0 60'
K=91.68

L=590.00'
MO=-3.59'
K=121.04

S=0.75%
S=-0.75%
S=1.54%

HGL

INSTALL 112.24LF 36" SD
S=0.24% (119.24LF)
Q=42.24 CFS V=5.98 FPS

INSTALL 188.36LF 36" SD
S=0.24% (193.36LF)
Q=42.24 CFS V=5.98 FPS

INSTALL 280.07LF 36" SD
S=0.24% (284.07LF)
Q=42.24 CFS V=5.98 FPS

INSTALL 369.69LF 36" SD
S=0.24% (375.69LF)
Q=42.24 CFS V=5.98 FPS

BUILD60IA, SDMH8
RIM = 5374.70
INV IN = 5363.56(W)
INV OUT = 5363.46(N)
INV OUT = 5360.46(E)

BUILD56IA, SDMH18
RIM = 5374.92
INV IN = 5361.19(S)
INV OUT = 5363.09(NE)

BUILD48IA, SDMH13
RIM = 5372.90
INV IN = 5362.64(SW)
INV OUT = 5362.54(NE)

BUILD42IA, SDMH12
RIM = 5369.67
INV IN = 5361.87(SW)
INV OUT = 5361.77(NE)

BUILD60IA, SDMH7
RIM = 5369.77
INV IN = 5360.88(SW)
INV OUT = 5360.78(SE)

STORM DRAIN ONLY

41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00

5400 5390 5380 5370 5360 5350 5340 5330 5320 5310

NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. ALL CURB RETURN RADII SHALL BE 25' UNLESS OTHERWISE SPECIFIED.
3. ALL CURVE DATA AND DIMENSIONS REFER TO FACE OF CURB UNLESS OTHERWISE SPECIFIED.
4. GRADE ELEVATIONS, WHERE NOTED, ARE ALONG FLOWLINE OF CURB UNLESS OTHERWISE SPECIFIED.
5. CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND EMS AT THE END OF EACH SANITARY SEWER SERVICE.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES.
7. ANY ADDITIONAL GRADING REQUIRED TO MATCH PROPOSED STREET GRADES SHALL BE INCIDENTAL TO PAVING ITEMS.
8. CONTRACTOR SHALL PROVIDE THE INSPECTORS, (CITY AND PRIVATE) WITH THE PROPOSED HYDROSTATIC TESTING PLAN. THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN.
9. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
10. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
11. REMOVAL OF THE EXISTING CURB AND GUTTER SHALL BE AS PER COA STD. DWG. 2415A (SAWCUT ONLY).
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED PRIOR TO ACCEPTANCE OF CURB & GUTTER.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
14. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.

KEYED NOTES

1. STD. CURB & GUTTER PER COA STD. DWG. 2415A
2. MEDIAN CURB & GUTTER PER COA STD. DWG. 2415B
3. BUILD 10' ASPHALT TRAIL PER DETAIL SEE SHEET 5
4. BUILD WHEEL CHAIR RAMP PER DETAIL SHEET 50
5. INSTALL 6' CONCRETE VALLEY GUTTER PER COA STD. DWG. 2420
6. 6" MODIFIED EXTRUDED ASPHALT CURB PER COA STD. DWG. 2415B WITH 4" WHITE STRIPE ALONG STREET EDGE OF CURB
7. BUILD 4" TEXTURED MEDIAN PAVEMENT FROM MEDIAN NOSE TO 10' FROM NOSE OR TO 6' MIN. WIDTH F-F AS SHOWN ON PLANS (BAJA RED) MEDIAN NOSES SHALL BE PAINTED YELLOW TO APPROX. 6' BEHIND PC/PT. PER COA STD. DWG. 2408 & 2502
8. EXISTING EDGE OF PAVEMENT CONTRACTOR SHALL INSURE CLEAN EDGE PRIOR TO PAVING. SAWCUT MAY BE NECESSARY.
9. BUILD 6' SIDEWALK PER COA STD. DWG. 2430.
10. PAVEMENT DESIGN SECTION SEE SHEET 5

FOR INFORMATION ON FLOWLINE AND MEDIAN FLOWLINE CALCULATIONS FROM PROFILE GRADE POINT (PGP) SEE CROSS-SECTION DETAIL ON SHEET 5

GENERAL NOTE:
ALL STORM DRAIN MANHOLES SHALL BE 6' DIAMETER TYPE "E" AS PER STANDARD DRAWING 2102 UNLESS OTHERWISE NOTED.

AS-BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY
INSPECTIONS BY
CONSTRUCTION COMMENCED — DATE
FIELD REVISIONS BY
FIELD REVISIONS COMPLETED — DATE
CORRECTED BY
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS
USC&GS BRASS DISC STAMPED "REWARD 1969"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
N=1487364.063 E=1491190.819
GROUND TO GRID = 0.999675005
DELTA ALPHA = -00°17'12.26"
NAVD 1988 ELEVATION = 5319.688

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
YOLANDA PADILLA MOYEDA
NEW MEXICO
16035
LICENSED PROFESSIONAL ENGINEER

REMARKS | BY | DATE
REVISIONS
DESIGN
DESIGNED BY YPM DATE 04/2012
DRAWN BY ARR DATE 04/2012
CHECKED BY YPM DATE 04/2012

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

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
PAVING PLAN & PROFILE
TIERRA PINTADA BLVD.

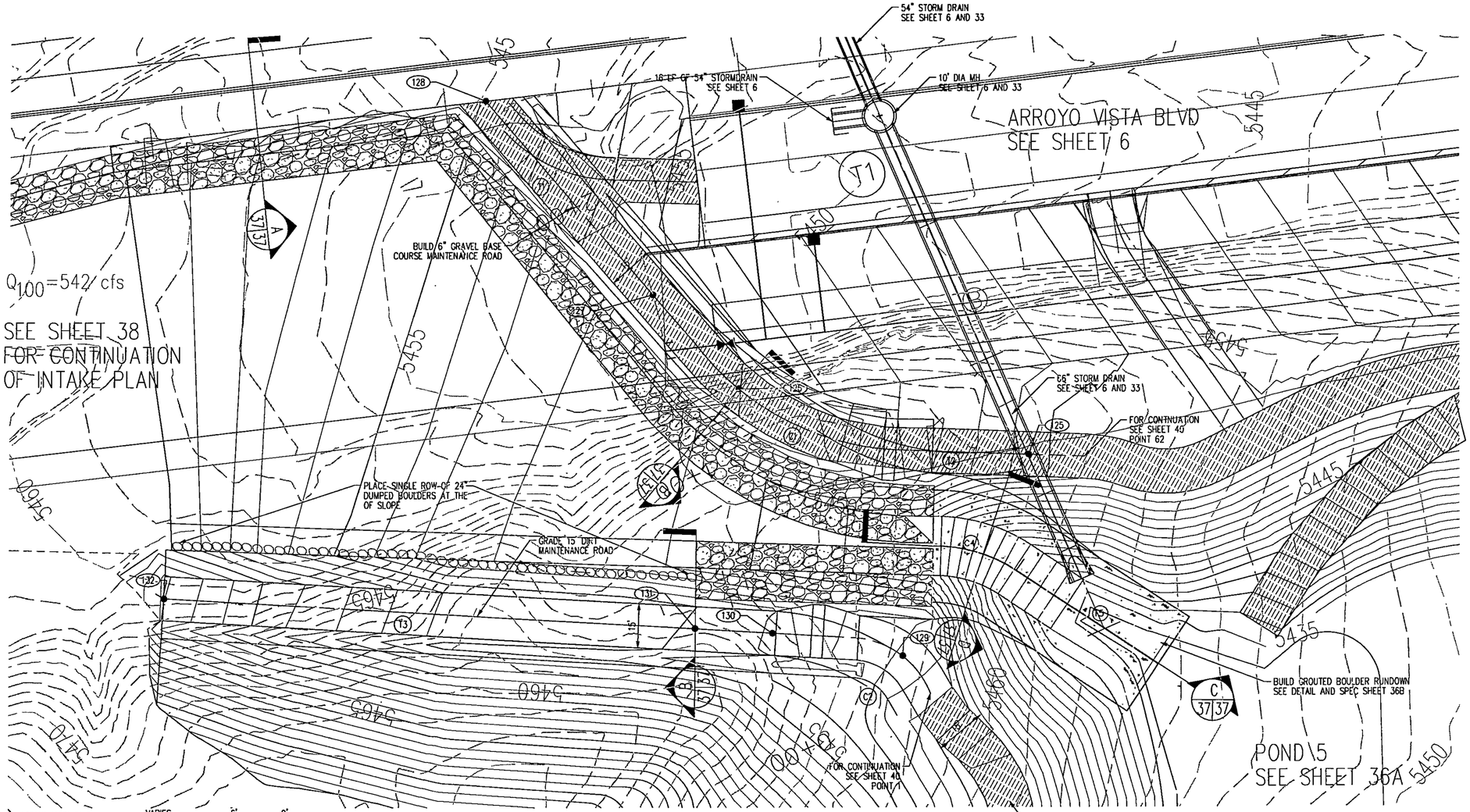
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

CITY PROJECT NO. 650274
ZONE MAP NO. J-7,J-8,K-7,K-8
SHEET 12 OF 72

BHI JOB NO. 20110349
SCALE: 1" = 50' (HORIZ.) 1" = 10' (VERT.)

'0110349\CDP\Plans\PNP\Phase1A\20110349_ppnp07.dgn
'2012

EXHIBIT 10 – POND 5S INTAKE PLAN & SECTIONS



LEGEND

- GROUTED BOULDER RUNDOWN
- DUMPED RIPRAP
- 6" GRAVEL BASE COURSE MAINTENANCE ROAD

BEGIN RUNDOWN
X = 1491445.44
Y = 1487328.44

END RUNDOWN
X = 1491386.20
Y = 1487390.96

MAINTENANCE ROAD POINT TABLE			
○	NORTHING	EASTING	ELEVATION
125	1491466.49	1487367 97	5450.58
126*	1491514.79	1487279.72	5455.02
127	1491553.49	1487260 61	5455.57
128	1491553.49	1487223.92	5457.92
129	1491412.31	1487308.57	5452.85
130	1491431.92	1487268 25	5453.69
131*	1491440 48	1487268 25	5454.85
132	1491499 28	1487073.75	5463 03

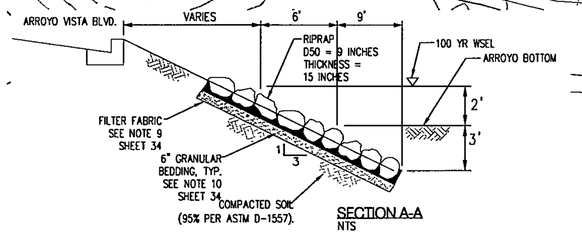
* INDICATES THE STARTING POINT FOR SECTION B-B

MAINTENANCE ROAD CURVE TABLE				
ID	ARC	RADIUS	DELTA	TANGENT
C1	79.84	91.44	50°01'42"	42.67'
C2	32.21'	29.80'	61°56'48"	17.88'

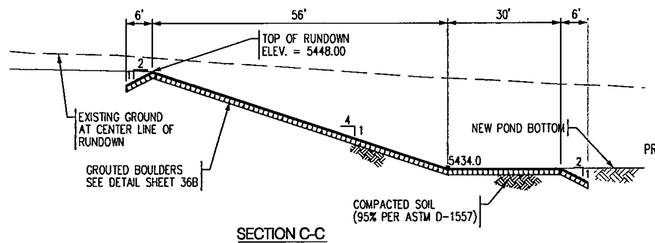
MAINTENANCE ROAD TANGENT TABLE		
ID	BEARING	LENGTH
T1	S24°51'04"E	108.78'
T2	S72°06'46"E	63.85'
T3	S70°53'50"E	235.00'

RUNDOWN CURVE TABLE				
ID	ARC	RADIUS	DELTA	TANGENT
C4	29.83'	49.99'	34°11'41"	15.38'

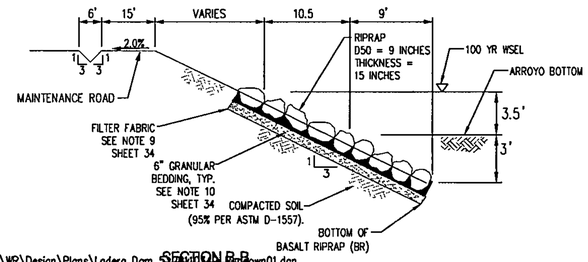
RUN DOWN TANGENT TABLE		
ID	BEARING	LENGTH
T5	N40°47'23"W	57.71'



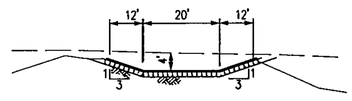
SECTION A-A
NTS



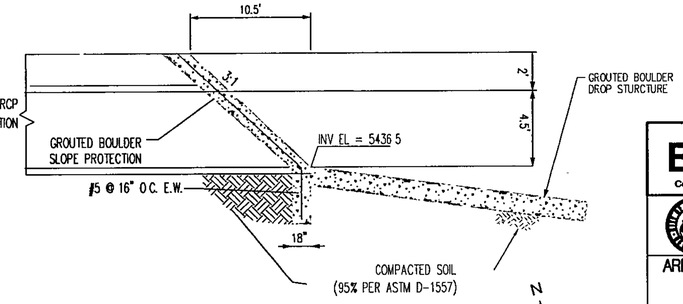
SECTION C-C
SCALE: NTS



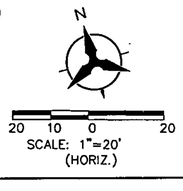
SECTION B-B
NTS



SECTION D-D
SCALE: 1" = 20'



STORM DRAIN END SECTION



BHI JOB NO. 20110349

\20110349\WR\Design\Plans\Lodera Dam S\20110349_Rundown01.dgn
3RAND$

AS-BUILT INFORMATION
CONTRACTOR — DATE
STAKED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
VERIFICATION BY — DATE
DRAWINGS ADDED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO. — DATE

BENCH MARKS
USC&GS BRASS DISC STAMPED "REWARD 1969"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES
(CENTRAL ZONE)
N=1487364.063 E=1491190.819
GROUND TO GRID = 0.999675005
DELTA ALPHA = -00°17'12.26"
NAVD 1988 ELEVATION = 5319.688

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL

REMARKS
REVISIONS
DESIGN
NO. | DATE | BY
DESIGNED BY — AOC — DATE 04/2012
DRAWN BY — ARR — DATE 04/2012
CHECKED BY — CMH — DATE 04/2012

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

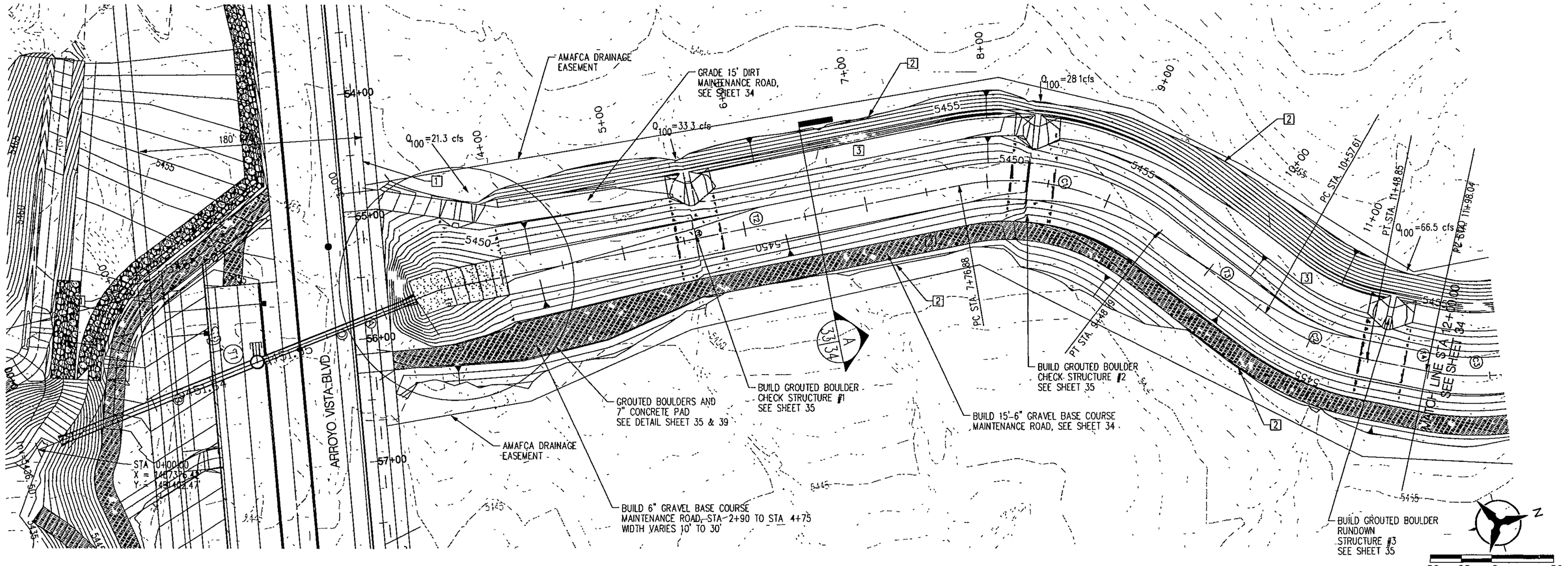
CITY OF ALBUQUERQUE
DEPARTMENT OF
MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
POND 5S
INTAKE PLAN & SECTIONS

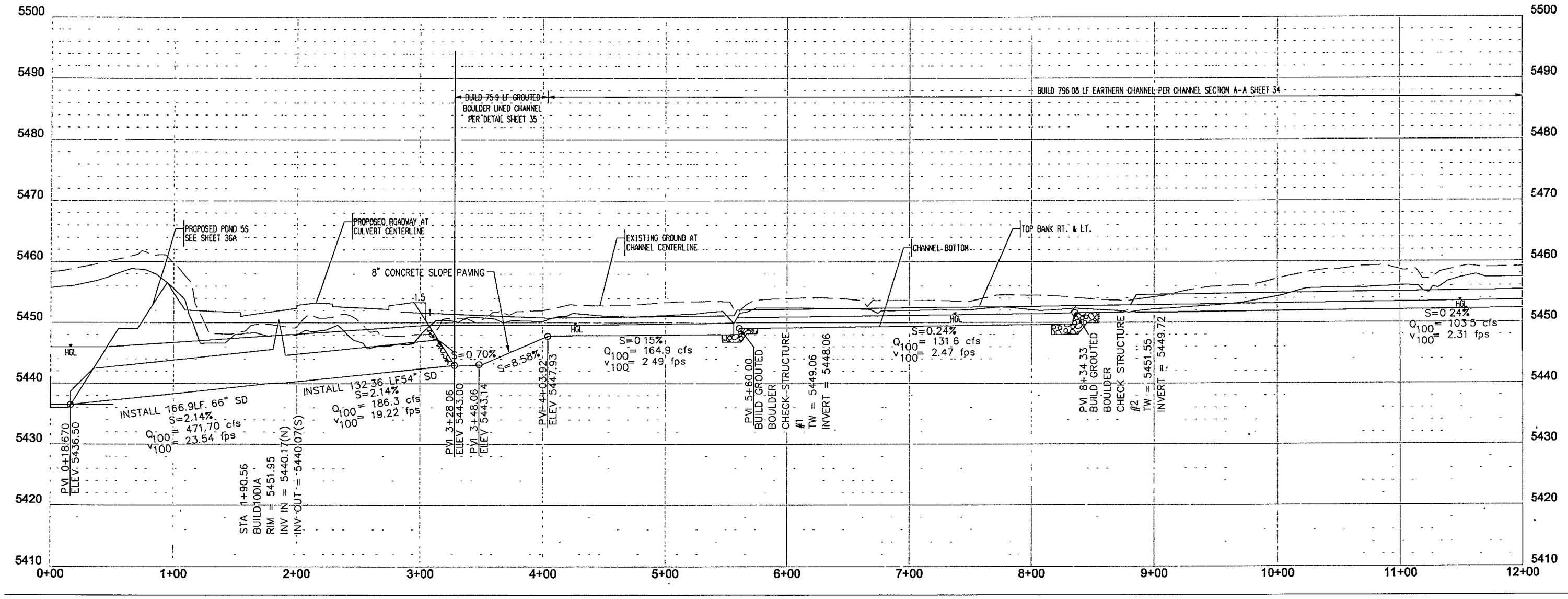
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
650274	J-7,J-8,K-7,K-8	37	72

EXHIBIT 11 – PLAN & PROFILE DAM 9 ARROYO DIVERSION CHANNEL



DAM 9 ARROYO DIVERSION CHANNEL



NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE
3. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
4. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
5. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926 650 SUBPART P.
6. GROUT CENTER 10' OF RUNDOWNS (AT MAINTENANCE ROAD) TO TOP OF BOULDERS TO ALLOW VEHICULAR ACCESS
7. STATIONING ALONG CENTERLINE (℄) OF CHANNEL

CURVE TABLE				
ID	ARC	RADIUS	DELTA	TANGENT
C1	171 91'	200 00'	49°14'56"	91 67'
C2	91.24'	200.00'	26°08'17"	46.43'
C3	82 66'	200 00'	23°40'47"	41 93'
C4	60 08'	200 00'	17°12'42"	30 27'
C5	48 13'	200 00'	13°47'18"	24.18'

TANGENT TABLE		
ID	BEARING	LENGTH
T1	N07°39'55"W	348 55'
T2	N02°52'57"E	428 33'
T3	N52°07'53"E	108 82'
T4	N25°59'37"E	49 19'
T5	N02°18'49"E	90 43'
T6	N19°31'32"E	51 42'
T7	N33°18'49"E	68 76'

KEYED NOTES

1. EXISTING ROW
2. TIE LIMITS
3. MAINTENANCE ROAD

LEGEND

- GROUTED BOULDERS
- CONCRETE
- 6" GRAVEL BASE COURSE MAINTENANCE ROAD

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

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
PLAN & PROFILE
DAM 9 ARROYO DIVERSION CHANNEL

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO /DAY/YR	MO /DAY/YR

CITY PROJECT NO.	ZONE MAP NO	SHEET	OF
650274	J-7,J-8,K-7,K-8	33	72

AS-BUILT INFORMATION
CONTRACTOR — DATE
WORK INSPECTED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE

BENCH MARKS
USC&GS BRASS DISC STAMPED "REWARD 1969"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
N=1497364 063 E=1491190.819
GROUND TO GRID = 0.999675005
DELTA ALPHA = -00°17'12.26"
NAVD 1988 ELEVATION = 5319 688

MICRO-FILM INFORMATION
RECORDED BY — DATE
NO — DATE

SURVEY INFORMATION
FIELD NOTES
NO. — BY — DATE

ENGINEER'S SEAL

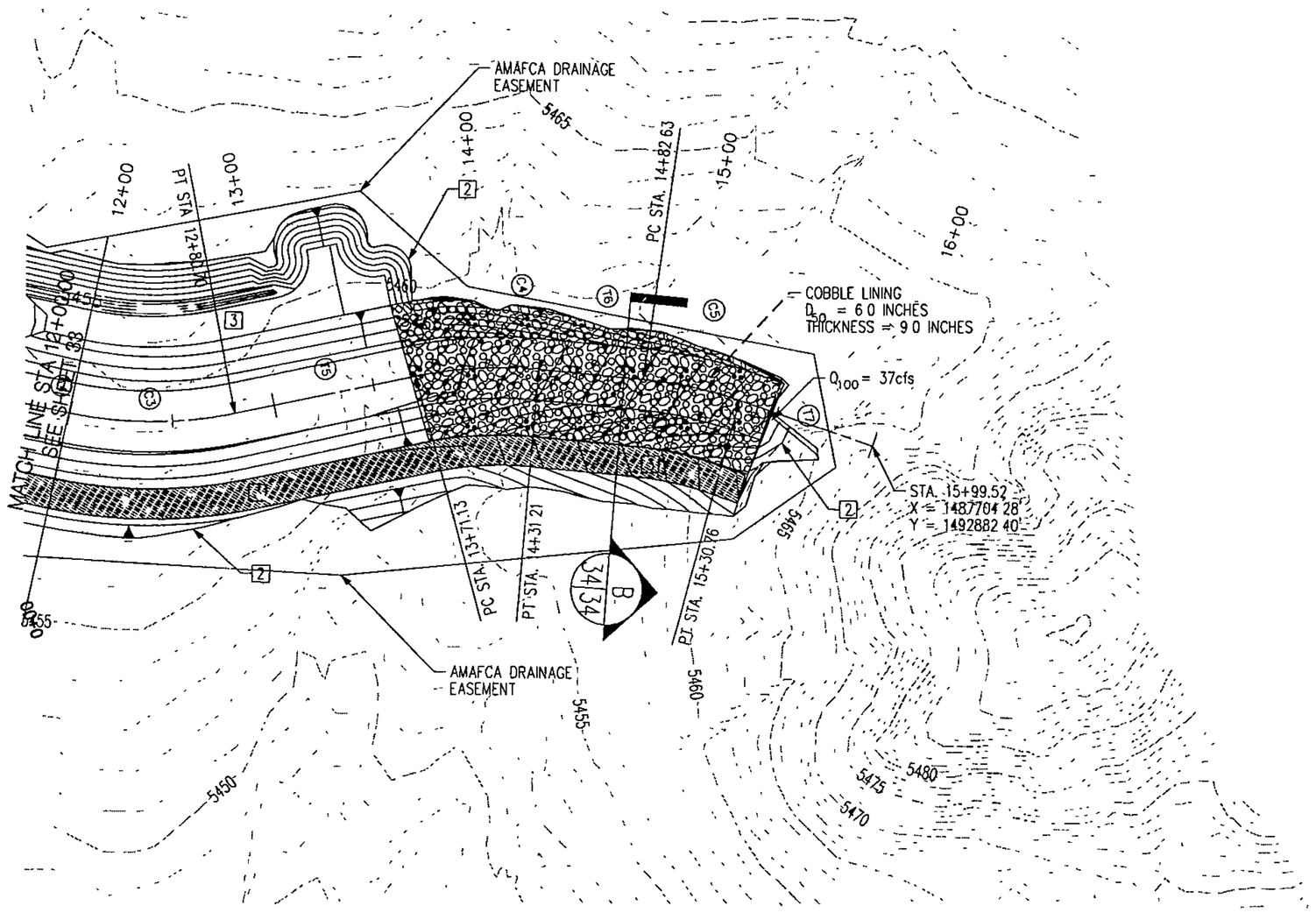
NO	DATE	REMARKS	BY
		DESIGN	
DESIGNED BY		AQC	DATE 04/2012
DRAWN BY		AQC	DATE 04/2012
CHECKED BY		CWH	DATE 04/2012

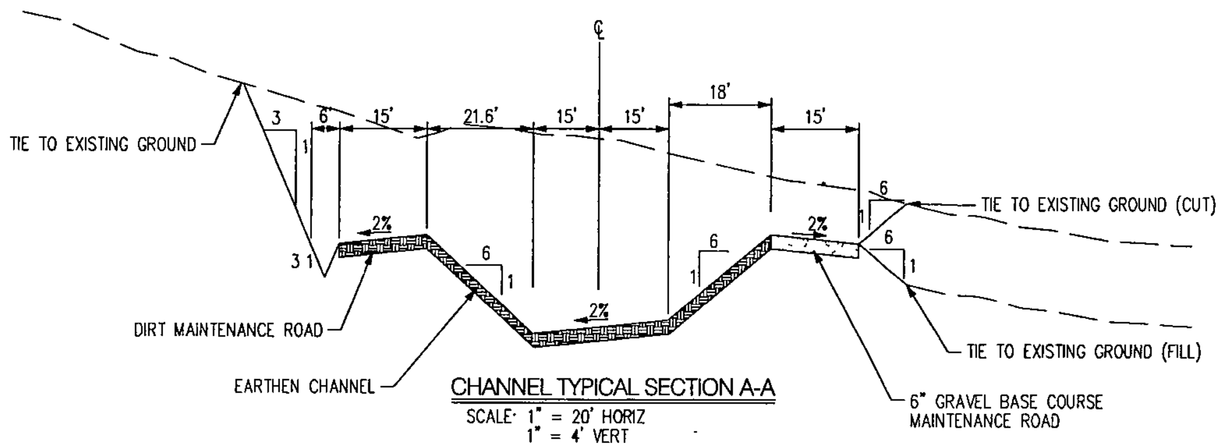
BHI JOB NO. 20110349

SCALE 1" = 50' (HORIZ.)
1" = 10' (VERT.)

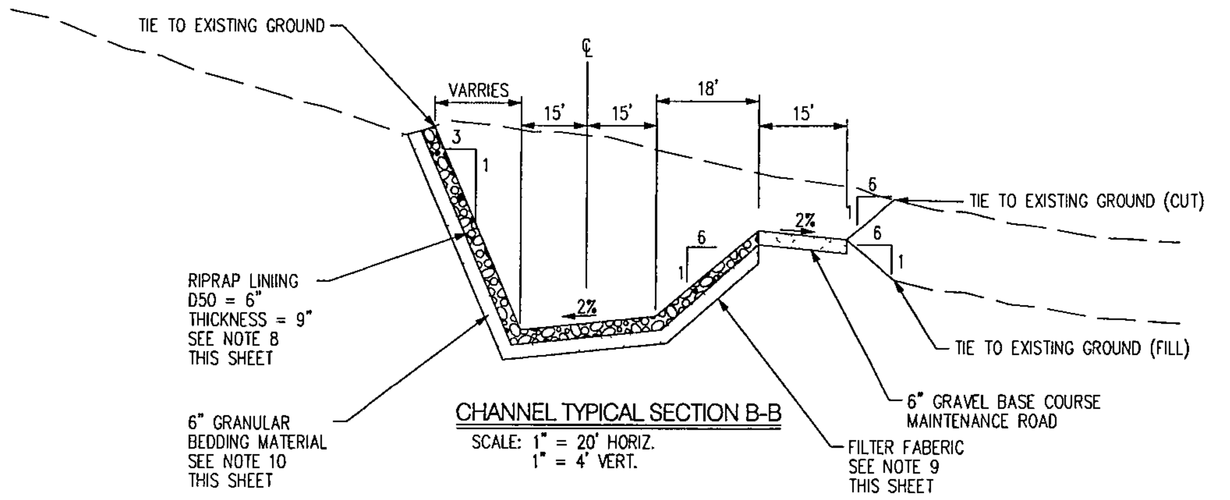
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EXHIBIT 12 – PLAN & PROFILE DAM 9 ARROYO DIVERSION CHANNEL





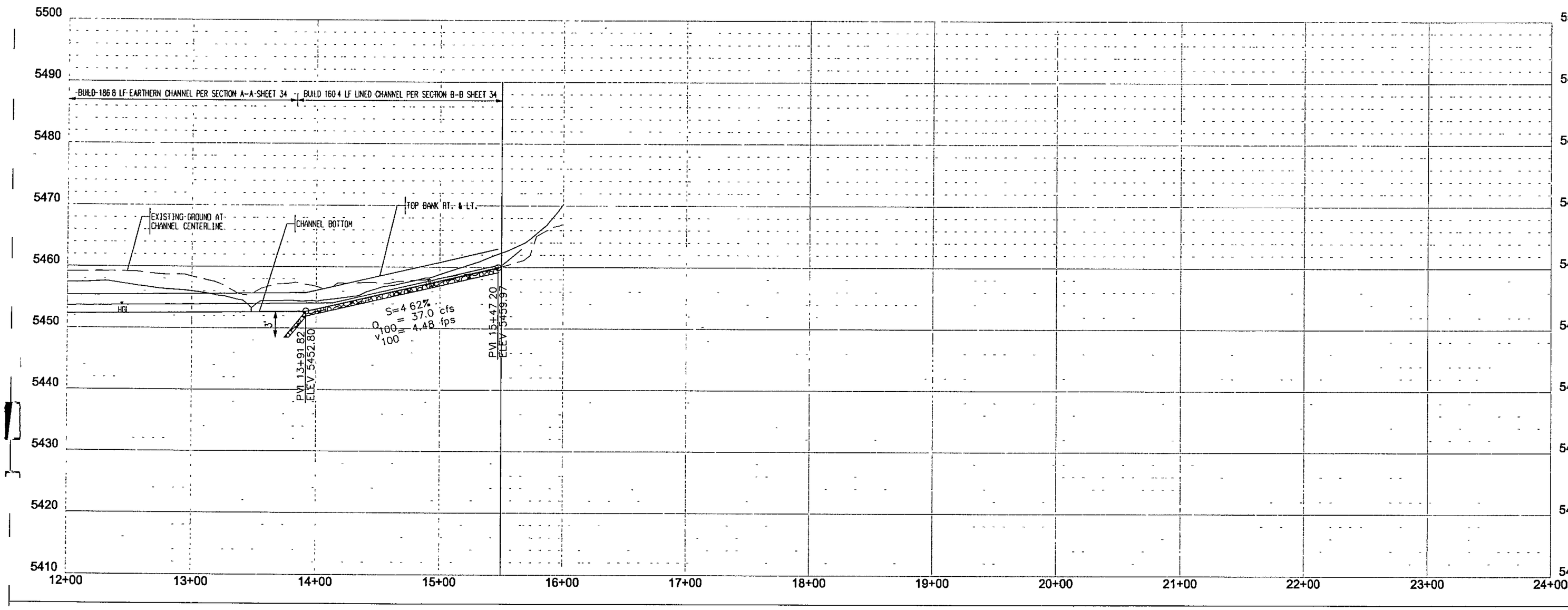
CHANNEL TYPICAL SECTION A-A
SCALE: 1" = 20' HORIZ
1" = 4' VERT



CHANNEL TYPICAL SECTION B-B
SCALE: 1" = 20' HORIZ.
1" = 4' VERT.



DAM 9 ARROYO DIVERSION CHANNEL



NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES
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6. GROUT CENTER 10' OF RUNDOWNS (AT MAINTENANCE ROAD) TO TOP OF BOULDERS TO ALLOW VEHICULAR ACCESS
7. STATIONING ALONG CENTERLINE (℄) OF CHANNEL
8. CONSTRUCT RIPRAP PER CITY OF ALBUQUERQUE SPECIFICATION 603 5
9. PLACE FILTER FABRIC PER CITY OF ALBUQUERQUE SPECIFICATION 603 9
10. EXCAVATED MATERIAL FROM THE SITE WILL BE USED FOR GRANULAR BEDDING MATERIAL.

KEYED NOTES

1. EXISTING ROW
2. TIE LIMITS
3. MAINTENANCE ROAD

LEGEND

- COBBLE LINING
- 6" GRAVEL BASE COURSE MAINTENANCE ROAD

AS-BUILT INFORMATION

CONTRACTOR		DATE
WORK INSPECTED BY		DATE
INSPECTOR'S ACCEPTANCE BY		DATE
VERIFICATION BY		DATE
DRAWINGS CORRECTED BY		DATE

BENCH MARKS

USC&GS BRASS DISC STAMPED "REWARD 1969"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
N=1487364.063 E=1491190.819
GROUND TO GRID = 0.999675005
DELTA ALPHA = -0°01'12.26"
NAVD 1988 ELEVATION = 5319.688

SURVEY INFORMATION

FIELD NOTES BY DATE

MICRO-FILM INFORMATION

RECORDED BY DATE
NO NO

ENGINEER'S SEAL

NO.	DATE	REVISIONS / REMARKS	BY	
		DESIGN	AQC	DATE 04/2012
		DESIGNED BY	AQC	DATE 04/2012
		DRAWN BY	AQC	DATE 04/2012
		CHECKED BY	CWH	

Bohannan ▲ Huston
Courtyard 1 7500 Jefferson St. NE Albuquerque, NM 87109-4335

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
PLAN & PROFILE
DAM 9 ARROYO DIVERSION CHANNEL

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO /DAY/YR	MO /DAY/YR

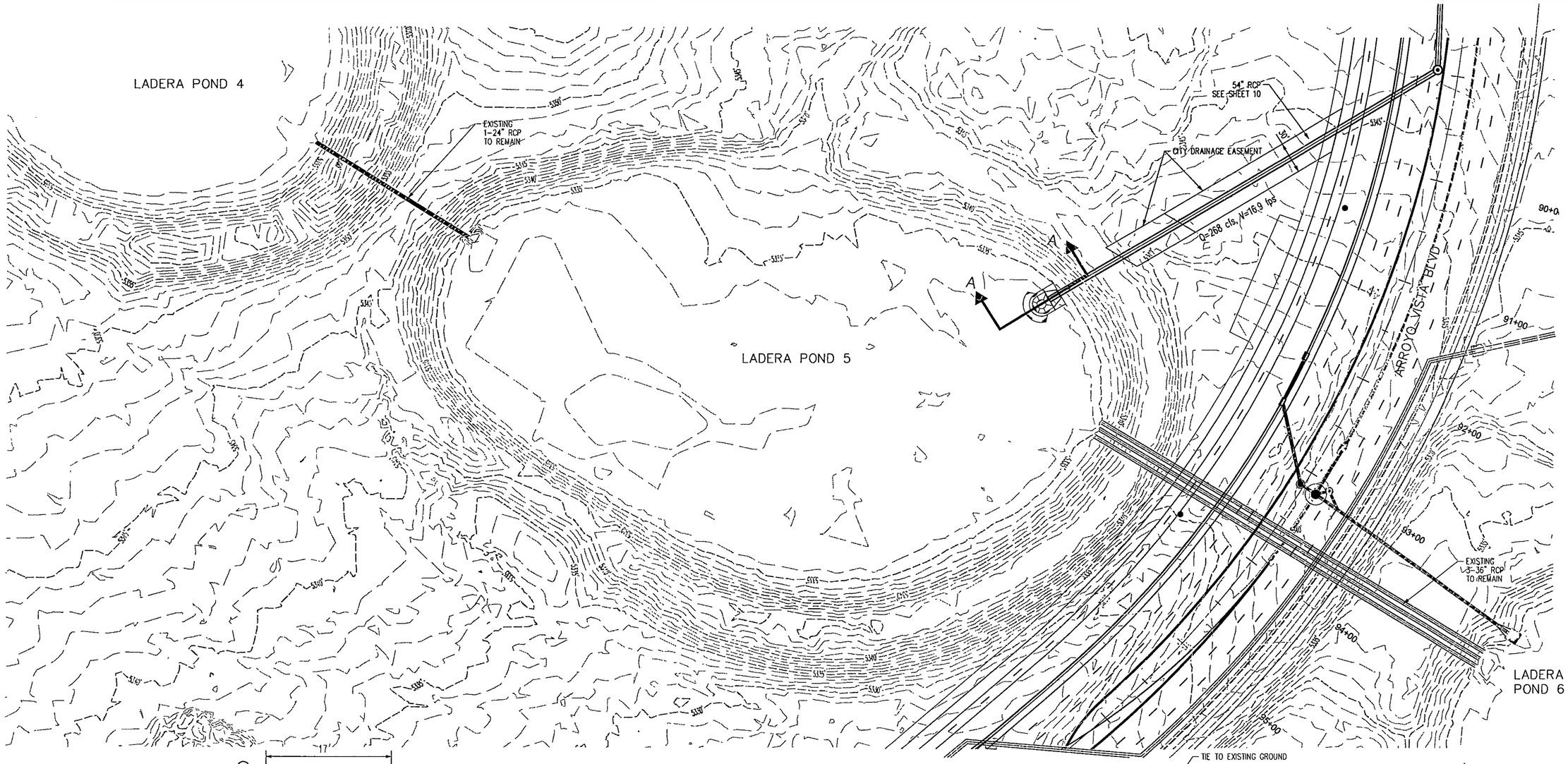
CITY PROJECT NO	ZONE MAP NO	SHEET	OF
650274	J-7,J-8,K-7,K-8	34	72

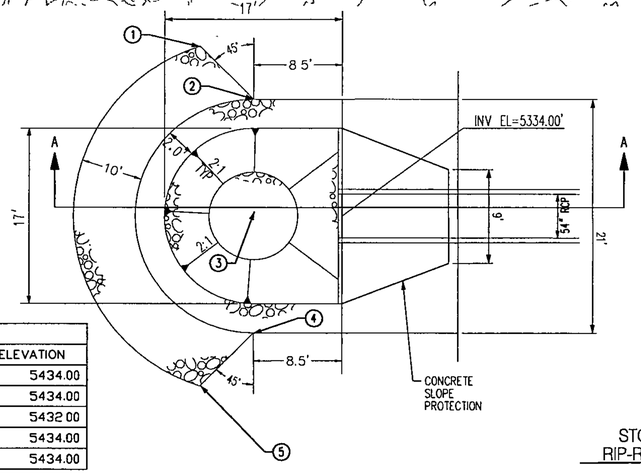
\20110349\WR\Design\Plans\Ladera Dam 5\20110349_Dam9Divpnp02 dgn
3RAND$

BHI JOB NO 20110349

SCALE: 1" = 50' (HORIZ.)
1" = 10' (VERT.)

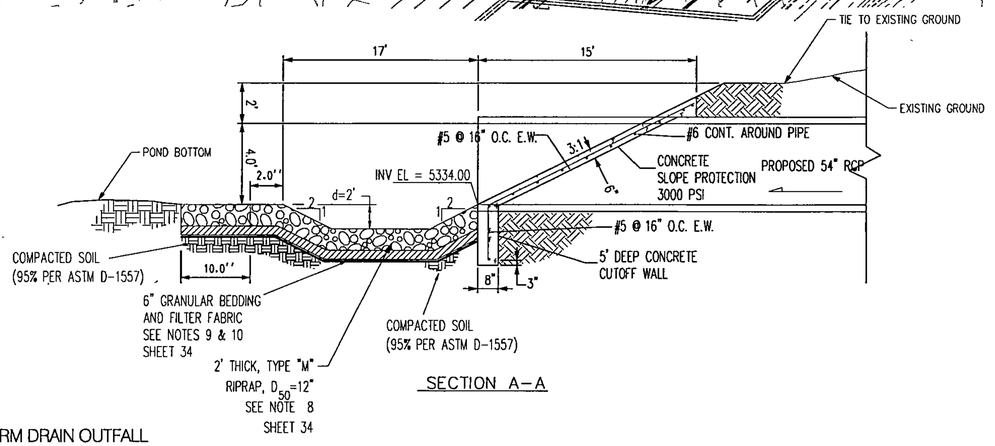
EXHIBIT 13 – LADERA DAM 5 OUTFALL



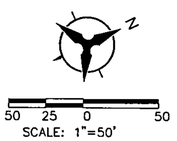


POINT TABLE			
	EASTING	NORTHING	ELEVATION
①	1490558.99	1490662 05	5434.00
②	1490563.61	1490667.62	5434.00
③	1490574.90	1490668 84	5432 00
④	1490586.31	1490669.70	5434.00
⑤	1490591.97	1490665.06	5434.00

STORM DRAIN OUTFALL
RIP-RAP EROSION CONTROL
NOT TO SCALE



SECTION A–A



SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

BENCH MARKS
USC&GS BRASS DISC STAMPED "REWARD 1969"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
N=1487364.063 E=1491190.819
GROUND TO GRID = 0.99967005
DELTA ALPHA = -0017'12.26"
NAVD 1988 ELEVATION = 5319.688

AS-BUILT INFORMATION
CONTRACTOR — DATE
STAKED BY
INSPECTOR'S ACCEPTANCE — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION
RECORDED BY — DATE
NO. — DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY AGC DATE 04/2012
DRAWN BY ARR DATE 04/2012
CHECKED BY CWH DATE 04/2012

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

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

ARROYO VISTA PH1 / APS WESTSIDE SPORTS COMPLEX PUBLIC INFRASTRUCTURE
LADERA DAM 5
OUTFALL

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

CITY PROJECT NO. 650274
ZONE MAP NO. J-7,J-8,K-7,K-8
SHEET 44 OF 72

\20110349\WR\Design\Plans\Ladera Dam 5\20110349_LaderaDam5GP01.dgn
BRAND$

BHI JOB NO. 20110349

Bohannan Huston

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

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

Las Cruces
425 S. Telshor Blvd.
Suite C-103
Las Cruces, NM
88011-8237

voice: 575.532.8670
facsimile: 575.532.8680

Denver
Meridian One
9785 Maroon Circle
Suite 140
Englewood, CO
80112-5928

voice: 303.799.5103
facsimile: 303.799.5104
toll free: 877.799.5103

www.bhinc.com

7/29/14

JOB D000

4/12 < LADERA DAMS AND DAM 9 ARROYOS APS PROJECT

FROM EXHIBIT 2, DEV CONDITIONS BASIN MAP B/ BH

SITE IS IN BASIN UD.2A:

79 AC 0% A 61% B 17% C 22% D

Q_{100} = 152 CFS V_{100} = 7.30 AC-FT

FLOWS GO TO POND 55, EAST OF SITE

POTENTIAL CITY SITE, PARCEL C-2-A, C-3-C, C-3-A

A = 9.91 + 6.05 + 65.39 = 81.35 AC

TOTAL A EVALUATED BY DAMS 5+9 REPORT A = 1436.9

81.35 / 1396.9 = 5.8%

IF JUST DOING C-3-A A = 65.38 AC

65.38 / 1396.9 = 4.7%

BY AMY NIEBS

7/29/14

NOTES

- POND 55 CONSTRUCTED PER SHAHAB
- LADERA PONDS 1-6 + MAYBE MORE CONSTRUCTED
- EAST OF CITY SITE, ARROYO VISTA BLVD HAS STORM DRAIN + WL + ROAD BUT NO SAS
  SEE ARROYO VISTA PHASE I 650274 6/29/12
- NORTH OF CITY SITE, ARROYO VISTA HAS VERY SMALL PORTION OF RD DONE. SEE ARROYO VISTA PHASE II 650273 4/20/12
- INFRASTRUCTURE EXHIBIT BY BH 4/23/12
  SHOWS FUTURE INFRASTRUCTURE
  (NO FIN GUAR AT THIS POINT)
  - ARROYO VISTA N OF SITE - 12" WL, 3 LANES OF RD, TRAFFIC SIGNAL
  - 54" STORM ACROSS PARCEL C-2
  - IN 118th ST - 12" SAS, 12" WL, 3 RD LANES, STORM DRAIN ACROSS C-3-A, TRAFFIC SIG

- ARROYO VISTA BLVD + TIERRA PINTADA BLVD DRAINAGE ANALYSIS (RPS COMMUNITY STADIUM) BHI
  TOB 0002 DOES NOT COVER THE POTENTIAL CITY SITE
- WALT WAS SUPPOSED TO GRANT DRAINAGE EASEMENTS FOR PONDS WEST + EAST OF STADIUM SITE.
- NORTH SECTION OF POND 55 WEST OF STADIUM BEING CONSTRUCTED WITH TOB D100 650274 ARROYO VISTA PHASE I. SOUTHERN POND CONSTRUCTION NOT PART OF PLANS

LISA MANUEL, SHAPIRO, KEVIN CURRAN 7/3/14

PARCEL C-2 CITY OWNS + C-3-C
BCZ OF VACATION OF ROW
JEFF GARRETT
$38,000/AC HIGHEST + LOST C3 → $2.4M 65.3 AC
$2.8M DISCUSSED 2016 > 326,000 DIFF

DEVELOPER WANTS INFRA DONE. CITY DOESN'T
" " PARTICIPATE N CLOSING COSTS

$7,000 MASTER DRAINAGE PLAN LINE DIB $67,420

ARROYOS - ARROYOS GOING IN

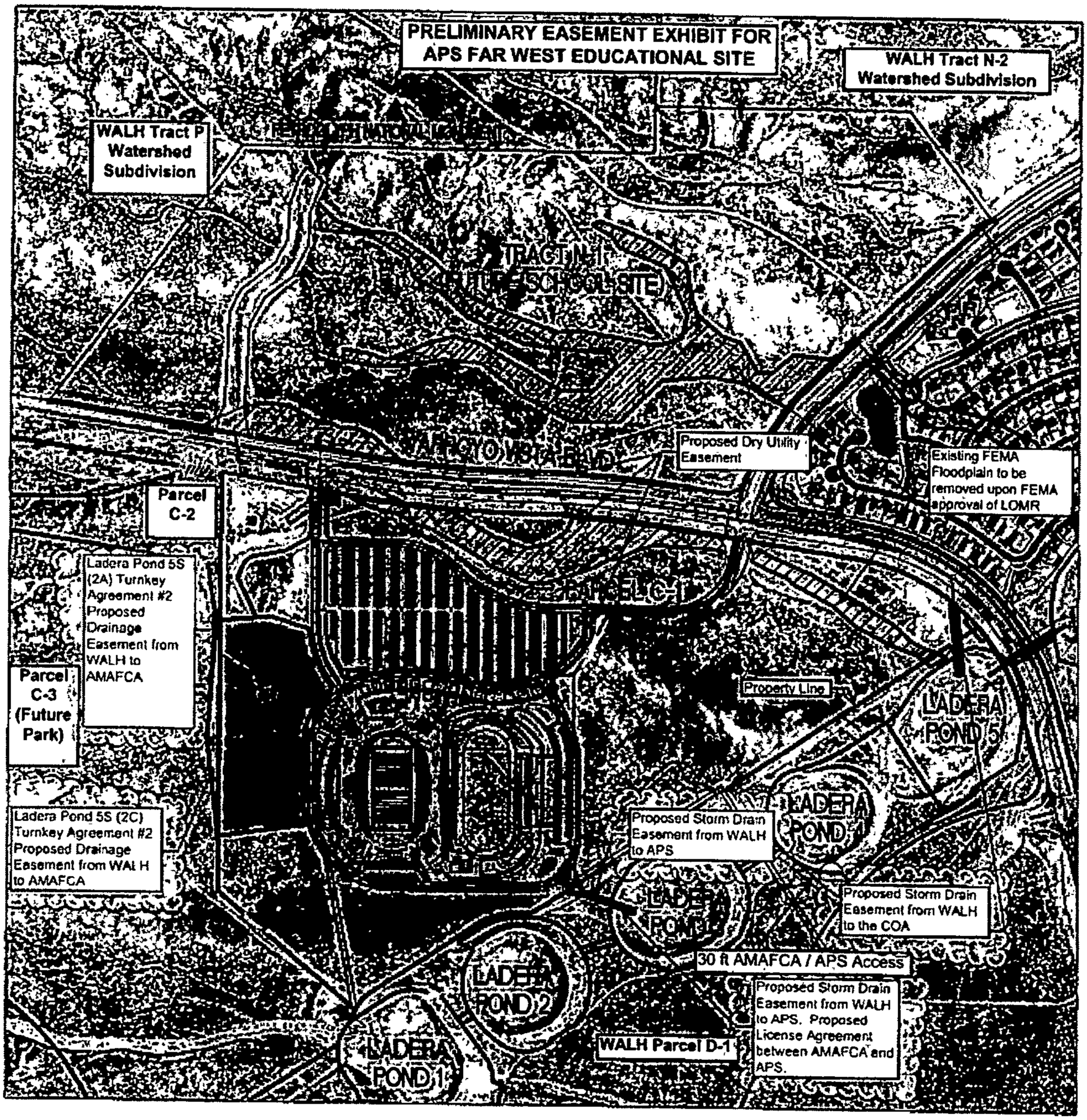
35,000 AC SHAPIRO - SUB LOTS

FOR 35,000 DO SOS IMPROV.

GO TO SU-1 FOR PARK

GOING ALTA SURVEY - SHOW DRAINAGE EASE.

EXHIBIT A



FROM J008 D002 APS STADIUM FOLDER

CITY OF ALBUQUERQUE

April 13, 2012

Kevin G. Patton, P.E.
Bohannan Huston, Inc.
7500 Jefferson NE CY 1
Albuquerque, NM 87109

Re: DAR-Arroyo Vista Blvd. And Tierra Pintada Blvd.-An Amendment To The DAR-Basalt View St., Ladera Blvd., and Prieta Vista Blvd. Engineer's Signature Stamp Date 4-06-12 (J8/D100)

Dear Mr. Patten,

Based upon the information provided in your submittal received 4-06-12, the drainage report is approved. The following comments have to be addressed prior to approval of the work order:

- Recorded easements
- Encroachment agreement with AMAFCA

Floodplain Development Permit will be required for any work within the floodplain. This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge for disturbing one acre or more and a Topsoil Disturbance Permit for disturbing ¾ of an acre or more. Please attach copies of the approved grading plans to the construction.

Albuquerque's MS4 Permit became effective March 1st, 2012. Grading and Drainage Plans and Drainage Reports will have to comply with the requirements of the new permit (www.cabq.gov/Planning/landcoord/Hydrology.html). Engineer Certification per the DPM checklist will be required prior to closeout approval of the work order.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: e-mail

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

WESTERN ALBUQUERQUE LAND HOLDINGS LLC
POST OFFICE BOX 56790
ALBUQUERQUE, NEW MEXICO 87187

April 8, 2012

Mr. Richard Dourte, P.E., CFM
City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Western Albuquerque Land Holdings LLC & APS Easements Required for Construction Drawing Approval

Dear Mr. Dourte:

It is my understanding that (1) the civil engineering construction plans ("Plans") for the infrastructure improvements required for the Albuquerque Public Schools' ("APS") Westside Educational and Recreational Complex ("Project") are ready for final approval and signature, (2) the City of Albuquerque ("City") has requested that Western Albuquerque Land Holdings LLC ("WALH") submit a letter to the City promising to grant the five easements further detailed, bubbled and highlighted in the attached Exhibit A ("Easements") required for the Project and (3) the City, including the City Parks Department, have reviewed and approved of WALH granting the Easements. Based on the above understandings, WALH, at no cost to WALH, hereby agrees to grant the Easements, in a form acceptable to WALH, to AMAFCA and APS required for the Project. If the City is in agreement with the understandings detailed within this letter, please proceed with executing the Plans for the Project.

Sincerely,

Western Albuquerque Land Holdings LLC, a Delaware limited liability company

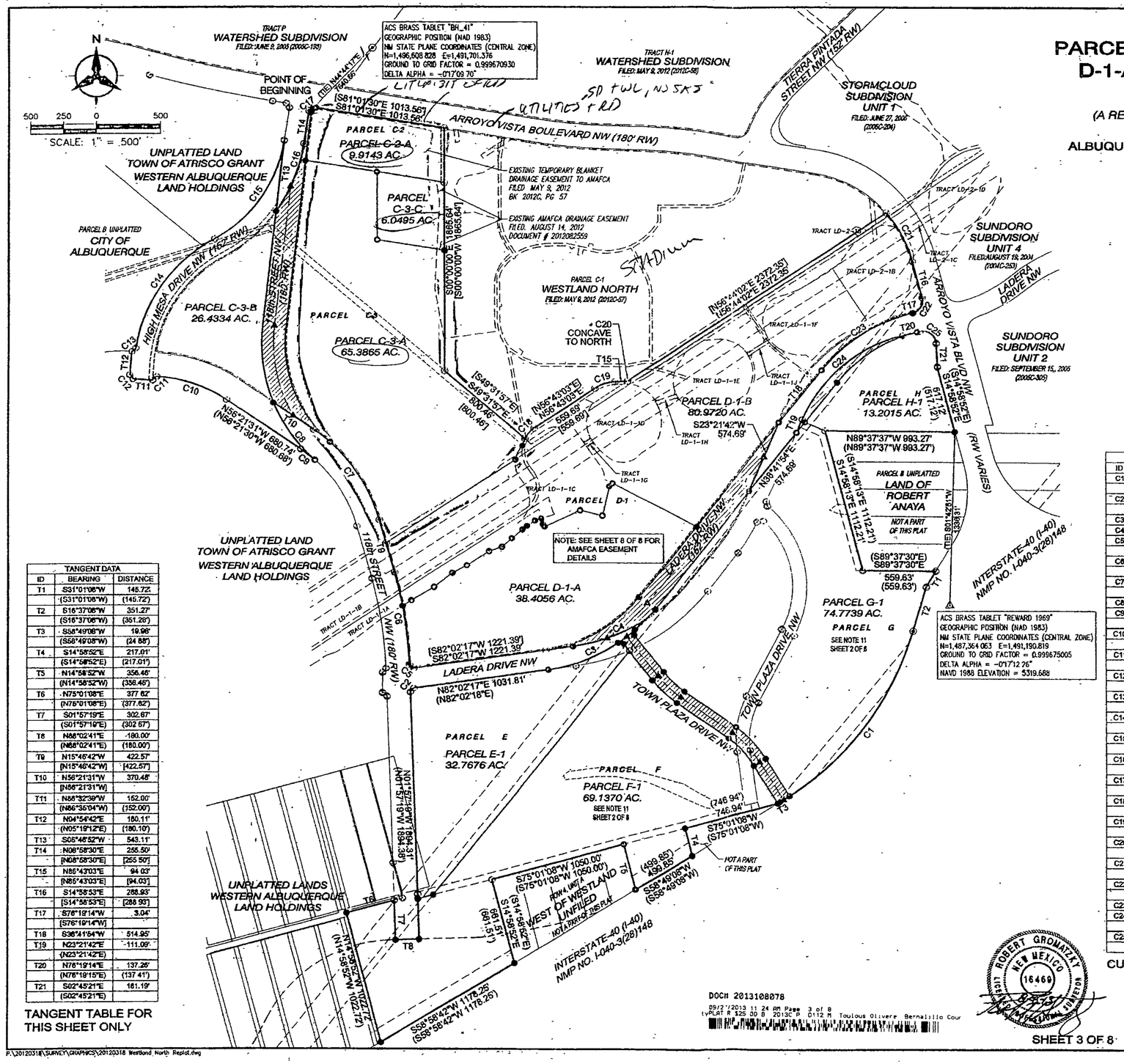
By: Barclays Capital Real Estate Inc., as Servicing Member
By: _____
Mark Wuest, Authorized Signatory

Address: Western Albuquerque Land Holdings LLC
C/O Garrett Development Corporation
3131 Camelback Road, Suite 200
Phoenix, Arizona 85016
Phone:480-236-5059
Email: jeff@gdc-az.com

PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012



LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993"
- FOUND #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- CENTERLINE MONUMENT STAMPED "GROMATZKY PS 16469"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE
- VACATED EASEMENT LINE
- HATCHED AREA DESIGNATES RIGHT-OF-WAY TO BE DEDICATED WITH THE FILING OF THIS PLAT

CURVE DATA						
ID	DELTA	TANGENT	ARC	RADIUS	CHORD	CHORD BEARING
C1	42°12'00"	889.18'	1697.23'	2304.36'	1659.13'	S37°43'06"W
	(42°19'08")		(1692.76')	(2291.83')	(1654.64')	(S37°39'28"W)
C2	83°59'36"	27.01'	43.98'	30.00'	40.15'	N40°02'29"E
	(83°59'37")		(43.98')	(30.00')	(40.15')	(N40°02'29"E)
C3	38°21'31"	443.83'	854.26'	1276.00'	838.39'	N52°51'32"E
C4	24°01'55"	303.09'	597.28'	1424.00'	592.91'	S70°01'20"W
C5	95°29'39"	33.02'	50.00'	30.00'	44.41'	N50°12'53"W
	(95°29'39")	(33.02')	(50.00')	(30.00')	(44.41')	(N50°12'53"W)
C6	13°18'38"	380.55'	717.85'	3090.00'	716.24'	N09°07'23"W
	(13°18'38")	(380.66')	(717.85')	(3090.00')	(716.24')	(N09°07'23"W)
C7	40°34'56"	456.96'	875.38'	1235.90'	857.20'	N36°04'03"W
	(40°34'56")	(456.96')	(875.38')	(1235.90')	(857.20')	(N36°04'03"W)
C8	26°12'53"	277.08'	544.48'	1190.00'	539.73'	S35°53'44"E
C9	07°21'20"	67.87'	135.56'	1055.90'	135.46'	N52°40'50"W
				(1056.92')		
C10	30°46'00"	290.62'	567.01'	1055.93'	560.22'	N71°44'31"W
	(30°14'04")		(557.12')	(1056.76')	(550.68')	(N71°26'09"W)
C11	89°41'55"	29.84'	46.97'	30.00'	42.31'	S46°18'19"W
	(90°00'00")		(47.12')	(30.00')	(42.43')	(S46°24'56"W)
C12	88°32'39"	29.25'	46.38'	30.00'	41.88'	N40°48'56"W
	(90°00'00")		(47.12')	(30.00')	(42.49')	(N41°35'04"W)
C13	85°46'46"	27.87'	44.91'	30.00'	40.84'	N52°01'19"E
	(84°17'22")		(44.13')	(30.00')	(40.26')	(N51°18'15"E)
C14	52°35'37"	581.13'	1079.49'	1176.00'	1041.92'	N35°25'45"E
	(52°36'01")		(1079.62')	(1176.00')	(1042.11')	(N35°25'35"E)
C15	52°45'04"	513.72'	953.82'	1036.00'	920.49'	N35°21'02"E
	(52°45'04")		(953.83')	(1036.00')	(920.49')	(N35°21'05"E)
C16	27°10'58"	287.22'	563.62'	1188.00'	558.35'	N22°33'59"E
				(1188.00')		
C17	90°00'00"	30.00'	47.12'	30.00'	42.43'	N53°58'30"E
	(90°00'00")	(30.00')	(47.12')	(30.00')	(42.43')	(N53°58'30"E)
C18	29°55'20"	56.38'	110.19'	211.00'	108.94'	N41°45'27"E
	(29°55'20")	(56.38')	(110.19')	(211.00')	(108.94')	(N41°45'27"E)
C19	50°00'00"	85.33'	162.84'	311.00'	160.99'	N71°43'03"E
	(30°00'00")	(85.33')	(162.84')	(311.00')	(160.99')	(N71°43'03"E)
C20	00°47'47"	1.88'	3.77'	271.11'	3.77'	N86°19'10"E
	(00°47'47")	(1.88')	(3.77')	(271.11')	(3.77')	(N86°19'10"E)
C21	26°39'50"	215.65'	423.49'	910.00'	419.68'	S28°18'58"E
	(26°39'50")	(215.65')	(423.49')	(910.00')	(419.68')	(S28°18'58"E)
C22	91°18'07"	102.30'	159.35'	100.00'	143.02'	S30°40'11"W
	(91°18'07")	(102.30')	(159.35')	(100.00')	(143.02')	(S30°40'11"W)
C23	37°37'20"	434.66'	837.66'	1275.00'	822.89'	S57°30'34"W
C24	52°57'33"	559.90'	1038.92'	1124.00'	1002.33'	N49°50'28"E
	(52°57'33")		(1038.92')	(1124.00')	(1002.33')	(N49°50'29"E)
C25	100°55'25"	121.14'	176.14'	100.00'	154.24'	S53°13'03"E
	(100°55'24")		(176.14')	(100.00')	(154.24')	(S53°13'03"E)

CURVE TABLE FOR THIS SHEET ONLY

TANGENT DATA		
ID	BEARING	DISTANCE
T1	S31°01'06"W	145.72'
	(S31°01'06"W)	(145.72')
T2	S16°37'06"W	351.27'
	(S16°37'06"W)	(351.26')
T3	S58°49'06"W	19.98'
	(S58°49'06"W)	(24.88')
T4	S14°58'52"E	217.01'
	(S14°58'52"E)	(217.01')
T5	N14°58'52"W	356.46'
	(N14°58'52"W)	(356.46')
T6	N75°01'08"E	377.62'
	(N75°01'08"E)	(377.62')
T7	S01°57'19"E	302.67'
	(S01°57'19"E)	(302.67')
T8	N88°02'41"E	180.00'
	(N88°02'41"E)	(180.00')
T9	N15°46'42"W	422.57'
	[N15°46'42"W]	[422.57']
T10	N56°21'31"W	370.48'
	[N56°21'31"W]	
T11	N88°32'39"W	152.00'
	(N88°36'04"W)	(152.00')
T12	N04°54'42"E	180.11'
	(N05°19'12"E)	(180.10')
T13	S06°46'52"W	543.11'
T14	N08°58'30"E	255.50'
	[N08°58'30"E]	[255.50']
T15	N86°43'03"E	94.03'
	[N86°43'03"E]	[94.03']
T16	S14°58'52"E	288.93'
	[S14°58'52"E]	[288.93']
T17	S76°19'14"W	3.04'
	[S76°19'14"W]	
T18	S36°41'54"W	514.95'
T19	N23°21'42"E	111.09'
	(N23°21'42"E)	
T20	N76°19'14"E	137.26'
	(N76°19'15"E)	(137.41')
T21	S02°45'21"E	181.19'
	(S02°45'21"E)	

TANGENT TABLE FOR THIS SHEET ONLY

DOC# 2013108078
09/27/2013 11:24 AM Page 3 of 8
typPLAT R $25.00 B 2013C P 0112 R Toulous Olivere Bernalillo Cour

SHEET 3 OF 8

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

P:\20120318\SURVEY\GRAPHICS\20120318 Westland North Replat.dwg

JOB NO: 20120318.001 01

DEVELOPED BASIN ANALYSIS SUMMARY

BASIN ID	AREA (ac)	LAND TREATMENT PERCENTAGE				Q_{100} (cfs)	V_{100} (ac-ft)
		A	B	C	D		
UD 5A	99 4	0 0	23 4	23.4	53 2	296 19	13 69
UD 5E	119.7	0 0	23 4	23 4	53 2	346 56	16.75
UD 1C	58 2	0 0	23.4	23 4	53 2	188.97	7.87
OS 5A	67.6	50 0	25 0	25 0	0 0	120 87	3.74
OS 5B	98 6	50 0	25 0	25 0	0 0	202 65	5.44
OS.1	219 3	50 0	25 0	25 0	0 0	436 37	11.57
OS.4	101 8	15 0	75 0	10 0	0.0	248 54	6 69
UD 5B	53 6	0 0	35 0	35.0	30.0	136 03	5.69
UD 5C	54 4	0 0	23 4	23.4	53.2	182.75	7.61
UD 1B	81.0	1 0	28 0	28 0	42 9	256 58	10.17
UD.2	82.6	0 0	46 0	20 0	34.0	217.49	9.13
UD 2A	79 8	0 0	61 0	17 0	22 0	151 94	7.30
L9 1A	78 9	0 0	30 5	30 5	39 1	186 29	9 50
UD 3	35 9	0 0	7 6	12 8	79 6	135 78	6.19
UD.4A	16.7	0 0	16 4	0 0	83.6	64 04	2.99
UD 4D	20 7	0 0	0 0	18 0	82.0	78.83	3 50
UD.4C	63.7	0 0	28 9	57.4	13.7	177 57	5 74
L9.2A	61 4	0 0	23 4	23 4	53.2	204 50	8 57
L7 1A	3 6	0 0	16.7	33 3	50.0	11 95	0.50

DEVELOPED CONDTIONS POND 5S ANALYSIS

POND	SPILLWAY CREST ELEVATION (FT)	TOP OF POND ELEVATION (FT)	MAXIMUM WATER SURFACE ELVATION ALLOWED (FT)	CALCULATED WATER SURFACE ELEVATION (FT)	(MAXIMUM ALLOWED WSEL) - (CACLUATED WSEL) (FT)	V_{100} INTO POND (AC-FT)	Q_{100} INFLOW (CFS)	Q_{100} OUTFLOW (CFS)	STORAGE CAPACITY AT SPILLWAY CREST (AC-FT)
POND 5S	5447 3	5449 0	5447.3	5447.3	0 0	476 2	623 6	261 5	31.7

DEVELOPED LADERA DAMS ANALYSIS SUMMARY

DAM NO.	SPILLWAY CREST ELEVATION (FT)	MAXIMUM WATER SURFACE ELVATION ALLOWED (FT)	CALCULATED WATER SURFACE ELEVATION (FT)	(MAXIMUM ALLOWED WSEL) - (CACLUATED WSEL) (FT)	STORAGE CAPACITY AT SPILLWAY CREST (AC-FT)
1*[1]	5427 2	5426.2	5425 8	0.4	50 0
2[1]	5412 1	5411 1	5410 6	0.5	30 1
3*	5383.5	5382.5	5381 8	0.7	33 5
4	5356 0	5355 0	5354 5	0.5	19 0
5[1]	5337.0	5336 0	5336 0	0.0	27 8
6[1]	5327.5	5326 5	5326.5	0.0	25 2
7[1]	5306.0	5305.0	5305 0	0.0	15 9

* Indicates Dams that will be expanded

[1] Indicates Dams that onfice plates will be added

DEVELOPED STORM DRIAN ANALYSIS FOR ARROYO VISTA AND TIERRA PINTADA

PIPE NO.	PIPE LOCATION	SIZE/TYPE	LENGTH (ft.)	SLOPE (%)	PIPE CAPACITY (100-YR, CFS)	PROPOSED Q (100-YR, CFS)
SD1A	ARROYO VISTA CROSSING	54" SD	137.4	2 14	287.7	186 0
SD1B	ARROYO VISTA CROSSING	66" SD	171.9	2.14	491 2	471.7
SD1C	ARROYO VISTA	54" SD	16.0	3.00	340 6	321.4
SD2	ARROYO VISTA	36" SD	213 6	3.12	117.8	25.7
SD3A	PIPE LEAVING POND 5S	54" SD	136 0	2.87	333.1	261.5
SD3B*	PIPE LEAVING POND 5S	48" SD	230 1	2.87	243.4	261 5
SD4	ARROYO VISTA	48" SD	266 2	3 39	264.5	261.5
SD5	ARROYO VISTA	48" SD	349.9	3 42	265.6	261.5
SD6	ARROYO VISTA	48" SD	444 0	3 77	278 9	261.5
SD7	ARROYO VISTA	48" SD	443.0	3 56	271 0	261 5
SD8	ARROYO VISTA	54" SD	138 3	4 80	371 0	264 0
SD9	ARROYO VISTA	48" SD	71.2	2 00	203 1	78 8
SD10	ARROYO VISTA	54" SD	29.4	4 25	405.4	264 0
SD11*	ARROYO VISTA	48" SD	450.0	1 93	199 6	221 8
SD12	ARROYO VISTA	48" SD	324.3	3 12	253.7	221.8
SD13	ARROYO VISTA	48" SD	211.6	3.16	255 3	221.8
SD14*	PIPE ENTERING DAM 5	54" SD	418 5	0 90	186 6	221 8
SD15*	TIERRA PINTADA	36" SD	112 2	0.24	32 7	42.2
SD16*	TIERRA PINTADA	36" SD	188 4	0.24	32.7	42.2
SD17*	TIERRA PINTADA	36" SD	280.1	0 24	32.7	42.2
SD18*	TIERRA PINTADA	36" SD	369 7	0 24	32.7	42 2
SD19	PIPE LEAVING D5 DAM	54" SD	289 0	1 73	278 1	271.1
SD20	ARROYO VISTA	48" SD	2005 0	3 75	278 2	271.1
SD21	ARROYO VISTA	54" SD	1190 0	3 00	340.6	321 4
SD22	LADERA DAM 5 TO UNSER CHANNEL	54" SD	2190 0	1 61	248 7	199.1

* Indicates pipes that are under pressure

FROM JOB 00002 APS STADIUM

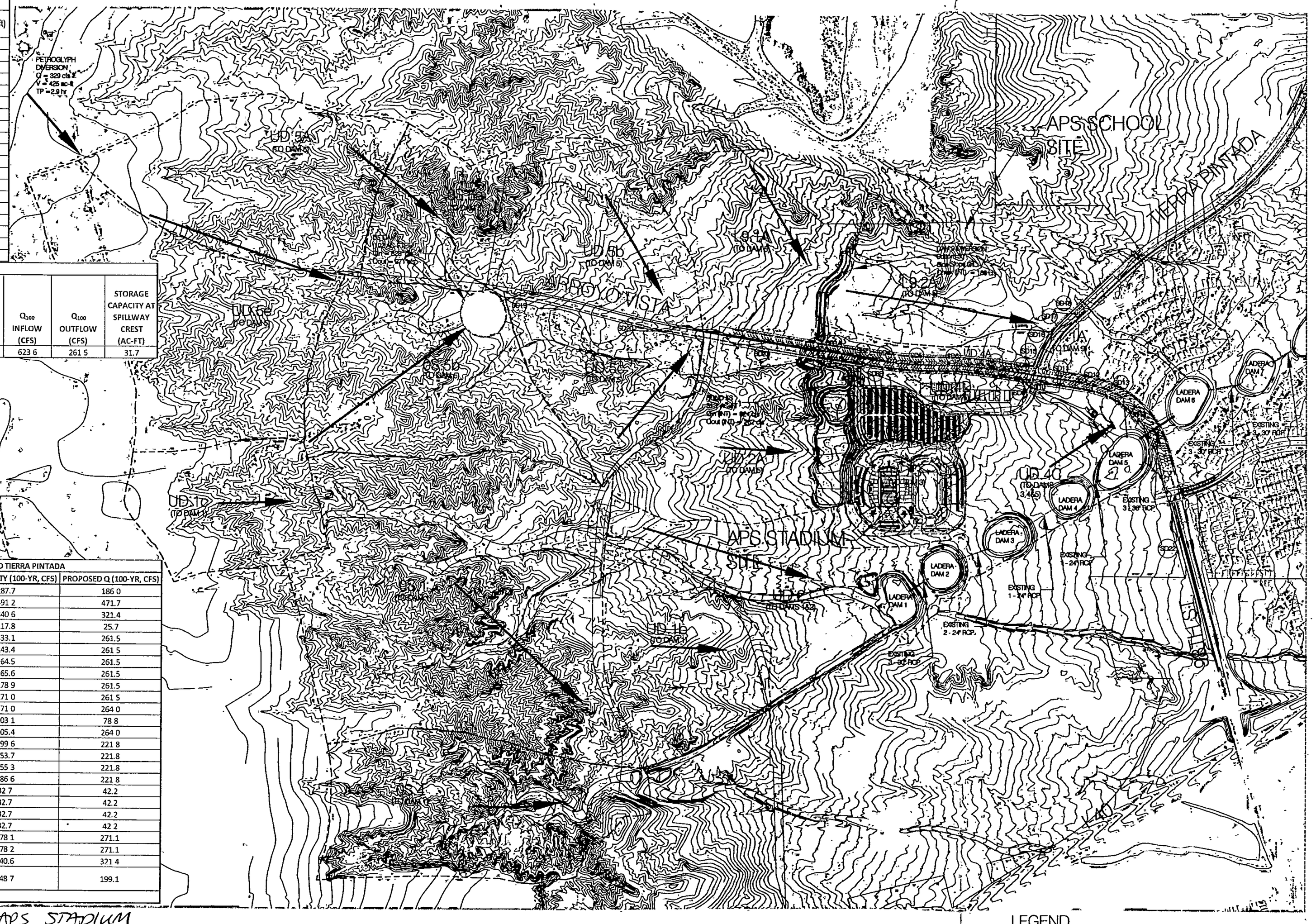


EXHIBIT 1
DEVELOPED CONDITIONS LOCATION & BASIN MAP

N

500 250 0 500

LEGEND

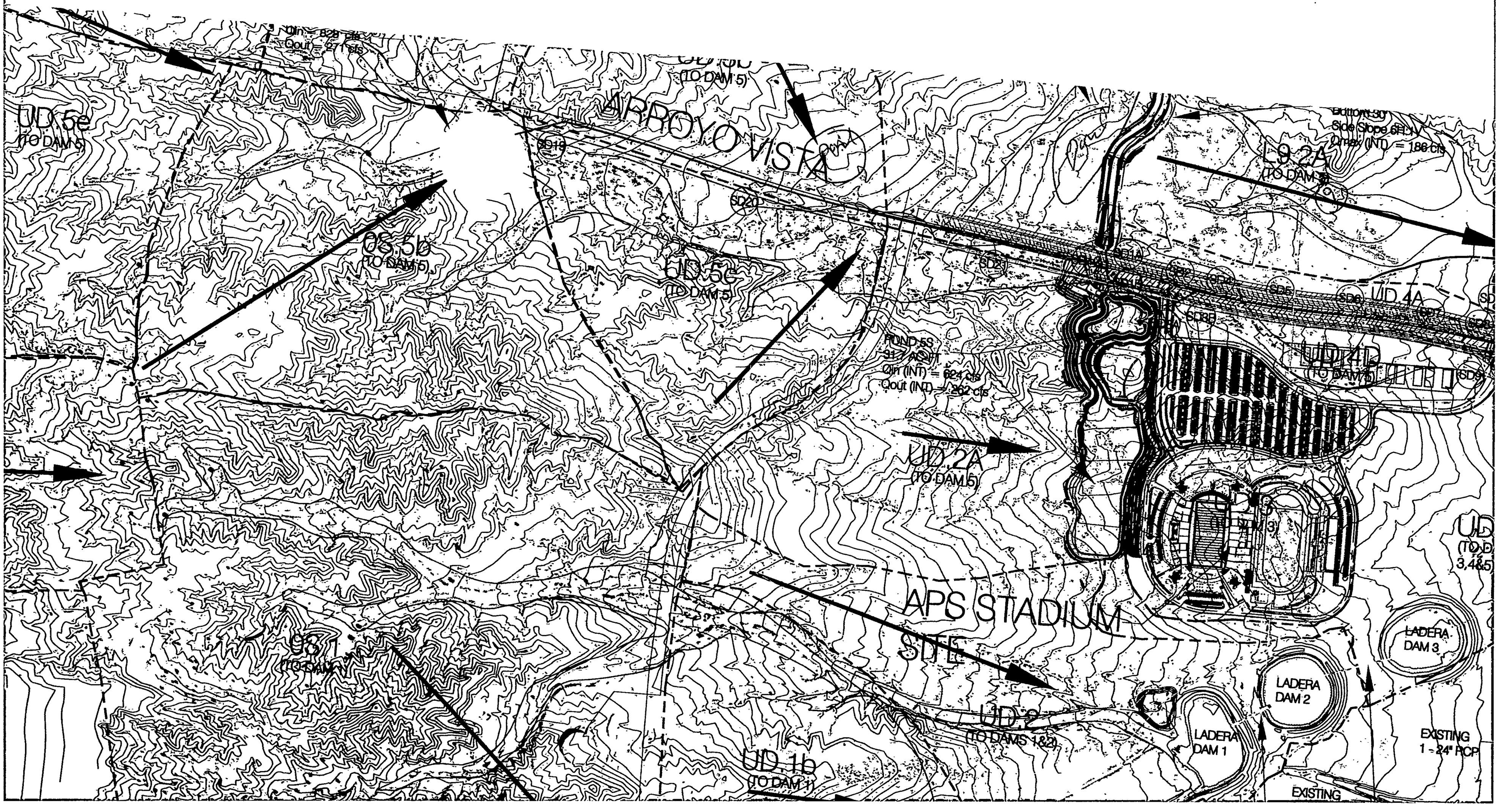
- BASIN BOUNDARY
- FLOW LINE
- FEMA FLOOD PLAINS

Bohannan Huston

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

P \20110349\HR\Reports\Preliminary & Draft\Ladera Dam 5 DAR\Figures\EXHIBIT-2_developed_conditions.dwg, Layout1
April 06, 2012 - 8 16am

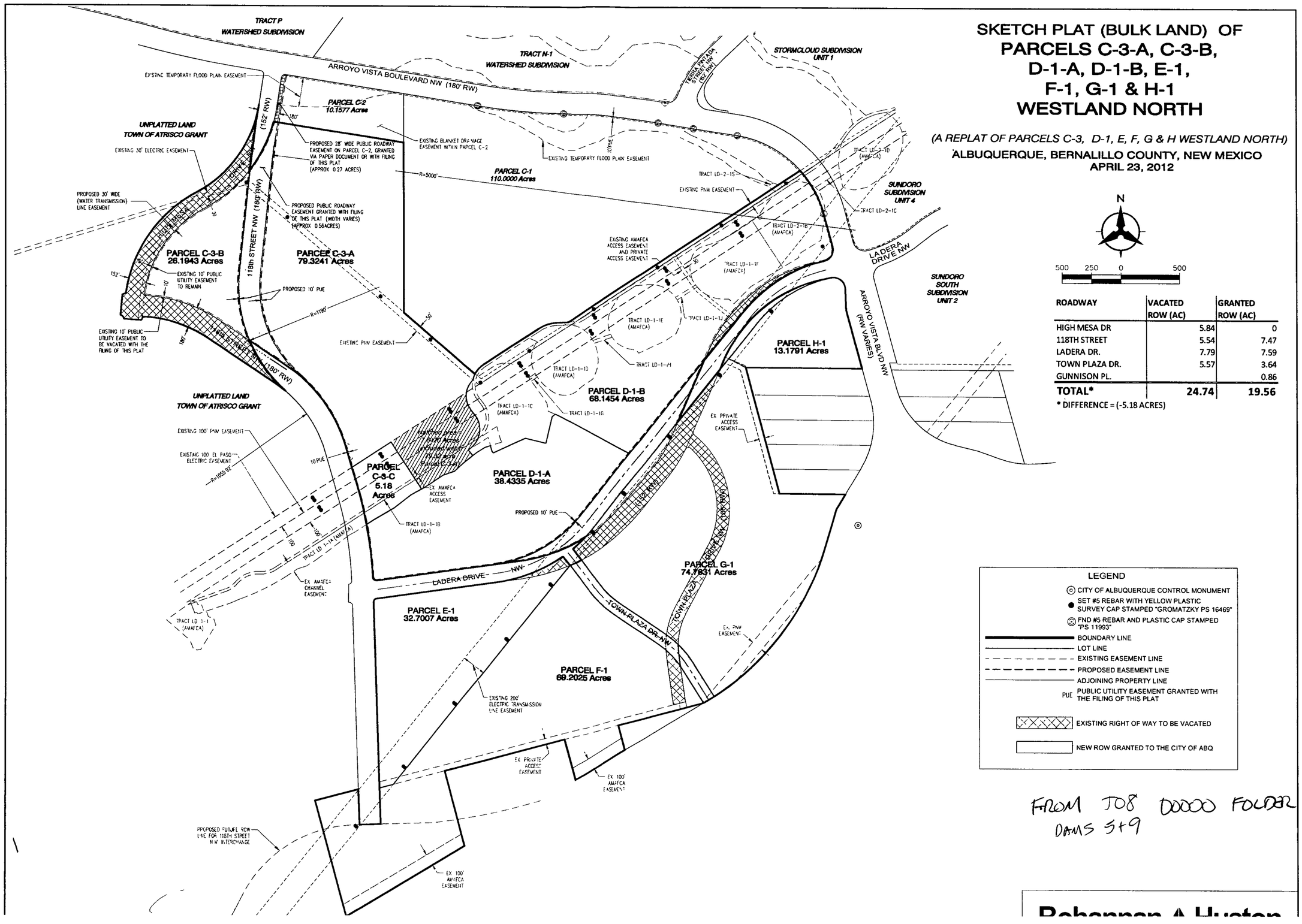
FROM LADERA DAM 5 AND DAM 9 ARROYOS APS PROJECT, DEV BASINS MAP 4/12
J08 D002



SKETCH PLAT (BULK LAND) OF PARCELS C-3-A, C-3-B, D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-3, D-1, E, F, G & H WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
APRIL 23, 2012



ROADWAY	VACATED ROW (AC)	GRANTED ROW (AC)
HIGH MESA DR	5.84	0
118TH STREET	5.54	7.47
LADERA DR.	7.79	7.59
TOWN PLAZA DR.	5.57	3.64
GUNNISON PL.		0.86
TOTAL*	**24.74**	**19.56**

* DIFFERENCE = (-5.18 ACRES)

LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE
- PUE — PUBLIC UTILITY EASEMENT GRANTED WITH THE FILING OF THIS PLAT
- EXISTING RIGHT OF WAY TO BE VACATED
- NEW ROW GRANTED TO THE CITY OF ABQ

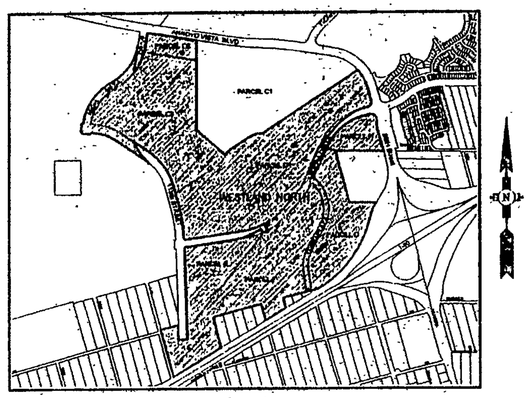
FROM J08 D0000 FOLDER
DGNS 5+9

Bohannan Huston

PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012



LOCATION MAP
ZONE ATLAS INDEX MAP NOS. J-7, J-8, K-7 & K-8
NOT TO SCALE

SUBDIVISION DATA

1. DRB No.: 1009445
2. Zone Atlas Index Nos. J-7, J-8, K-7, K-8
3. Gross Subdivision Acreage: 435.7468 acres.
4. Total Number of Parcels Created: 10 Parcels.
5. Town Plaza Drive NW and 118th Street NW were created.
6. Portions of Town Plaza Drive, 118th Street, High Mesa Drive and Ladera Drive consisting of 25.5131 acres vacated by Vacation Action No.: 13DRB-70433
7. Additional Right-of-Way for 118th Street NW, Ladera Drive NW and Town Plaza Drive NW consisting of 19.7074 acres is created with this plat.
8. Total mileage of public street right-of-way created: 1.265 miles.
9. Date of Survey: October, 2012.
10. Plat is located within the Town of Atrisco Grant within projected Sections 17, 18, 19 & 20, T10N, R2E, NMPM.

PUBLIC UTILITY EASEMENTS

PUBLIC UTILITY EASEMENTS shown on this plat are granted for the common and joint use of:

A. Public Service Company of New Mexico ("PNM"), a New Mexico corporation, (PNM Electric) for installation, maintenance, and service of overhead and underground electrical lines, transformers, and other equipment and related facilities reasonably necessary to provide electrical services.

B. New Mexico Gas Company for installation, maintenance, and service of natural gas lines, valves and other equipment and facilities reasonably necessary to provide natural gas.

C. Qwest Corporation d/b/a CenturyLink QC for the installation, maintenance, and service of such lines, cable, and other related equipment and facilities reasonably necessary to provide communication services.

D. Cable TV for the installation, maintenance, and service of such lines, cable, and other related equipment and facilities reasonably necessary to provide Cable services.

Included, is the right to build, rebuild, construct, reconstruct, locate, relocate, change, remove, replace, modify, renew, operate and maintain facilities for purposes described above, together with free access to, from, and over said easements, with the right and privilege of going upon, over and across adjoining lands of Grantor for the purposes set forth herein and with the right to utilize the right of way and easement to extend services to customers of Grantee, including sufficient working area space for electric transformers, with the right and privilege to trim and remove trees, shrubs or bushes which interfere with the purposes set forth herein. No building, sign, pool (above ground or subsurface), hot tub, concrete or wood pool decking, or other structure shall be erected or constructed on said easements, nor shall any well be drilled or operated thereon. Property owners shall be solely responsible for correcting any violations of National Electrical Safety Code by construction of pools, decking, or any structures adjacent to or near easements shown on this plat.

Easements for electric transformer/switchgear, as installed, shall extend ten (10) feet in front of transformer/switchgear doors and five (5) feet on each side.

Disclaimer:

In approving this plat, Public Service Company of New Mexico (PNM), New Mexico Gas Company (NMGC) and Qwest Corporation D/B/A CenturyLink (QWEST) did not conduct a Title Search of the properties shown hereon. Consequently, PNM, NMGC and QWEST do not waive or release any easement or easement rights which may have been granted by prior plat, replat or other document and which are not shown on this plat.

FREE CONSENT AND DEDICATION

The plat shown hereon is made with free consent and in accordance of the desires of the undersigned owner(s), the execution of this plat is their free act and deed. Those signing as owner(s) warrant that they hold among them, complete indefeasible title in fee simple to the land shown on this plat. Owner(s) hereby affirm that the described property shown on this plat lies within the platting and subdivision jurisdiction of Albuquerque, New Mexico. Said owner(s) hereby grant all Easements as may be shown on this plat; and hereby dedicate Public Rights-of-Way as shown on this plat to The City of Albuquerque, New Mexico in Fee Simple with Warranty Covenants.

WESTERN ALBUQUERQUE LAND HOLDINGS LLC, Owner Parcels C-3, D-1, E, F, G & H
a Delaware limited liability company

By: BARCLAYS CAPITAL REAL ESTATE INC.
as Servicing Advisor

Name: [signature]
Title: VICE PRESIDENT

State of New York)
SS
County of New York)

This instrument was acknowledged before me on 22 day of JAN 2013
by MARK WUEST VICE PRESIDENT

My Commission Expires: 4/2/2016 Notary Public

KRISTINA WALL
NOTARY PUBLIC-STATE OF NEW YORK
No. 01WA6258817
Qualified in New York County
My Commission Expires April 02, 2016

FREE CONSENT AND DEDICATION

The plat shown hereon is with the free consent and in accordance of the desires of the undersigned owner. Existing Public Utility easements shown hereon for the common and joint use of Gas, Electrical Power and Communication Services for buried and/or overhead distribution lines, conduits and pipes for underground utilities where shown or indicated, and including the right of ingress and egress for construction and maintenance, and the right to trim interfering trees and shrubs. Said owner does hereby certify that this subdivision is its free act and deed.

Said owners do hereby grant all easements as shown hereon with listed beneficiaries and stipulations.

[signature] 1/08/13
Robert J. Perry Date
Chief Administrative Officer
City of Albuquerque, a New Mexico Municipal Corporation, Owner Parcel C-2

KJC 1/24/13

ACKNOWLEDGEMENT

State of New Mexico)
SS
County of Bernalillo)

This instrument was acknowledged before me this 28th day of January 2013, by Robert J. Perry, Chief Administrative Officer, City of Albuquerque, a New Mexico Municipal Corporation Owner Parcel C-2.

By Mary E. Chavez Notary Public My Commission Expires: 2/17/13

OFFICIAL SEAL
MARY E. CHAVEZ
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 2/17/13

PURPOSE OF PLAT

Purpose of this Plat is to:

- Subdivide original Parcel C-3 into three parcels (C-3-A, C-3-B, C-3-C)
- Subdivide original Parcel D-1 into two parcels (D-1-A, D-1-B)
- Vacate and grant easements
- Re-align Ladera Drive by vacating and dedicating Right-of-Way
- Re-align Town Plaza Drive by vacating and dedicating Right-of-Way
- Re-align 118th Street and eliminate High Mesa Drive by vacating and dedicating Right-of-Way
- Replat Parcels C-2, E, F, G and H into Parcels C-2-A, E-1, F-1, G-1 and H-1
- Parcel C-3-C is being created for conveyance to the City of Albuquerque in exchange for vacated right-of-way

ROBERT GROMATZKY NEW MEXICO 16469 LICENSED PROFESSIONAL SURVEYOR

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tyPLAT R $25.00 B 2013C P 0112 M Toulous Olivere Bernalillo Cou

PROJECT NUMBER 1009445

APPLICATION NUMBER 13DRB-70435

UTILITY APPROVALS:

QWEST CORPORATION D/B/A CENTURYLINK QC	DATE 2-19-2013
COMCAST CABLE	DATE 8/21/13
PNM ELECTRIC SERVICES	DATE 9-25-13
NEW MEXICO GAS COMPANY	DATE 8-11-2013

CITY APPROVALS:

CITY SURVEYOR	DATE 1/24/13
TRAFFIC ENGINEER, TRANSPORTATION DIVISION	DATE 02-27-13
ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY	DATE 02/27/13
PARKS & RECREATION DEPARTMENT	DATE 2-27-13
A.M.A.F.C.A.	DATE 6-21-13
CITY ENGINEER	DATE 2-27-13
DRB CHAIRPERSON, PLANNING DEPARTMENT	DATE 9-27-13
REAL PROPERTY DIVISION	DATE 9-4-13

TAX CERTIFICATION

THIS IS TO CERTIFY THAT TAXES ARE CURRENT AND PAID ON UPC #

See Attached

PROPERTY OWNER OF RECORD City of Alb./Western Alb. Land Holdings LLC

BERNALILLO COUNTY TREASURER'S OFFICE DATE 09-09-2013

SURVEYOR'S CERTIFICATION

I, Robert Gromatzky, a registered Professional New Mexico Surveyor, certify that I am responsible for this survey and that this plat was prepared by me or under my supervision, shows all existing easements as shown on the plats of record, or made known to me by the owner, utility companies, or other interested parties and conforms to the Minimum Requirements of the Board of Registration for Professional Engineers and Professional Surveyors and meets the minimum requirements for monumentation and surveys contained in the Albuquerque Subdivision Ordinance, and is true and accurate to the best of my knowledge and belief.

Robert Gromatzky
New Mexico Professional Surveyor 16469
Date: JANUARY 18, 2013

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

JOB NO. 20120318 001 01

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PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012

NOTES

1. Bearings are New Mexico State Plane Grid Bearings (Central Zone) NAD 1983. Basis of Bearings is between City of Albuquerque Control Monuments "REWARD" and "BH 41". Bearing = N03°09'40"E.
2. Distances are ground distances.
3. Record easements taken from Title Commitment No. 1711618-AL04, dated October 9, 2012 at 8:00 am, issued by First American Title Insurance Company to Western Albuquerque Land Holdings, LLC, a Delaware limited liability company and Title Commitment No. 1707363-AL04, dated October 9, 2012 at 8:00 am, issued by First American Title Insurance Company to Western Albuquerque Land Holdings, LLC, a Delaware limited liability company.
4. Record Bearings and distances as shown on Bulk Land Plat of Westland North filed December 27, 2000 in Book 2000C, page 316 are shown in parenthesis ( ). Record Bearings and distances as shown on Correction Plat of Parcels C-1, C-2, C-3 & D-1 Westland North filed May 9, 2012 in Book 2012C, page 57 are shown in brackets [ ].
5. This Plat was prepared with information included in Title Commitment issued by First American Title Insurance Company, Commitment No. 1707363-AL04, Effective Date: October 9, 2012 and Commitment No. 1711618-AL04, Effective Date: October 9, 2012.
6. Portions of Tracts C-2-A, C-3-A, C-3-B, C-3-C, D-1-A, D-1-B, E-1, F-1, G-1 & H-1 are located in Flood Zones "A", "AE", "AO" and "X", per FIRM Map Number 35001C307H, Revised August 16, 2012, FIRM Map Number 35001C0309G, Revised September 26, 2008, FIRM Map Number 35001C0328H, Revised August 16, 2012, FIRM Map Number 35001C0328H, Revised August 16, 2012 and updated by LOMC Case No. 10-06-113V-35002, Effective Date: August 17, 2012.
7. Tracts LD-1-1A, LD-1-1B, LD-1-1C, LD-1-1D, LD-1-1E, LD-1-1F, LD-1-1G, LD-1-1H, LD-1-1I, LD-2-1B AND LD-2-1S designate existing AMAFCA easements as per Court Judgement No. 7-76-03096 filed September 28, 1976 in Misc. Bk 498, pages 648-683, with the District Court of Bernalillo County, New Mexico.
8. Pursuant to Section 14-14-4-7 of the City of Albuquerque Code of Ordinances, "No property within the area of this Plat shall at any time be subject to a deed restriction, covenant, or binding agreement prohibiting solar collectors from being installed on buildings or erected on the lots or parcels within the area of proposed Plat. The foregoing requirement shall be a condition to approval of this plat".
9. All tract corners will be monumented with a #5 rebar and Plastic Survey Cap stamped "Gromatzky PS 16469".
10. Centerline monuments to be installed at centerline PC's, PT's, angle points and street intersections prior to acceptance of subdivision street improvements and will consist of a standard 3-1/4" aluminum alloy cap stamped "CITY OF ALBUQUERQUE", CENTERLINE MONUMENTATION", "SURVEY MARKER", "DO NOT DISTURB", "PLS 16469".
11. Parcels F-1 and G-1 subject to unrecorded Temporary Storm Drain Easements executed by WESTLAND DEVCO, LP and granted to AMAFCA.

NOTICE OF SUBDIVISION PLAT CONDITIONS

Future subdivision of Parcels C-2-A, C-3-A, C-3-B, C-3-C, D-1-A, D-1-B, E-1, F-1, G-1 and H-1, zoning Site Development Plan approvals, and development permits may be conditioned upon dedication of rights-of-way and easements, and/or upon infrastructure improvements by the owner for water, sanitary sewer, streets; drainage, grading and parks in accordance with current resolutions, ordinances and policies in effect at the time for any specific proposal

The City and AMAFCA (with reference to drainage) may require and/or permit easements to be added, modified, or removed when future plats and/or Site Development Plans are approved.

By its approval of this subdivision the City makes no representation or warranties as to availability of utilities, or final approval of all requirements including (but not limited to) the following items: water and sanitary sewer availability; future street dedications and/or improvements; park and open space requirements; drainage requirements and/or improvements; and, excavation, filling or grading requirements. Any person intending development of lands within this subdivision is cautioned to investigate the status of these items.

At such time as all such conditions have been satisfactorily met, the City Engineer shall approve a recordable document, removing such conditions from all or from a portion of the area within the subject subdivision.

DESCRIPTION

A certain tract of land located within the Town of Atrisco Grant, within projected Sections 17, 18, 19 and 20, Township 10 North, Range 2 East, New Mexico Principal Meridian, City of Albuquerque, Bernalillo County, New Mexico, being and comprising all of Parcels lettered "C-2", "C-3" and "D-1", Correction Plat of Westland North, as the same is shown and designated on the plat thereof filed in the office of the County Clerk of Bernalillo County, New Mexico on May 9, 2012 in Book 2012C, page 57 and all of Parcels lettered "E", "F", "G" and "H", Westland North, as the same is shown and designated on the plat thereof filed in the office of the County Clerk of Bernalillo County, New Mexico on December 27, 2000 in Book 2000C, page 316 together with a portion of High Mesa Drive Right-of-Way, a portion of 118th Street Right-of-Way, a portion of Ladera Drive Right-of-Way and a Town Plaza Drive Right-of-Way and being more particularly described by New Mexico State Plane Grid Bearings (NAD83 Central Zone) and ground distances as follows:

BEGINNING at the northwest corner of the tract herein described, a found No.5 Rebar with a Plastic Survey Cap stamped "GROMATZKY PS 16469", said point being the east northeast point of return at the intersection of High Mesa Drive NW and Arroyo Vista Boulevard NW, WHENCE the City of Albuquerque Control Monument "BH 41", a brass disc having New Mexico State Plane Grid Coordinates (NAD 83 Central Zone) N=1,496,608.828 and E=1,491701.376, bears N44°44'17"E a distance of 7640.86 feet;

THENCE along the northerly boundary of the tract herein described, coincident with the southerly right-of-way of said Arroyo Vista Boulevard NW and the northerly boundary of said Parcels "C-2", "D-1", the following nine (9) courses;

S81°01'30"E a distance of 1013.56 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being the northeast corner of said Parcel "C-2";
S00°00'00"W a distance of 1885.84 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being an angle point of said Parcel C-3;
S49°31'57"E a distance of 800.46 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being the southeast corner of said Parcel C-3 and a point of curvature of said Parcel D-1;
110.19 feet along the arc of a curve to the right having a radius of 211.00 feet, a central angle of 29°55'20" and a chord bearing N41°45'27"E a distance of 108.94 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of tangency;
N58°43'03"E a distance of 559.69 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of curvature;
162.84 feet along the arc of a curve to the right having a radius of 311.00 feet, a central angle of 30°00'00" and a chord bearing N71°43'03"E a distance of 160.99 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of tangency;
N85°43'03"E a distance of 94.03 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of curvature;
3.77 feet along the arc of a curve to the left having a radius of 271.11 feet, a central angle of 00°47'47" and a chord bearing N85°19'10"E a distance of 3.77 feet to a point of tangency;
N60°44'02"E a distance of 2372.35 feet to a found No 5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point on the southerly right-of-way line of Arroyo Vista Boulevard NW;

THENCE along the easterly boundary of the tract herein described, coincident with the westerly right-of-way line of said Arroyo Vista Boulevard, the northerly and southerly right-of-way lines of said Ladera Drive and the easterly boundary of said Parcel "H" and Parcel "G", the following eighteen (18) courses;

423.49 feet along the arc of a curve to the right having a radius of 910.00 feet, a central angle of 26°39'50" and a chord bearing S28°16'56"E a distance of 419.65 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993 marking a point of tangency;
S14°56'53"E a distance of 288.93 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being the north northwest point of return at the intersection of Arroyo Vista Boulevard NW and Ladera Drive NW;
along said return, 159.35 feet along the arc of a curve to the right having a radius of 100.00 feet, a central angle of 91°18'05" and a chord bearing S30°40'11"W a distance of 143.02 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being the west northwest point of return at the intersection of Arroyo Vista Boulevard NW and Ladera Drive NW;
S75°57'10"W a distance of 2.86 feet to a point of curvature;
838.07 feet along the arc of a curve to the left having a radius of 1276.00 feet, a central angle of 37°37'53" and a chord bearing S57°30'51"W a distance of 823.09 feet to a point of tangency;
S38°41'54"W a distance of 514.95 feet to a point;
S23°21'42"W a distance of 574.69 feet to a point;
N38°41'54"E a distance of 574.69 feet to a point;
N23°21'42"E a distance of 111.09 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of curvature;
1038.92 feet along the arc of a curve to the right having a radius of 1124.00 feet, a central angle of 52°57'33" and a chord bearing N49°50'28"E a distance of 1002.33 feet to a point of tangency;
N76°19'14"E a distance of 137.26 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being the west southwest point of return at the intersection of Ladera Drive NW and Arroyo Vista Boulevard NW;
along said return, 176.14 feet along the arc of a curve to the right having a radius of 100.00 feet, a central angle of 100°55'25" and a chord bearing S53°13'03"E a distance of 154.24 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being the south southwest point of return at the intersection of Arroyo Vista Boulevard NW and Ladera Drive NW;
S02°45'21"E along the westerly right-of-way line of said Arroyo Vista Boulevard NW, a distance of 181.19 feet to found No.5 Rebar and Plastic Survey Cap stamped "PS 11993";
S14°56'52"E along the westerly right-of-way line of said Arroyo Vista Boulevard NW, a distance of 517.12 feet to the southeast corner of said Parcel "H";
N89°37'32"W along the south boundary of said Parcel "H", a distance of 993.27 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being the southwest corner of said Parcel "H";
S14°56'13"E along the east boundary of said Parcel "G", a distance of 1112.21 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993";
S89°37'30"E continuing along said east boundary, a distance of 559.63 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being the point of intersection of said east boundary and the northerly right-of-way line of Interstate 40 (I-40);

CONTINUE DESCRIPTION

THENCE along the southerly boundary of the tract herein described, coincident with the northerly right-of-way line of said Interstate 40 (I-40), the southerly boundary of said Parcel "G" and Parcel "F", the following eleven (11) courses;

S31°01'08"W along said northerly right-of-way, a distance of 145.72 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993";
S16°37'08"W along said northerly right-of-way, a distance of 351.27 feet to a found NMDOT Aluminum Right-of-Way Survey Cap, being a point of curvature;
along said northerly right-of-way, 1697.23 feet along the arc of a curve to the left having a radius of 2304.36 feet, a central angle of 42°12'00" and a chord bearing S37°43'08"W a distance of 1659.13 feet to a point of tangency;
S58°49'08"W along said northerly right-of-way, a distance of 19.98 feet to a point;
S76°01'08"W leaving said northerly right-of-way, a distance of 746.94 feet to a point;
S14°58'52"E a distance of 217.01 feet to a point on said northerly right-of-way;
S58°49'08"W along said northerly right-of-way, a distance of 499.86 feet to a point;
N14°58'52"W leaving said northerly right-of-way, a distance of 356.46 feet to a point;
S75°01'08"W a distance of 1050.00 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993";
S14°58'52"E a distance of 661.51 feet to a point on said northerly right-of-way;
S58°58'42"W along said northerly right-of-way, a distance of 1176.25 feet to a point;

THENCE along the westerly boundary of the tract herein described, coincident with the westerly boundary of said Parcel "F", Parcel "E", Parcel "D-1", Parcel "C-3", Parcel "C-2", the southerly right-of-way and the northerly right-of-way lines of said Ladera Drive NW, the easterly right-of-way and the southerly right-of-way lines of said 118th Street NW and the westerly right-of-way and easterly right-of-way lines of said High Mesa Drive NW, the following twenty-eight (28) courses;

N14°58'52"W leaving said northerly right-of-way, a distance of 1022.72 feet to a point;
N75°01'08"E a distance of 377.62 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", a point on the westerly right-of-way of said 118th Street NW;
S01°57'19"E a distance of 302.67 feet to the southwest corner of said 118th Street NW;
N88°02'41"E a distance of 180.00 feet to the southeast corner of said 118th Street NW;
N01°57'19"W along the easterly right-of-way of said 118th Street NW, coincident with the westerly boundary line of said Parcel "E" and "F", a distance of 1894.31 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being the point of return at the south southeast return of the intersection of 118th Strdet NW and Ladera Drive NW;
along said return, 43.98 feet along the arc of a curve to the right having a radius of 30.00 feet, a central angle of 83°59'36" and a chord bearing N40°02'29"E a distance of 40.16 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being the east southeast point of return at the intersection 118th Street NW and Ladera Drive NW;
N82°02'18"E along the southerly right-of-way of said Ladera Drive NW, coincident with the northerly boundary line of said Parcel "E", a distance of 1031.81 feet to a point of curvature;
along said southerly right-of-way and said northerly boundary line, 854.26 feet along the arc of a curve to the left having a radius of 1276.00 feet, a central angle of 38°21'31" and a chord bearing N62°51'32"E a distance of 838.40 feet to a point on curve on said northerly right-of-way line of Ladera Drive NW;
597.28 feet along the arc of a curve to the right having a radius of 1424.00 feet, a central angle of 24°01'55" and a chord bearing S70°01'20"W a distance of 592.91 feet to a point on said northerly right-of-way, coincident with the southerly boundary line of said Parcel "D", being a point of tangency;
S82°02'18"W along said northerly right-of-way and said southerly boundary line, a distance of 1221.45 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being the east northeast point of return at the intersection of Ladera Drive NW and 118th Street NW;
along said return, 50.00 feet along the arc of a curve to the right having a radius of 30.00 feet, a central angle of 95°29'39" and a chord bearing N50°12'53"W a distance of 44.41 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being the north northeast point of return at the intersection of Ladera Drive NW and 118th Street NW;
along the westerly boundary of said Parcel "D-1" and the easterly right-of-way of said 118th Street NW, 717.85 feet along the arc of a curve to the left having a radius of 3090.00 feet,
a central angle of 13°18'38" and a chord bearing N09°07'23"W a distance of 716.24 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of tangency;
N15°46'42" W along said easterly right-of-way and said westerly boundary line of said Parcels "D" and "C", a distance of 422.57 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of curvature;
along said easterly right-of-way and said westerly boundary line of said Parcel "C", 875.38 feet along the arc of a curve to the left having a radius of 1235.90 feet, a central angle of 40°34'58" and a chord bearing N36°04'03"W a distance of 857.20 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of tangency;
N56°21'31"W along said easterly right-of-way and said westerly boundary line of said Parcel "C", a distance of 370.48 feet to a point on curve;
544.46 feet along the arc of a curve to the left having a radius of 1190.00 feet, a central angle of 26°12'53" and a chord bearing S35°53'44"E a distance of 539.73 feet to a point on curve on said southerly right-of-way line of 118th Street NW;
along said southerly right-of-way, 135.56 feet along the arc of a curve to the left having a radius of 1055.90 feet, a central angle of 07°21'20" and a chord bearing N52°40'50"W a distance of 135.46 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of tangency;

CONTINUE DESCRIPTION

N56°21'31"W along said southerly right-of-way, a distance of 680.74 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of curvature;
along said southerly right-of-way, 567.01 feet along the arc of a curve to the left having a radius of 1055.93 feet, a central angle of 30°46'00" and a chord bearing N71°44'31"W a distance of 560.22 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of compound curvature at the east southeast point of return at the intersection of 118th Street NW and High Mesa Drive NW;
along said return, 46.97 feet along the arc of a curve to the left having a radius of 30.00 feet, a central angle of 89°41'55" and a chord bearing S48°18'19"W a distance of 42.31 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of tangency at the west southeast point of return at the intersection of 118th Street NW and High Mesa Drive NW;
N86°32'39"W a distance of 152.00 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of curvature at the east southwest point of return at the intersection of 118th Street NW and High Mesa Drive NW;
along said return, 46.36 feet along the arc of a curve to the left having a radius of 30.00 feet, a central angle of 88°32'39" and a chord bearing N40°48'58"W a distance of 41.88 feet to a point of tangency at the west southwest point of return at the intersection of 118th Street NW and High Mesa Drive NW;
N04°54'42"E a distance of 180.11 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of curvature at the east northwest point of return at the intersection of 118th Street NW and High Mesa Drive NW;
along said return, 44.91 feet along the arc of a curve to the left having a radius of 30.00 feet, a central angle of 85°46'46" and a chord bearing N52°01'19"E a distance of 40.84 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of reverse curvature at the east northwest point of return at the intersection of 118th Street NW and High Mesa Drive NW;
along said westerly right-of-way of High Mesa Drive NW, 1079.49 feet along the arc of a curve to the right having a radius of 1176.00 feet, a central angle of 52°35'37" and a chord bearing N35°25'45"E a distance of 1041.99 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of reverse curvature;
along said westerly right-of-way, 953.82 feet along the arc of a curve to the left having a radius of 1030.00 feet, a central angle of 52°45'04" and a chord bearing N35°21'02"E a distance of 920.49 feet to a found No.5 Rebar and Plastic Survey Cap stamped "PS 11993", being a point of non-tangency;
S06°46'52"W a distance of 643.11 feet to a point of curvature;
563.62 feet along the arc of a curve to the left having a radius of 1188.00 feet, a central angle of 27°10'58" and a chord bearing N22°33'59"E a distance of 558.35 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of tangency on said easterly right-of-way of High Mesa Drive NW;
N08°58'30"E along said easterly right-of-way, a distance of 255.50 feet to a found No.5 Rebar and Plastic Survey Cap stamped "GROMATZKY PS 16469", being a point of curvature at the east southeast point of return at the intersection of High Mesa Drive NW and Arroyo Vista Boulevard NW;
along said return, 47.12 feet along the arc of a curve to the right having a radius of 30.00 feet, a central angle of 90°00'00" and a chord bearing N53°58'30"E a distance of 42.43 feet to the POINT OF BEGINNING.

This tract contains 436.7488 acres, more or less.



DOC# 2013108078
09/27/2013 11 24 AM Page 2 of 8
TyMLST R $25 00 B 2013C P 0112 M Toulous Olivere, Bernalillo Coun

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

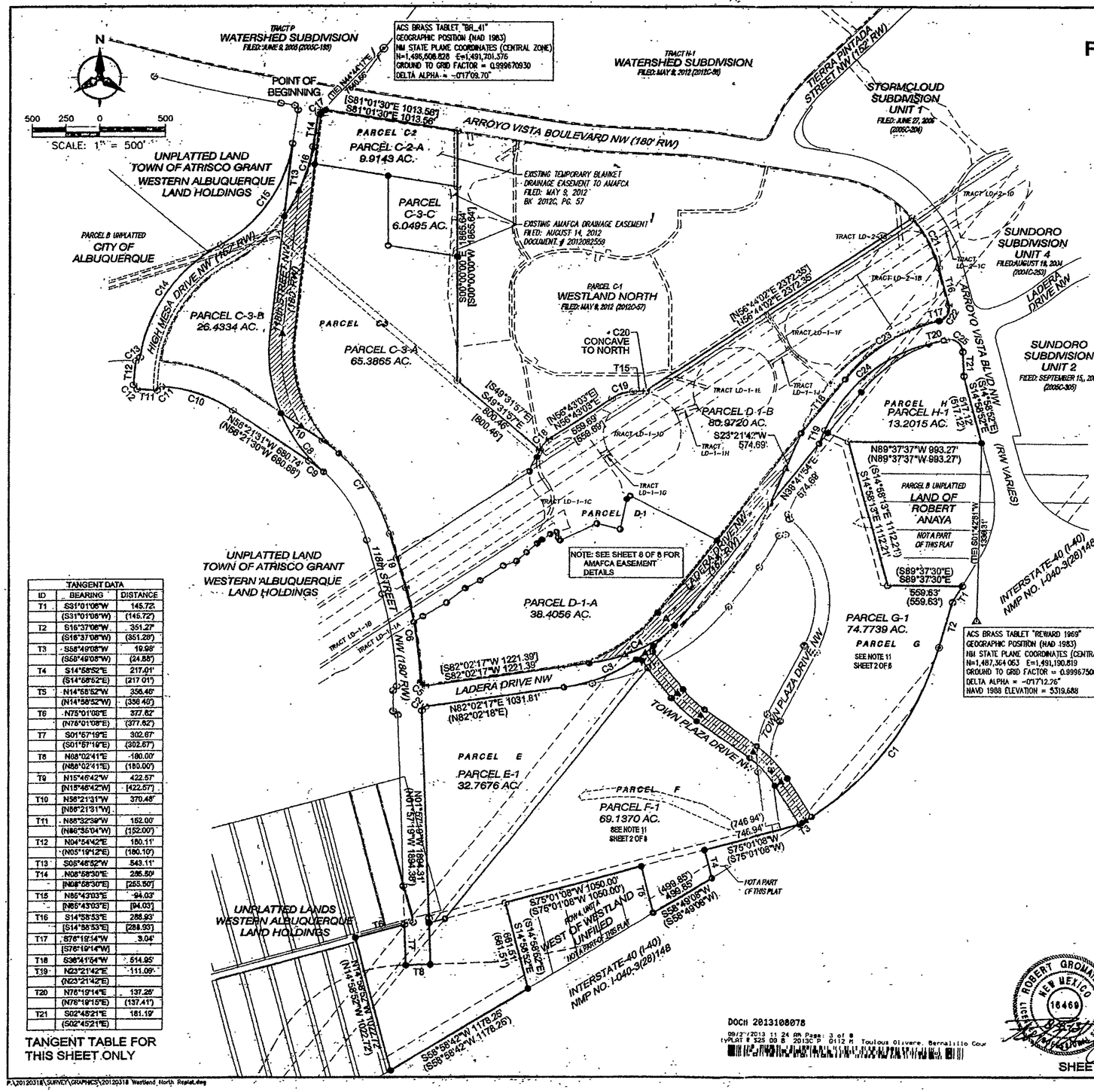
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PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012



LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993"
- FOUND #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- CENTERLINE MONUMENT STAMPED "GROMATZKY PS 16469"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE
- VACATED EASEMENT LINE
- HATCHED AREA DESIGNATES RIGHT-OF-WAY TO BE DEDICATED WITH THE FILING OF THIS PLAT

CURVE DATA						
ID	DELTA	TANGENT	ARC	RADIUS	CHORD	CHORD BEARING
C1	42°12'00"	889.18'	1697.23'	2304.86'	1659.13'	S37°43'08"W
	(42°19'08")		(1692.76')	(2201.83')	(1654.54')	(S37°39'28"W)
C2	83°59'36"	27.01'	43.98'	30.00'	40.15'	N40°02'29"E
	(83°59'37")		(43.98')	(30.00')	(40.15')	(N40°02'29"E)
C3	39°21'31"	443.83'	854.20'	1276.00'	838.39'	N62°51'32"E
C4	24°01'55"	303.09'	597.28'	1424.00'	592.91'	S70°01'20"W
C5	95°29'39"	33.02'	60.00'	30.00'	44.41'	N50°12'53"W
	[95°29'39"]	[33.02']	[60.00']	[30.00']	[44.41']	[N50°12'53"W]
C6	12°18'38"	380.55'	717.85'	3090.00'	716.24'	N09°07'23"W
	[13°18'38"]	[380.66']	[717.85']	[3090.00']	[716.24']	[N09°07'23"W]
C7	40°34'50"	456.96'	875.38'	1235.90'	857.20'	N36°04'03"W
	[40°34'50"]	[456.96']	[875.38']	[1235.90']	[857.20']	[N36°04'03"W]
C8	26°12'53"	277.00'	544.46'	1190.00'	539.73'	S38°53'44"E
C9	07°21'20"	67.87'	135.56'	1055.90'	135.46'	N52°40'50"W
			(1056.92')			
C10	30°46'00"	290.62'	567.01'	1055.93'	560.22'	N71°44'31"W
	(30°14'04")		(557.12')	(1055.78')	(550.85')	(N71°26'02"W)
C11	89°41'55"	29.84'	46.97'	30.00'	42.31'	S48°18'16"W
	(90°00'00")		(47.12')	(30.00')	(42.43')	(S48°24'06"W)
C12	88°32'39"	29.25'	46.36'	30.00'	41.88'	N40°48'56"W
	(90°00'00")		(47.12')	(30.00')	(42.43')	(N41°26'04"W)
C13	85°46'46"	27.67'	44.91'	30.00'	40.84'	N52°01'10"E
	(84°17'22")		(44.13')	(30.00')	(40.20')	(N51°16'15"E)
C14	52°35'37"	581.13'	1079.49'	1176.00'	1041.99'	N35°25'45"E
	(52°36'01")		(1079.62')	(1176.00')	(1042.11')	(N35°25'35"E)
C15	52°45'04"	513.72'	953.82'	1036.00'	920.49'	N35°21'02"E
	(52°45'04")		(953.83')	(1036.00')	(920.49')	(N35°21'03"E)
C16	27°10'58"	287.22'	533.62'	1168.00'	528.35'	N22°33'50"E
				(1168.00')		
C17	90°00'00"	30.00'	47.12'	30.00'	42.43'	N53°58'30"E
	(90°00'00")	[30.00']	[47.12']	[30.00']	[42.43']	[N53°58'30"E]
C18	29°55'20"	58.38'	110.19'	211.00'	108.94'	N41°45'27"E
	[29°55'20"]	[58.38']	[110.19']	[211.00']	[108.94']	[N41°45'27"E]
C19	30°00'00"	83.33'	162.84'	311.00'	160.99'	N71°43'03"E
	[30°00'00"]	[83.33']	[162.84']	[311.00']	[160.99']	[N71°43'03"E]
C20	00°47'47"	1.88'	3.77'	271.11'	3.77'	N86°19'10"E
	[00°47'47"]	[1.88']	[3.77']	[271.11']	[3.77']	[N86°19'10"E]
C21	26°39'50"	215.65'	423.49'	910.00'	419.66'	S28°18'58"E
	[26°39'50"]	[215.65']	[423.49']	[910.00']	[419.66']	[S28°18'58"E]
C22	91°18'07"	102.30'	159.35'	100.00'	143.02'	S30°40'11"W
	[91°18'07"]	[102.30']	[159.35']	[100.00']	[143.02']	[S30°40'11"W]
C23	37°37'20"	434.86'	837.66'	1275.00'	822.89'	S57°30'34"W
C24	52°57'33"	559.90'	1038.92'	1124.00'	1002.33'	N49°50'28"E
	(52°57'33")		(1038.92')	(1124.00')	(1002.33')	(N49°50'29"E)
C25	100°55'25"	121.14'	176.14'	100.00'	154.24'	S53°13'03"E
	(100°55'24")		(176.14')	(100.00')	(154.24')	(S53°13'03"E)

CURVE TABLE FOR THIS SHEET ONLY

TANGENT DATA		
ID	BEARING	DISTANCE
T1	S31°01'06"W	145.72'
	(S31°01'06"W)	(145.72')
T2	S16°37'06"W	351.27'
	(S16°37'06"W)	(351.28')
T3	S58°49'08"W	19.98'
	(S58°49'08"W)	(24.88')
T4	S14°58'52"E	217.01'
	(S14°58'52"E)	(217.01')
T5	N14°58'52"W	358.46'
	(N14°58'52"W)	(358.46')
T6	N75°01'08"E	377.62'
	(N75°01'08"E)	(377.62')
T7	S01°57'19"E	302.67'
	(S01°57'19"E)	(302.67')
T8	N88°02'41"E	-180.00'
	(N88°02'41"E)	(180.00')
T9	N15°46'42"W	422.57'
	[N15°46'42"W]	[422.57']
T10	N56°21'31"W	370.48'
	[N56°21'31"W]	
T11	N88°32'39"W	152.00'
	(N88°35'04"W)	(152.00')
T12	N04°24'42"E	180.11'
	(N05°19'12"E)	(180.10')
T13	S05°46'52"W	543.11'
T14	N08°58'30"E	285.59'
	[N08°58'30"E]	[285.50']
T15	N85°43'03"E	-94.03'
	[N85°43'03"E]	[94.03']
T16	S14°58'53"E	288.93'
	[S14°58'53"E]	[288.93']
T17	S76°19'14"W	3.04'
	[S76°19'14"W]	
T18	S36°41'54"W	514.95'
T19	N23°21'42"E	111.09'
	(N23°21'42"E)	
T20	N76°19'14"E	137.26'
	(N76°19'15"E)	(137.41')
T21	S02°45'21"E	181.19'
	(S02°45'21"E)	

TANGENT TABLE FOR THIS SHEET ONLY

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(vPLAT R $25.00 B 2013C P 0112 M Toulous Olivere, Bernalillo Cou



SHEET 3 OF 8

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

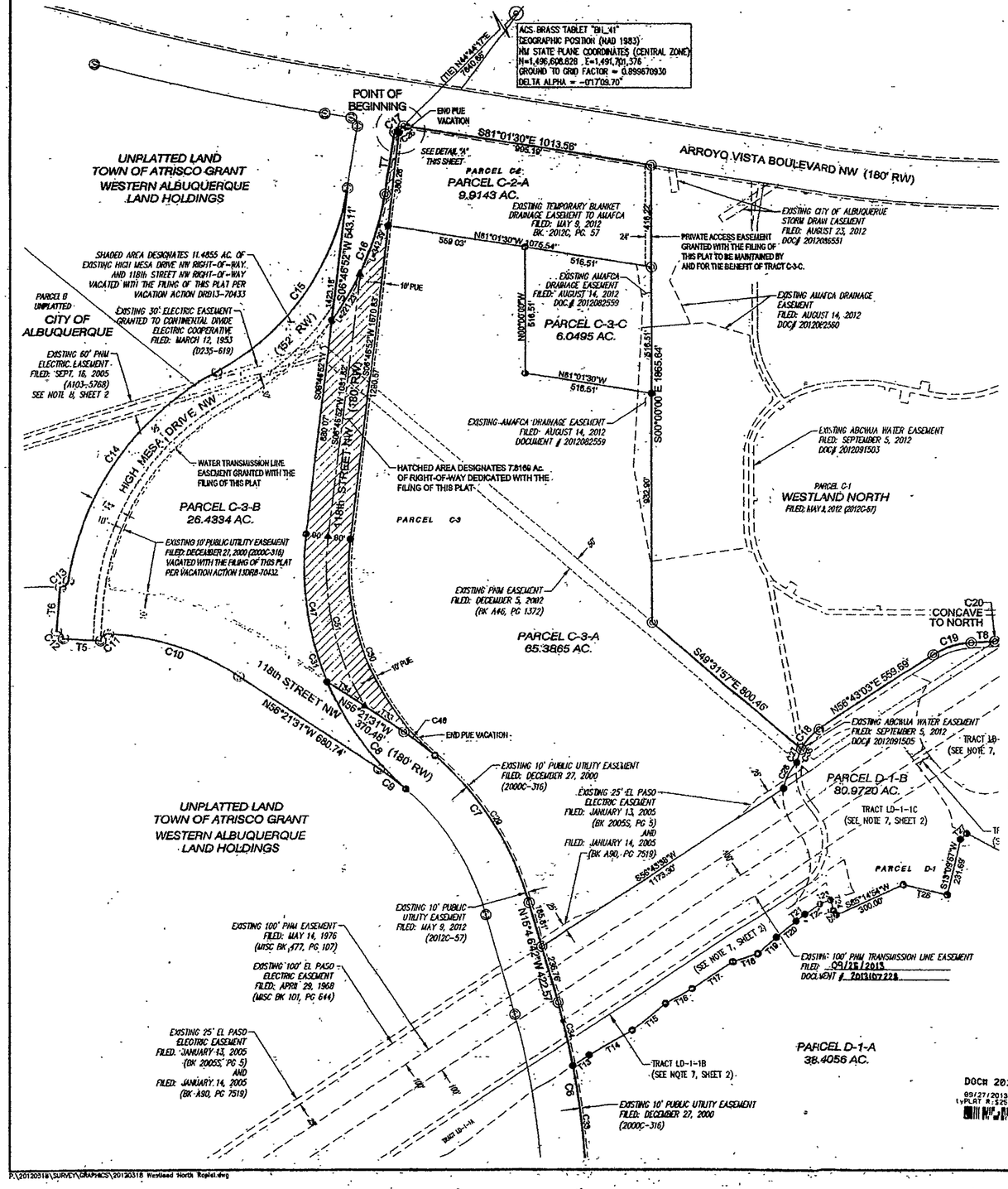
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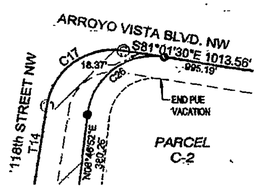
JOB NO: 20120318.001.01

PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

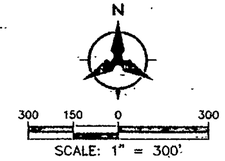
(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012.





DETAIL "A"
NOT TO SCALE



TANGENT DATA					
ID	BEARING	DISTANCE	ID	BEARING	DISTANCE
T1	S81°01'08"W	145.72'	T19	S48°12'08"W	101.30'
T2	S56°48'08"W	19.98'	T20	S61°00'27"W	105.36'
T3	S14°58'52"E	217.01'	T21	S60°59'03"W	45.21'
T4	N88°02'41"E	180.00'	T22	S56°43'03"W	75.00'
T5	N86°32'39"W	152.00'	T23	S72°05'37"W	50.35'
T6	N04°54'42"E	180.11'	T24	N15°24'55"W	44.95'
T7	N08°58'30"E	255.50'	T25	N35°46'20"W	22.26'
T8	N86°43'03"E	94.03'	T26	N76°00'02"W	160.00'
T9	S76°19'14"W	3.04'	T27	S46°44'27"W	35.00'
T10	N23°21'42"E	111.09'	T28	N30°41'54"E	102.62'
T11	N76°19'14"E	137.20'	T29	N37°45'45"W	72.18'
T12	S02°48'21"E	181.19'	T30	S78°01'08"W	120.60'
T13	S56°43'03"W	79.85'	T31	N66°38'18"W	166.85'
T14	S59°34'57"W	200.06'	T32	N76°19'14"E	23.56'
T15	S51°49'03"W	175.64'	T33	N50°21'31"W	186.79'
T16	S61°17'27"W	125.40'	T34	N56°21'31"W	181.66'
T17	S56°43'03"W	200.00'	T35	N76°19'14"E	113.70'
T18	S70°45'10"W	103.08'	T36	S33°15'56"E	311.54'
			T37	S51°17'13"E	69.41'

SEE SHEET 6 FOR CURVE TABLE

LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993"
- FOUND #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- CENTERLINE MONUMENT STAMPED "GROMATZKY PS 16469"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE
- VACATED EASEMENT LINE
- PUE — PUBLIC UTILITY EASEMENT GRANTED WITH THE FILING OF THIS PLAT
- HATCHED AREA DESIGNATES RIGHT-OF-WAY TO BE DEDICATED WITH THE FILING OF THIS PLAT
- SHADED AREA DESIGNATES RIGHT-OF-WAY TO BE VACATED WITH THE FILING OF THIS PLAT



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09/27/2013 11:24:08 AM Page: 4 of 8
typLAT R:$25.00 B: 2013C P: 0112 M: Toulous Olivere, Bernalillo Cou

Bohannan Huston
7500 JEFFERSON STREET NE · ALBUQUERQUE, NEW MEXICO

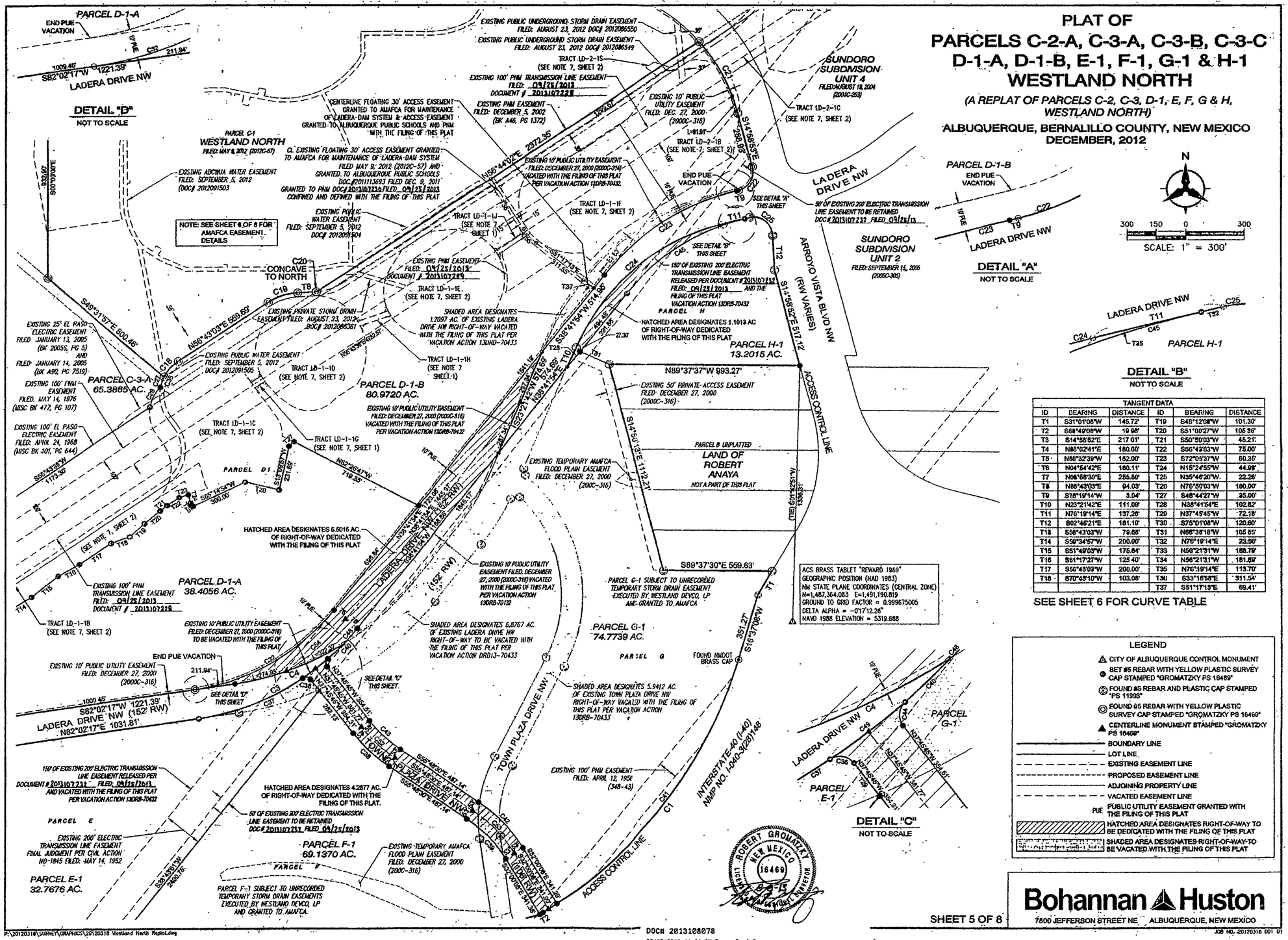
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JOB NO. 20120318 001 01

PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012



TANGENT DATA					
ID	BEARING	DISTANCE	ID	BEARING	DISTANCE
T1	S31°01'08"W	145.72'	T19	S40°12'08"W	101.30'
T2	S68°49'08"W	19.98'	T20	S51°00'27"W	105.36'
T3	S14°56'52"E	217.01'	T21	S50°59'03"W	45.21'
T4	N86°02'41"E	180.00'	T22	S56°49'03"W	75.00'
T5	N86°32'39"W	152.00'	T23	S72°05'37"W	50.35'
T6	N04°54'42"E	180.11'	T24	N15°24'55"W	44.98'
T7	N08°58'30"E	255.50'	T25	N35°46'20"W	22.26'
T8	N86°43'03"E	94.03'	T26	N70°00'03"W	100.00'
T9	S76°19'14"W	3.04'	T27	S46°44'27"W	35.00'
T10	N23°21'42"E	111.09'	T28	N38°41'54"E	102.82'
T11	N76°19'14"E	137.26'	T29	N37°45'45"W	72.16'
T12	S02°46'21"E	181.10'	T30	S75°01'08"W	120.60'
T13	S56°43'03"W	79.88'	T31	N66°38'16"W	105.65'
T14	S56°34'57"W	200.06'	T32	N76°19'14"E	23.56'
T15	S51°49'03"W	176.84'	T33	N50°21'31"W	188.79'
T16	S61°17'27"W	125.40'	T34	N56°21'31"W	181.69'
T17	S56°43'03"W	200.00'	T35	N76°19'14"E	119.70'
T18	S70°45'10"W	103.06'	T36	S33°16'58"E	311.54'
			T37	S51°17'15"E	69.41'

LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- BET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993"
- FOUND #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16460"
- CENTERLINE MONUMENT STAMPED "GROMATZKY PS 16469"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE
- VACATED EASEMENT LINE
- PUE PUBLIC UTILITY EASEMENT GRANTED WITH THE FILING OF THIS PLAT
- HATCHED AREA DESIGNATES RIGHT-OF-WAY TO BE DEDICATED WITH THE FILING OF THIS PLAT
- SHADED AREA DESIGNATES RIGHT-OF-WAY TO BE VACATED WITH THE FILING OF THIS PLAT

NEW MEXICO 16469 ROBERT GROMATZKY LICENSED PROFESSIONAL SURVEYOR

DOC# 2013108078

09/27/2013 11:24 AM Page 5 of 8
LVPLAT R $25.00 B 2013C P 0112 M Toulous Olivare, Bernalillo Cour

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

SHEET 5 OF 8

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JOB NO. 20120318.001.01

PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012

N

300 150 0 300

SCALE: 1" = 300'

PARCEL C-3-A
65.3864 AC.

PARCEL D-1-A
38.4056 AC.

PARCEL D-1-B
80.9720 AC.

PARCEL E-1
32.7676 AC.

PARCEL F-1
69.1370 AC.

PARCEL G-1
74.7739 AC.

PARCEL E

PARCEL F

LADERA DRIVE NW (152' RW)

TOWN PLAZA DRIVE NW

ACCESS CONTROL LINE

INTERSTATE-40 (I-40)
NMP NO. I-040-3(28)148

WEST OF WESTLAND UNFILED
NOT A PART OF THIS PLAT

UNPLATTED LAND
TOWN OF ATRISCO GRANT
WESTERN ALBUQUERQUE LAND HOLDINGS

UNPLATTED LANDS
WESTERN ALBUQUERQUE LAND HOLDINGS

EXISTING 25' EL PASO ELECTRIC EASEMENT FILED: JANUARY 13, 2005 (BK 2005S, PG 5) AND FILED: JANUARY 14, 2005 (BK A90, PG 7519)

EXISTING 10' PUBLIC UTILITY EASEMENT FILED: MAY 8, 2012 (2012C-57)

EXISTING 100' EL PASO ELECTRIC EASEMENT FILED: APRIL 24, 1968 (MISC BK 101, PG 644)

EXISTING 10' PUBLIC UTILITY EASEMENT FILED: DECEMBER 27, 2000 (2000C-316)

EXISTING 100' PNM TRANSMISSION LINE EASEMENT FILED: 09/25/2013 DOCUMENT # 2013107228

EXISTING 100' PNM EASEMENT FILED: MAY 14, 1976 (MISC BK 477, PG 107)

EXISTING 200' ELECTRIC TRANSMISSION LINE EASEMENT FINAL JUDGMENT PER CIVIL ACTION NO 1845 FILED: MAY 14, 1952

EXISTING TEMPORARY AMAFCA FLOOD PLAIN EASEMENT FILED: DECEMBER 27, 2000 (2000C-316)

EXISTING 50' PRIVATE ACCESS EASEMENT FILED: 12/27/2000 (2000C-316)

EXISTING 10' PUBLIC UTILITY EASEMENT FILED: DECEMBER 27, 2000 (2000C-316) TO BE VACATED WITH THE FILING OF THIS PLAT PER VACATION ACTION 130RB-70432

EXISTING 100' AMAFCA EASEMENT FILED: DECEMBER 27, 2000 (2000C-316)

EXISTING 100' PNM EASEMENT FILED: APRIL 12, 1956 (348-43)

EXISTING C.O.A. 118th STREET PUBLIC ROADWAY EASEMENT FILED: DECEMBER 23, 2000 (BK. A13, PG. 6654)

PUBLIC ROADWAY EASEMENT FOR FUTURE 118th STREET INTERCHANGE GRANTED DECEMBER 27, 2000 (2000C-316) EASEMENT TO REVERT BACK TO WESTLAND DEVELOPMENT CO., INC. IF EASEMENT IS NOT USED FOR STATED PURPOSE.

150' OF EXISTING 200' ELECTRIC TRANSMISSION LINE EASEMENT VACATED BY DOCUMENT # 2013107232 FILED: 09/25/2013 AND WITH THE FILING OF THIS PLAT PER VACATION ACTION 130RB-70432

50' OF EXISTING 200' ELECTRIC TRANSMISSION LINE EASEMENT TO BE RETAINED FINAL JUDGEMENT PER CIVIL ACTION NO. 1845 FILED: MAY 14, 1952 & DOC# 2013107232 FILED 09/25/2013

HATCHED AREA DESIGNATES ± 5015 AC. OF RIGHT-OF-WAY TO BE DEDICATED WITH THE FILING OF THIS PLAT.

HATCHED AREA INDICATES 4.2877 AC. OF RIGHT-OF-WAY DEDICATED WITH THE FILING OF THIS PLAT.

SHADED AREA DESIGNATES 6.8767 AC. OF EXISTING LADERA DRIVE NW RIGHT-OF-WAY VACATED WITH THE FILING OF THIS PLAT PER VACATION ACTION 130RB-70433

SHADED AREA DESIGNATES 5.9412 AC. OF EXISTING TOWN PLAZA DRIVE NW RIGHT-OF-WAY VACATED WITH THE FILING OF THIS PLAT PER VACATION ACTION 130RB-70433

PARCEL G-1 SUBJECT TO UNRECORDED TEMPORARY STORM DRAIN EASEMENT EXECUTED BY WESTLAND DEVCO, LP AND GRANTED TO AMAFCA.

PARCEL F-1 SUBJECT TO UNRECORDED TEMPORARY STORM DRAIN EASEMENTS EXECUTED BY WESTLAND DEVCO, LP AND GRANTED TO AMAFCA

END PUE VACATION

SEE DETAIL "C" SHEET 6 OF 7

SEE DETAIL "A" THIS SHEET

DETAIL "A"
NOT TO SCALE

CURVE DATA						
ID	DELTA	TANGENT	ARC	RADIUS	CHORD	CHORD BEARING
C1	42°12'00"	889.18'	1097.23'	2304.36'	1659.13	S37°43'06"W
C2	83°59'36"	27.01'	43.98'	30.00'	40.15'	N40°02'29"E
C3	38°21'31"	443.83'	854.26'	1276.00'	838.39'	N62°51'32"E
C4	24°01'55"	303.09'	597.28'	1424.00'	592.91'	S70°01'20"W
C5	95°20'39"	93.02'	50.00'	30.00'	44.41'	N50°12'53"W
C6	13°18'38"	360.55'	717.65'	3000.00'	716.24'	N09°07'23"W
C7	40°34'56"	450.98'	875.38'	1235.90'	857.20'	N30°04'03"W
C8	28°12'53"	277.08'	544.46'	1100.00'	539.72'	S35°53'44"E
C9	07°21'20"	67.87'	135.56'	1055.00'	135.46'	N52°40'50"W
C10	30°46'00"	290.52'	567.01'	1055.03'	560.22'	N71°44'31"W
C11	59°41'35"	29.84'	46.97'	30.00'	42.31'	S48°18'19"W
C12	88°32'39"	29.25'	46.36'	30.00'	41.88'	N40°48'58"W
C13	85°46'46"	27.87'	44.91'	30.00'	40.84'	N52°01'19"E
C14	52°35'37"	581.13'	1079.49'	1176.00'	1041.99'	N35°29'45"E
C15	52°49'04"	513.72'	953.82'	1036.00'	920.49'	N35°21'02"E
C16	27°10'58"	287.22'	553.62'	1188.00'	548.35'	N22°39'59"E
C17	90°00'00"	30.00'	47.12'	30.00'	42.43'	N53°59'30"E
C18	28°55'20"	56.38'	110.19'	211.00'	108.94'	N41°46'27"E
C19	30°00'00"	89.33'	162.84'	311.00'	160.99'	N71°43'03"E
C20	00°47'47"	1.88'	3.77'	271.11'	3.77'	N88°19'01"E
C21	26°39'50"	215.65'	423.40'	910.00'	419.66'	S28°18'58"E
C22	91°18'07"	102.30'	159.35'	100.00'	143.02'	S30°41'11"W
C23	37°37'20"	434.60'	837.88'	1276.00'	822.89'	S67°30'34"W
C24	52°57'33"	559.90'	1038.92'	1124.00'	1002.33'	N49°50'28"E
C25	100°55'25"	121.14'	176.14'	100.00'	154.24'	S53°19'03"E
C26	02°11'37"	31.17'	48.27'	30.00'	43.23'	N52°52'41"E
C27	15°21'06"	28.44'	56.54'	211.00'	56.37'	S19°07'13"W
C28	36°31'48"	62.38'	120.50'	189.00'	118.47'	S27°36'26"W
C29	33°13'36"	308.75'	716.72'	1235.90'	706.72'	N42°23'22"W
C30	55°47'03"	534.69'	983.35'	1010.00'	944.97'	N21°06'39"W
C31	55°47'03"	629.66'	1158.60'	1190.00'	1113.38'	S21°06'39"E
C32	43°20'23"	446.61'	850.22'	1124.00'	830.09'	S60°22'06"W
C33	08°23'36"	226.75'	462.64'	3090.00'	462.24'	N06°39'52"W
C34	04°55'03"	132.80'	265.21'	3090.00'	265.12'	N13°19'11"W
C35	46°16'27"	87.99'	168.73'	211.00'	162.43'	N34°04'53"E
C36	85°25'27"	28.18'	45.25'	30.00'	41.08'	S90°58'29"E
C37	26°13'30"	207.23'	584.04'	1276.00'	578.95'	N68°55'32"E
C38	18°02'45"	127.51'	252.91'	802.09'	251.88'	S46°47'08"E
C39	23°48'22"	146.92'	289.61'	697.01'	287.53'	S43°54'19"E
C40	09°49'38"	109.70'	218.88'	1276.00'	218.59'	N43°36'43"E
C41	40°03'39"	840.11'	1611.20'	2304.36'	1578.58'	S38°38'58"W
C42	23°48'22"	169.27'	333.65'	803.01'	331.25'	N43°54'19"W
C43	18°02'45"	110.66'	219.62'	696.09'	218.62'	N46°47'08"W
C44	88°17'18"	28.12'	45.18'	30.00'	41.03'	S03°22'54"W
C45	37°37'20"	382.88'	738.05'	1124.00'	724.87'	N57°30'34"E
C46	07°21'20"	79.44'	158.67'	1235.90'	158.56'	N52°40'50"W
C47	20°34'10"	314.07'	614.14'	1190.00'	607.35'	N08°00'12"W
C48	04°58'52"	55.50'	110.83'	1276.00'	110.80'	S41°11'20"W
C49	07°17'15"	81.26'	162.30'	1276.00'	162.19'	N52°10'10"E
C50	02°08'21"	43.02'	86.03'	2304.36'	86.03'	S57°44'58"W
C51	37°28'47"	373.18'	719.56'	1100.00'	706.80'	S11°57'31"E
C52	18°02'45"	119.09'	236.21'	749.99'	235.24'	S46°47'08"E
C53	23°48'22"	158.10'	311.63'	750.01'	309.39'	S43°54'19"E
C54	19°29'27"	206.10'	408.21'	1200.00'	406.25'	N48°28'38"E
C55	18°01'15"	49.79'	98.75'	313.95'	98.34'	S42°16'36"E

TANGENT DATA					
ID	BEARING	DISTANCE	ID	BEARING	DISTANCE
T1	S31°01'08"W	145.72'	T19	S48°12'08"W	101.30'
T2	S68°49'08"W	19.96'	T20	S61°00'27"W	105.38'
T3	S14°58'52"E	217.01'	T21	S50°59'03"W	45.21'
T4	N88°02'41"E	180.00'	T22	S36°43'03"W	75.00'
T5	N88°32'39"W	182.00'	T23	S72°05'37"W	50.55'
T6	N04°54'42"E	180.11'	T24	N15°24'55"W	44.98'
T7	N08°56'30"E	255.50'	T25	N36°46'20"W	22.26'
T8	N86°43'03"E	94.03'	T26	N76°50'03"W	160.00'
T9	S76°19'14"W	3.04'	T27	S46°44'27"W	35.00'
T10	N23°21'42"E	111.09'	T28	N38°41'54"E	102.62'
T11	N76°19'14"E	137.26'	T29	N37°45'45"W	72.18'
T12	S02°45'21"E	181.19'	T30	S75°01'08"W	120.80'
T13	S56°43'03"W	79.88'	T31	N66°26'18"W	165.65'
T14	S59°34'57"W	200.06'	T32	N76°19'14"E	23.56'
T15	S51°49'03"W	175.64'	T33	N56°21'31"W	188.79'
T16	S61°17'27"W	125.40'	T34	N56°21'31"W	181.69'
T17	S66°49'03"W	200.00'	T35	N76°19'14"E	113.70'
T18	S70°45'10"W	103.06'	T36	S33°51'58"E	311.54'
			T37	S51°17'13"E	69.41'

LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993"
- FOUND #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- CENTERLINE MONUMENT STAMPED "GROMATZKY PS 16469"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE
- VACATED EASEMENT LINE
- PUE PUBLIC UTILITY EASEMENT GRANTED WITH THE FILING OF THIS PLAT
- HATCHED AREA DESIGNATES RIGHT-OF-WAY TO BE DEDICATED WITH THE FILING OF THIS PLAT
- SHADED AREA DESIGNATES RIGHT-OF-WAY TO BE VACATED WITH THE FILING OF THIS PLAT

ROBERT GROMATZKY
NEW MEXICO
16469
REGISTERED PROFESSIONAL SURVEYOR

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

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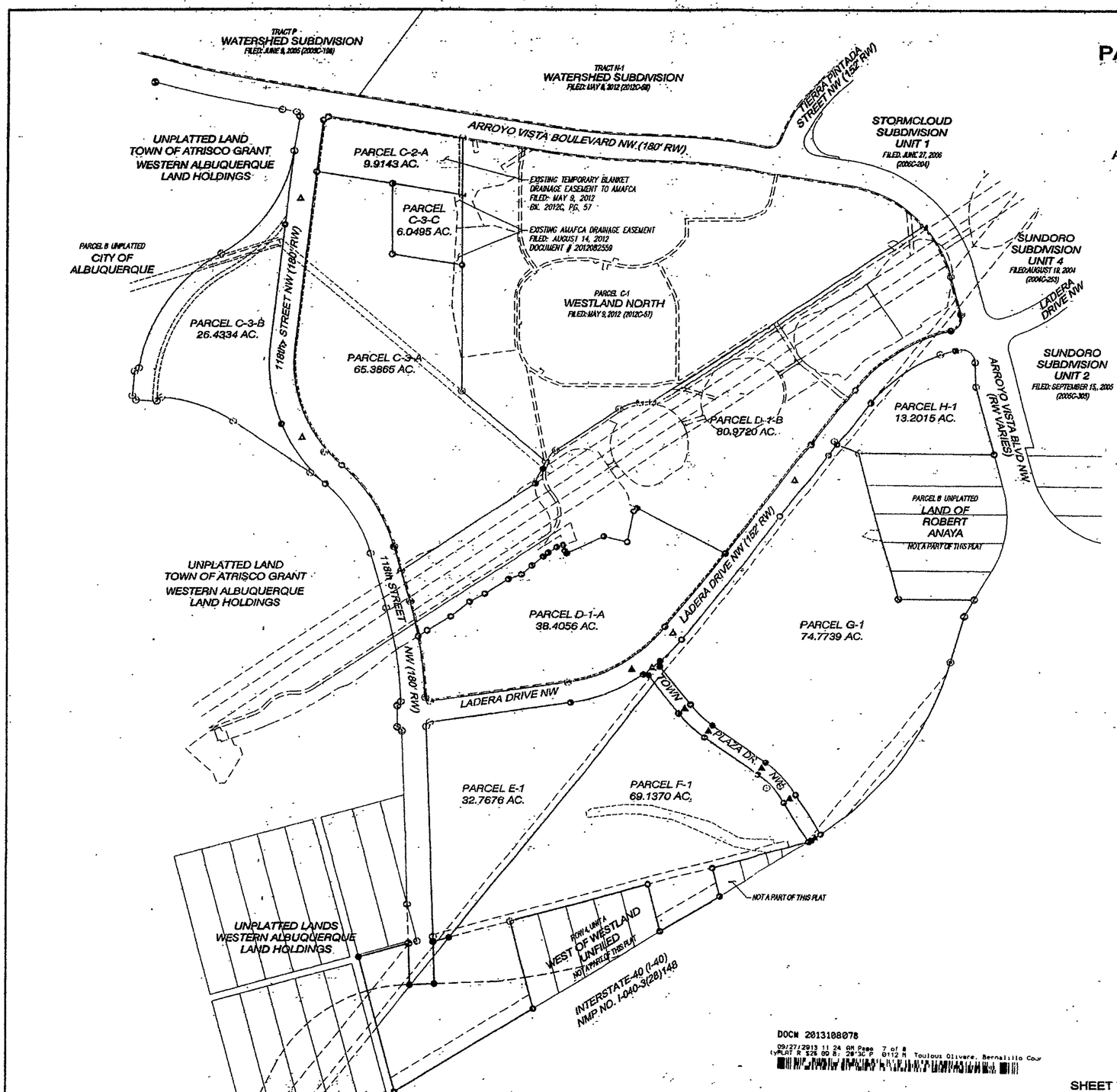
09/27/2013 11:24 AM Page 6 of 8
typLAT R $25.00 B 2013C P 0112 M Toulous Olivere, Bernalillo Cour

JOB NO. 20120318 001 01

PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012



N

500 250 0 500

SCALE: 1" = 500'

LEGEND

- △ CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR AND PLASTIC CAP STAMPED "PS 11093"
- FOUND #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- CENTERLINE MONUMENT STAMPED "GROMATZKY. PS 16469"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE

THIS SHEET SHOWS FINAL PLATTED BOUNDARIES

DOCM 2013108078
09/27/2013 11:24 AM Page 7 of 8
(PLAT R 12A 09 B: 2013C P: 0112 M Toulous Olivere, Bernalillo Cou

ROBERT GROMATZKY NEW MEXICO 16469 PROFESSIONAL SURVEYOR

SHEET 7 OF 8

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

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JOB NO. 20120318 001 01

PLAT OF
PARCELS C-2-A, C-3-A, C-3-B, C-3-C D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-2, C-3, D-1, E, F, G & H, WESTLAND NORTH)

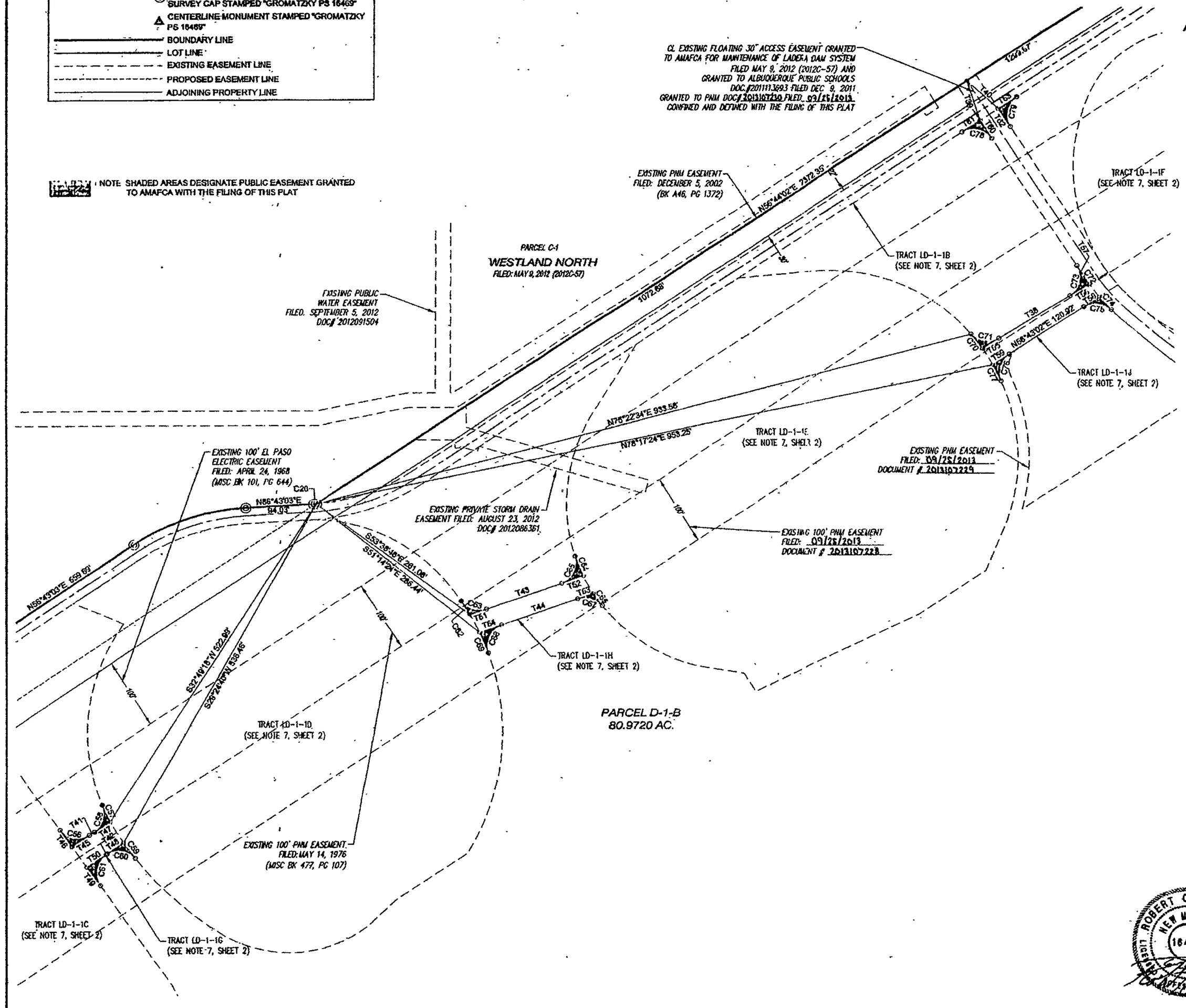
ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
DECEMBER, 2012

LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FOUND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993".
- FOUND #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- CENTERLINE MONUMENT STAMPED "GROMATZKY PS 16469"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE

NOTE: SHADED AREAS DESIGNATE PUBLIC EASEMENT GRANTED TO AMAFCA WITH THE FILING OF THIS PLAT

AMAFCA EASEMENT DETAILS



N

100 50 0 100

SCALE: 1" = 100'

CURVE DATA

ID	DELTA	TANGENT	ARC	RADIUS	CHORD	CHORD BRG
C56	87°15'54"	28.50'	46.09'	30.00'	41.40'	S79°39'00"E
C57	05°45'02"	12.56'	25.09'	250.00'	25.08'	S28°21'58"E
C58	60°12'30"	25.27'	42.00'	80.00'	38.65'	N16°35'40"E
C59	03°16'52"	13.03'	27.26'	476.35'	27.25'	S37°01'02"E
C60	84°37'57"	27.31'	44.31'	30.00'	40.39'	N60°57'59"W
C61	82°44'09"	31.47'	48.56'	30.00'	45.48'	S10°21'01"W
C62	04°02'59"	11.31'	22.82'	320.00'	22.81'	S32°34'06"E
C63	74°31'12"	22.82'	39.02'	30.00'	36.33'	N71°51'11"W
C64	07°24'05"	14.86'	29.71'	230.00'	29.69'	S22°08'58"E
C65	89°20'07"	20.85'	46.75'	30.00'	42.18'	N20°13'10"E
C66	05°15'32"	10.56'	21.11'	230.00'	21.10'	S35°20'45"E
C67	71°02'18"	21.41'	37.20'	30.00'	34.85'	N73°35'38"W
C68	90°58'07"	30.51'	47.63'	30.00'	42.76'	S25°24'10"W
C69	05°28'53"	15.30'	30.58'	320.00'	30.57'	N22°40'10"W
C70	05°35'50"	12.70'	25.98'	260.00'	25.97'	N38°22'27"W
C71	80°40'16"	25.64'	42.82'	30.00'	39.90'	S81°34'53"E
C72	02°46'57"	7.09'	15.98'	328.96'	15.97'	S34°30'26"E
C73	91°10'27"	30.07'	47.79'	30.00'	42.90'	N12°22'16"E
C74	04°18'46"	12.20'	24.57'	328.96'	24.56'	S42°09'06"E
C75	78°50'27"	24.73'	41.36'	30.00'	38.16'	N63°47'16"W
C76	89°09'04"	25.05'	42.59'	30.00'	38.91'	S16°17'35"W
C77	08°35'48"	12.71'	26.98'	260.00'	25.38'	N28°55'45"W
C78	90°00'59"	30.01'	47.15'	30.00'	42.43'	N78°18'27"W
C79	89°58'45"	29.99'	47.11'	30.00'	42.42'	S11°42'26"W

TANGENT DATA

ID	BEARING	DISTANCE
T36	N59°00'29"E	113.40'
T30	S18°18'41"E	58.13'
T40	S48°13'23"E	59.12'
T41	S66°43'03"W	8.21'
T42	S66°43'05"W	1.81'
T43	N70°53'13"E	109.13'
T44	N70°53'13"E	110.57'
T45	S66°43'03"W	28.60'
T46	N30°01'03"W	28.60'
T47	S66°43'03"W	26.54'
T48	N56°43'05"E	26.09'
T49	N36°01'03"W	31.47'
T50	N56°43'05"E	31.47'
T51	N70°53'13"E	28.65'
T52	S70°53'13"W	31.57'
T53	N70°53'13"E	22.44'
T54	N70°53'13"E	31.97'
T55	S56°00'29"W	28.80'
T56	S56°00'29"W	31.06'
T57	S33°19'56"E	14.71'
T58	N56°43'02"E	25.66'
T59	N56°43'02"E	26.81'
T60	S33°19'56"E	30.01'
T61	N56°43'03"E	30.01'
T62	N33°19'56"W	29.99'
T63	N56°43'03"E	29.99'

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09/27/2013 11:24:03 Page: 8 of 8
typLAT R $25.00 B: 2013C P: 0112 M: Toulous Olivere, Bernalillo Cour

ROBERT GROMATZKY NEW MEXICO 16469 LICENSED PROFESSIONAL SURVEYOR

SHEET 8 OF 8

Bohannan Huston
7500 JEFFERSON STREET NE ALBUQUERQUE, NEW MEXICO

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FROM J08 D0000 FOLDER DAM 5+9

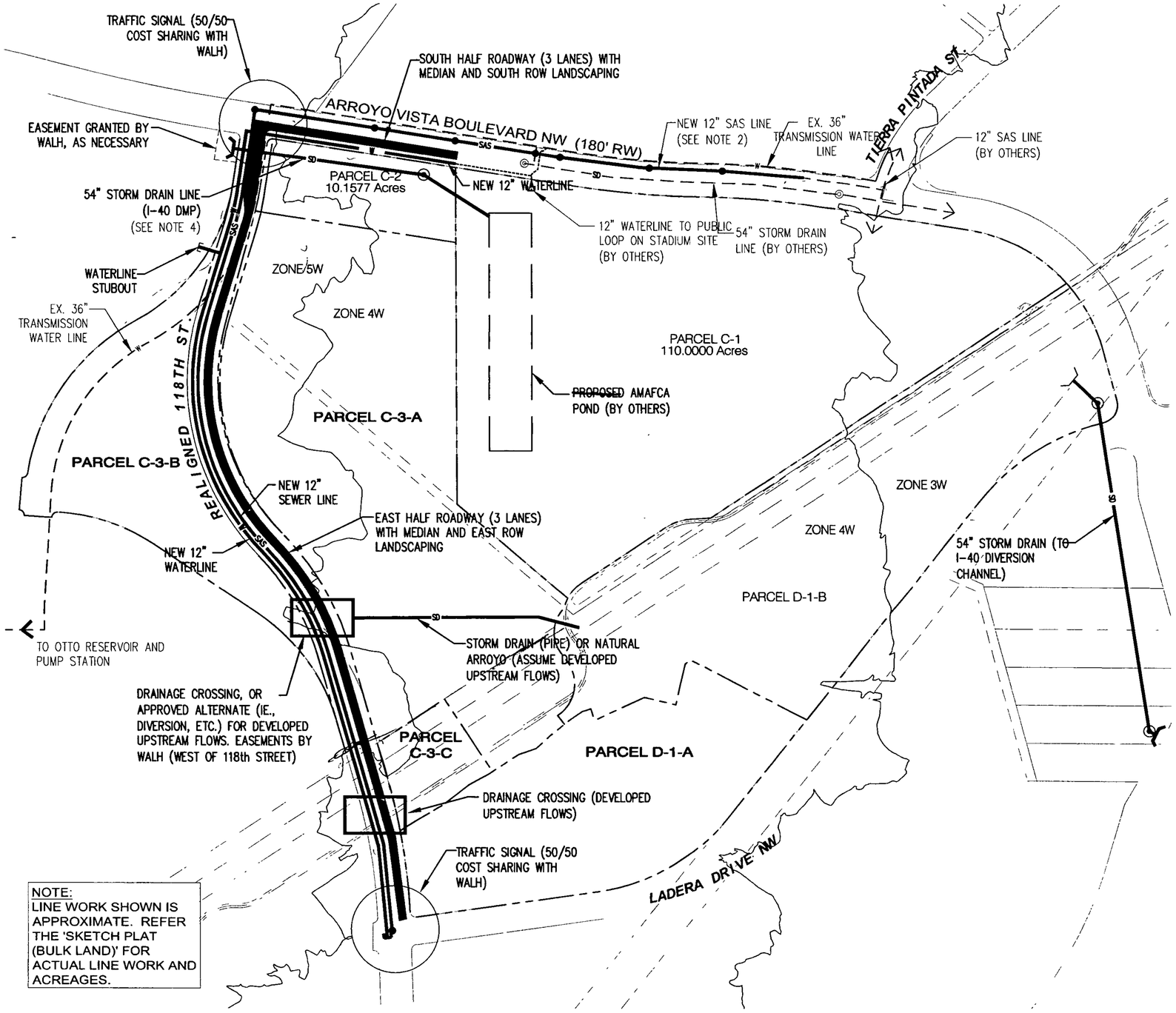
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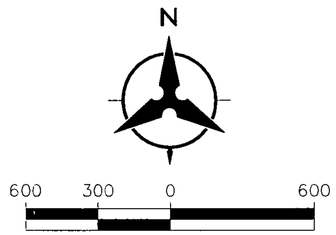
NOT CONSTRUCTED OR GUARANTEED

INFRASTRUCTURE EXHIBIT

PARCELS C-3 & D-1
WESTLAND NORTH

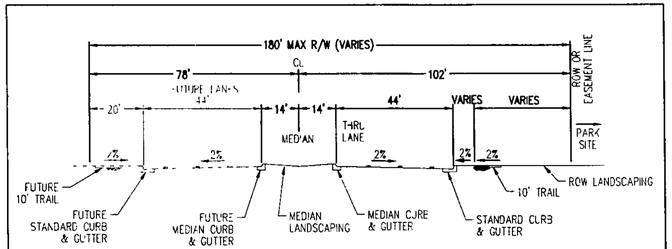
APRIL 23, 2012





NOTES:

1. Water Authority will decide final water and sewer line sizes.
2. Sewer line in Arroyo Vista is required, unless constructed prior by others.
3. "Roadway" assumes and includes all storm drain improvements, as necessary, and in accordance with approved drainage reports.
4. 54" storm drain through 118th Street (at Arroyo Vista) is minimum improvements. Additional storm infrastructure may be required.
5. No offsite traffic mitigation is required from WALH.
6. TIS, drainage reports, archeologist studies by City. Sanitary sewer lines in 118th Street shall comply with ongoing WALH and WUA study.



ARROYO VISTA BLVD & 118th ST.
HALF ROADWAY IMPROVEMENTS
(LOOKING NORTH OR EAST)

NOT TO SCALE

Bohannan Huston

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JOB NO 20110349 003 01

FROM JOB 00000 DAMS 5+9

INFRASTRUCTURE AND DRAINAGE DESIGN FOR MASTER PLAN (SEE EMAIL)

CITY WILL PARTICIPATE IN INFRASTRUCTURE REQUIRED AT DEVELOPMENT ONLY

Bohannan Huston

INVOICE

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

Western Albuquerque Land Holdings
PO Box 56790
Albuquerque, NM. 87187-6791 US

Invoice Number : 85384
Project Number : 20110349
Project Name : ~~APS-WALH-Offsite Infrastr/Studie~~
Invoice Group : **
Invoice Date : 3/5/2014

Attention: Jeff Garrett & Martin Eckert

For Professional Services Rendered through: 2/28/2014

The .01 values reflected on phases 018, 020, 023 ,024, 041, 042 & 044 are placeholders only.

Phase Code / Name	Fee Type	Contract Amount	Percent Complete	Total Fee Earned	Previous Billing	Current Billing
~~001 Subdivision Replats~~	LS	$40,300.00	96.77%	~~$38,998.31~~	$38,998.31	$0.00
~~002 DRB/City Processing~~	CPM	$74,660.00	---	~~$74,655.27~~	$74,655.27	$0.00
Per 01-13-12 Addendum Original Contract $45,000.00 Change Order Increase $29,660.00 New Contract $74,660.00						
~~003 ALTA Surveys~~	LS	$9,675.00	100.00%	~~$9,675.00~~	$9,675.00	$0.00
~~004 Update ALTA Surveys~~	CPM	$11,300.00	---	~~$8,564.98~~	$8,564.98	$0.00
Per 01-13-12 Addendum Original Contract $ 4,000.00 Change Order Increase $ 7,300 00 New Contract $11,300.00						
~~005 Legal Descriptions~~	CPM	$9,150.00	---	~~$9,128.75~~	$9,128.75	$0 00
Per 01-13-12 Addendum Original Contract $ 3,150.00 Change Order Increase $ 6,000.00 New Contract $ 9,150.00						
~~006 Design Survey~~	LS	$11,850.00	100.00%	~~$11,850.00~~	$11,850.00	$0.00
~~007 Stadium/HS/ES Site Topo~~	LS	$22,800.00	100.00%	$22,800.00	$22,800.00	$0.00

POSSIBLE COA PARTICIPATION ONLY IN PLAT & SURVEY EXPENSES @

81.3503 ACRES OF 685 ACRES
11.875%

$18,154.96

Engineering ▲
Spatial Data ▲
Advanced Technologies ▲

Bohannan Huston

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

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voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

Phase Code / Name	Fee Type	Contract Amount	Percent Complete	Total Fee Earned	Previous Billing	Current Billing
Per 01-13-12 Addendum Original Contract $26,800 00 Change Order Decrease ($ 4,000.00) New Contract $22,800.00						
008 Prelim Trip Gen Analysis	LS	$5,000.00	100.00%	$5,000.00	$5,000.00	$0.00
009 Traffic Study Counts	CPM	$8,170.00	---	$8,156.25	$8,156.25	$0.00
010 Traffic Study & Report	LS	$29,200.00	100.00%	$29,200.00	$29,200.00	$0.00
011 TIS Mtgs, Prcsg, & Coord.	CPM	$14,500.00	---	$14,073.94	$14,073.94	$0.00
012 Infra Report Update	LS	$4,500.00	100.00%	$4,500.00	$4,500.00	$0.00
013 Stormwater Master Plan	LS	$67,430.00	100.00%	$67,430.00	$67,430.00	$0.00
Per 01-13-12 Addendum Original Contract $47,000.00 Change Order Increase $20,430.00 New Contract $67,430.00						
014 Dam 5 Arroyo DAR	LS	$35,500.00	100.00%	$35,500.00	$35,500.00	$0.00
015 Dam 5 Design Process	LS	$40,500.00	100.00%	$40,500.00	$40,500.00	$0.00
016 Geotechnical Study.	CPM	$19,800 00	---	$18,740 03	$18,740.03	$0 00
Based on 7/3/12 authoirzation, APS/WALH Fence Staking (fee of $4800 plus tax) will be paid under this 016 phase.						
Per 08-09-13 Addendum Original Contract $40,000.00 Change Order Reduce $20,200.00 New Contract $19,800.00						
017 Dam 5 CLOMR/LOMR (Stadium Site)	LS	$24,850.00	100.00%	$24,850.00	$24,850.00	$0.00
Per 08-09-13 Addendum Original Contract $17,000.00 Change Order Increase $ 7,850.00 New Contract $24,850.00						
018 Dam 4,5,6 Add 1' Freeboard	LS	$0.01	0.00%	$0.00	$0 00	$0.00

Engineering ▲
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Phase Code / Name	Fee Type	Contract Amount	Percent Complete	Total Fee Earned	Previous Billing	Current Billing
Per 01-13-12 Addendum Original Contract $28,600.00 Change Order Decrease (28,600.00) New Contract $ 0 00						
019 Dam 5 404 Permit	LS	$1,500.00	100.00%	$1,500.00	$1,500 00	$0.00
Per 01-13-12 Addendum Original Contract $25,500.00 Change Order Decrease ($24,000.00) New Contract $ 1,500.00						
020 Dam 5 Biological Study	CPM	$4,050.00	---	$4,025 21	$4,025.21	$0 00
Per 01-13-12 Addendum Original Contract $8,000.00 Change Order Decrease ($8,000.00) New Contract $ 0.00						
Per 08-09-13 Addendum Original Contract $ 0.00 Change Order Increase $ 4,050.00 New Contract $ 4,050.00						
021 Dam 9 Diversion CLOMR/LOMR	LS	$29,450.00	100.00%	$29,450.00	$27,977.50	$1,472.50
Per 08-09-13 Addendum Original Contract $17,000.00 Change Order Increase $12,450.00 New Contract $29,450.00						
022 Dam 9 Diversion Design, Process	LS	$23,000.00	100.00%	$23,000.00	$23,000.00	$0.00
023 Dam 9 Diversion 404 Permit, Process	LS	$1,250.00	100.00%	$1,250.00	$1,250.00	$0.00
Per 01-13-12 Addendum Original Contract $25,500.00 Change Order Decrease ($25,000.00) New Contract $						
Per 08-09-13 Addendum Original Contract $ 0.00 Change Order Increase $ 1,250.00 New Contract $ 1,250.00						

Engineering ▲
Spatial Data ▲
Advanced Technologies ▲

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facsimile: 505.798.7988
toll free: 800.877.5332

Phase Code / Name	Fee Type	Contract Amount	Percent Complete	Total Fee Earned	Previous Billing	Current Billing
024 Dam 9 Diversion Biological Study	CPM	$0.01	---	$0.00	$0.00	$0.00
Per 01-13-12 Addendum Original Contract $8,000.00 Change Order Decrease ($8,000.00) New Contract $ 0.00						
025 Mirehaven DAR	LS	$9,500.00	100.00%	$9,500.00	$9,500.00	$0.00
026 Mirehaven Design/Process	LS	$23,500.00	100.00%	$23,500.00	$23,500 00	$0.00
027 Mirehaven 404 w/Processing	LS	$1,700.00	100.00%	$1,700.00	$1,700.00	$0.00
Per 08-09-13 Addendum Original Contract $ 9,300 .00 Change Order Reduce $ 7,600.00 New Contract $ 1,700.00						
028 Mirehaven Geotechnical	LS	$3,500 00	100.00%	$3,500.00	$3,500.00	$0.00
subconsultant Per 08-09-13 Addendum Original Contract $ 7,000 .00 Change Order Reduce $ 3,500.00 New Contract $ 3,500.00						
029 Mirehaven Biological Study	LS	$5,000.00	0.00%	$0.00	$0.00	$0.00
subconsultant						
030 Mirehaven LOMR	LS	$16,775.00	42.28%	$7,093.21	$7,093.21	$0.00
031 Mirehaven Coord w/I&A	LS	$3,000 00	16.81%	$504.26	$504 26	$0.00
032 Stadium Only Infra Design	LS	$269,000.00	100.00%	$269,000.00	$269,000.00	$0.00
Per 08-09-13 Addendum Original Contract $ 266,000.00 Change Order Increase $ 3,000.00 New Contract $ 269,000.00						
033 Stadium Only Plan Phasing	CPM	$15,000.00	---	$14,986 51	$14,986.51	$0 00
034 Stadium Subsurface (Potholing)	LS	$12,000.00	100.00%	$12,000.00	$12,000.00	$0.00
subconsultant						
035 Stadium Only Geotechnical	LS	$6,000.00	100.00%	$6,000.00	$6,000.00	$0.00

Engineering ▲
Spatial Data ▲
Advanced Technologies ▲

Bohannan Huston

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

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

Phase Code / Name subconsultant	Fee Type	Contract Amount	Percent Complete	Total Fee Earned	Previous Billing	Current Billing
Per 08-09-13 Addendum Original Contract $ 17,000 .00 Change Order Reduce $ 11 ,000.00 New Contract $ 6,000.00						
036 Stadium+Schools Design/Processing	LS	$202,000.00	100.00%	$202,000.00	$202,000.00	$0.00
Per 08-09-13 Addendum Original Contract $ 199,000.00 Change Order Increase $ 3,000.00 New Contract $ 202,000.00						
037 Stadium+Schools Phasing	CPM	$11,000.00	---	$10,432.22	$10,432.22	$0.00
038 Signals Design	LS	$32,000.00	100.00%	$32,000.00	$32,000.00	$0.00
039 Ultimate Infra Design	LS	$98,000.00	100.00%	$98,000.00	$98,000.00	$0.00
Per 08-09-13 Addendum Original Contract $94,000.00 Change Order Increase $ 4,000.00 New Contract $ 98,000.00						
040 Ultimate Infra Plan Phasing	CPM	$6,000.00	---	$6,000.00	$6,000.00	$0.00
041 Parcels C/D Site Plans	LS	$0.01	0.00%	$0.00	$0.00	$0.00
Per 01-13-12 Addendum Original Contract $6,000.00 Change Order Decrease ($6,000.00) New Contract $ 0.00						
042 Site Plans Processing	CPM	$0.01	---	$0.00	$0.00	$0.00
Per 01-13-12 Addendum Original Contract $6,000.00 Change Order Decrease ($6,000.00) New Contract $ 0.00						
043 Wtrshed/Inspir Site Plans Update	LS	$260.00	0.00%	$0 00	$0.00	$0.00
Per 01-13-12 Addendum Original Contract $9,000.00 Change Order Decrease ($8,740.00) New Contract $ 260.00						

Engineering ▲
Spatial Data ▲
Advanced Technologies ▲

Bohannan Huston

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87109-4335

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voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

Phase Code / Name	Fee Type	Contract Amount	Percent Complete	Total Fee Earned	Previous Billing	Current Billing
044 Wtrshed/Inspir Processing	LS	$0.01	0.00%	$0.00	$0.00	$0.00
Per 01-13-12 Addendum						
Original Contract $6,000.00						
Change Order Decrease ($6,000.00)						
New Contract $ 0.00						
045 Westland MP Update Scoping	LS	$300.00	100.00%	$300.00	$300.00	$0.00
Per 08-09-13 Addendum						
Original Contract $ 5,000 00						
Change Order Reduce $ 4,700.00						
New Contract $ 300.00						
046 Reimbursables	CPM	$15,000.00	---	$13,960 96	$13,960.96	$0.00
Total :		$1,217,970.05		$1,193,324.90	$1,191,852.40	$1,472 50
				Current Albuq Gross Receipts Tax	7.0000%	$103.08
				Amount Due this Invoice		**$1,575.58**

Terms: Invoices are due and payable upon receipt unless otherwise indicated by contract.

Please notify the BHI Accounting department at (505) 798-7814 or (505) 798-7993
if you have comments or concerns regarding this invoice.

38,998.31 +
74,655.27 +
9,675.00 +
8,564.98 +
9,128.75 +
11,850.00 +
0.00 +
007
152,872.31 *

Engineering ▲
Spatial Data ▲
Advanced Technologies ▲

Council cat Am 3 → 4/30

Cherne, Curtis

From: Webb, Andrew
Sent: Tuesday, November 12, 2013 9:38 AM
To: ~~Cloud, Jack W.~~; Cherne, Curtis; Sandoval, Christina M.; Metro, Kristal D.; Zaman, Jon K.; Gutierrez, Lisa; ~~Curran, Kevin J.~~; Baca, Barbara C.; ~~Montano, Gilbert A.~~; ~~Romero, Elaine~~ T.
Subject: Info for Thursday's regional park meeting
Attachments: WAHL Land Use Map.pdf

at meeting

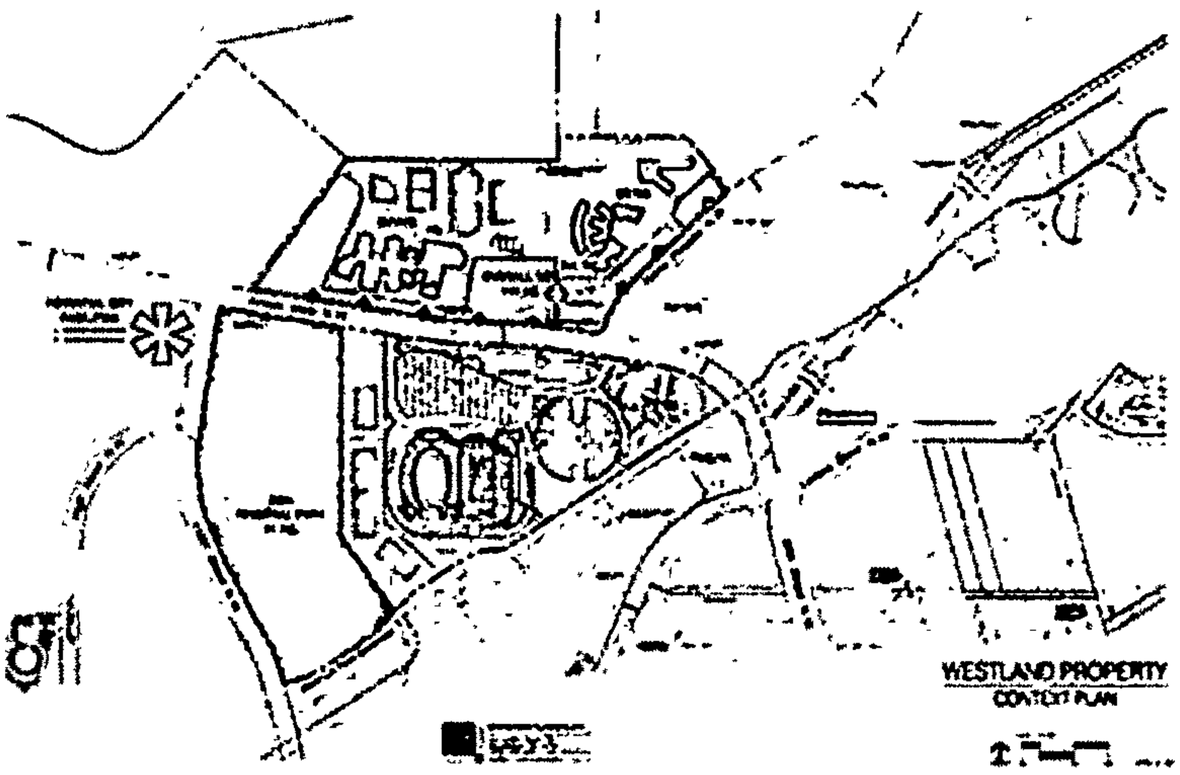
Good morning, everyone – hope you had a nice long weekend!

I'm e-mailing to provide more explanation and a couple of documents relevant to our scheduled meeting on Thursday regarding a proposed regional park west of the new APS Community Stadium in the Westland area. As you may be aware, the City is considering the purchase of up to 81 acres west of the new stadium for use as soccer fields, etc. The property in question is the chevron-shaped parcel in green in the diagram below.

In order to zero in on an offer for the property, we would like to get an idea of what DRB would require in terms of infrastructure to serve the site, including drainage, roads, etc. It is my understanding that DRB staff has a drainage study done for the area as part of the Community Stadium project. With regard to existing infrastructure, 118th Street (which would abut the western edge) has not been constructed. Arroyo Vista is built to the western edge of APS' property.

I'm attaching a pdf land use map that shows general plans for the area. The master plan document, which contains soil, slope and other analysis and maps, is available here:
http://www.cabq.gov/planning/documents/WestlandMasterPlanAmended2012.pdf

Feel free to give me a call or e-mail if you have any questions or would like more detailed maps. See you Thursday.



1 Annexed Lo widening Ladera Dam 1 improvements?

2 Are you sure south across the arroyo?

3 54" SD in Arroyo Vista Blvd

4 Drainage report downstream on 118th St

5 Ladera

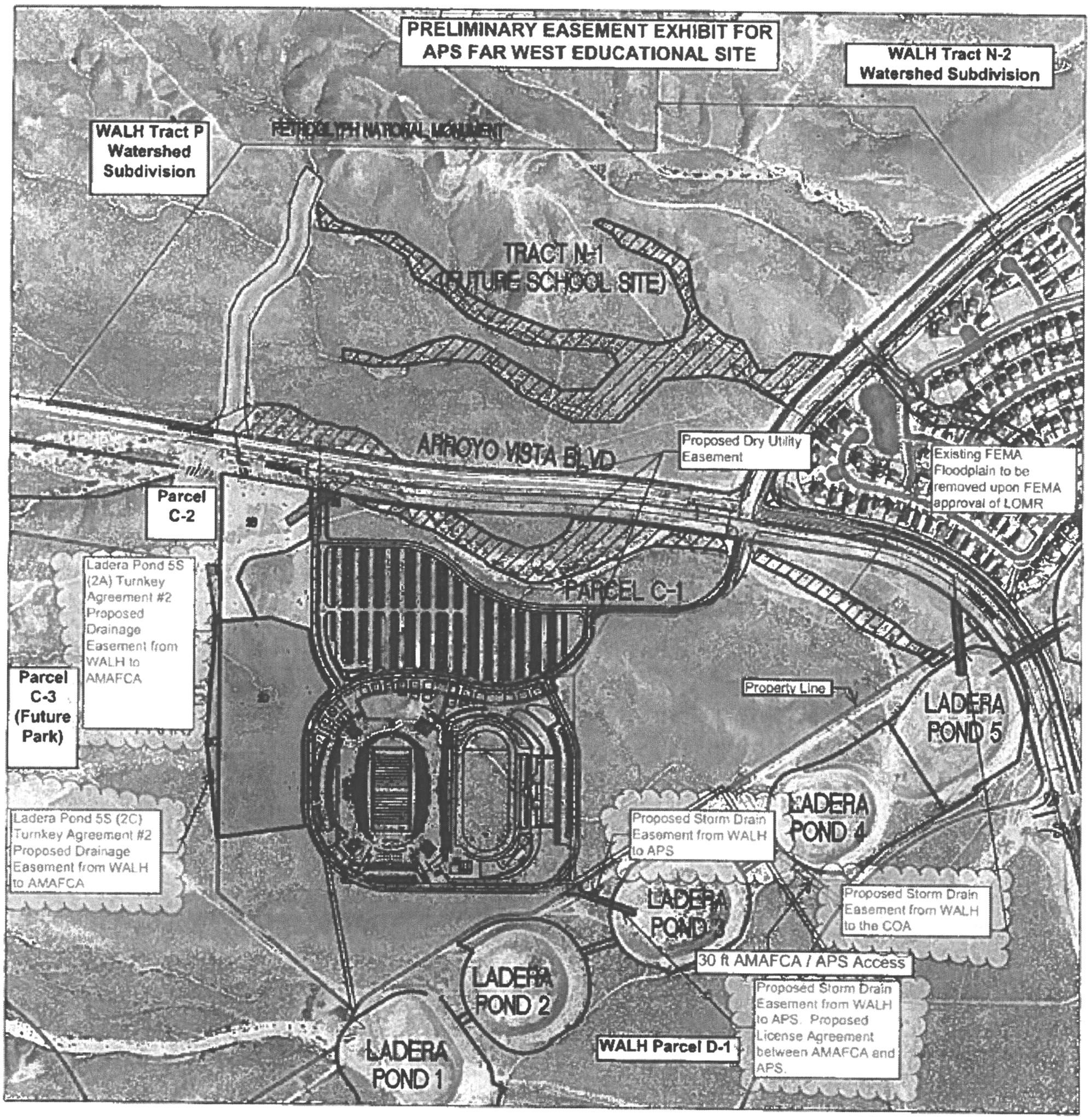
Thanks,
Andrew

Andrew Webb
Policy Analyst/Planning
Albuquerque City Council
505-768-3161

westfield Division ~~Rent~~ westerplan


LADERA

Exhibit A


PRELIMINARY EASEMENT EXHIBIT FOR
APS FAR WEST EDUCATIONAL SITE
WALH Tract N-2
Watershed Subdivision
WALH Tract P
Watershed
Subdivision
PETROGLYPH NATIONAL MONUMENT
TRACT N-1
(FUTURE SCHOOL SITE)
ARROYO VISTA BLVD
Proposed Dry Utility
Easement
Existing FEMA
Floodplain to be
removed upon FEMA
approval of LOMR
Parcel
C-2
Ladera Pond 5S
(2A) Turnkey
Agreement #2
Proposed
Drainage
Easement from
WALH to
AMAFCA
PARCEL C-1
Parcel
C-3
(Future
Park)
Property Line
LADERA
POND 5
Ladera Pond 5S (2C)
Turnkey Agreement #2
Proposed Drainage
Easement from WALH
to AMAFCA
Proposed Storm Drain
Easement from WALH
to APS
LADERA
POND 4
Proposed Storm Drain
Easement from WALH
to the COA
LADERA
POND 3
30 ft AMAFCA / APS Access
LADERA
POND 2
Proposed Storm Drain
Easement from WALH
to APS. Proposed
License Agreement
between AMAFCA and
APS.
LADERA
POND 1
WALH Parcel D-1

Tim Eichenberg, Chairman
Danny Hernandez, Vice Chairman
Bruce M. Thomson, Secretary-Treasurer
Ronald D. Brown, Assistant Secretary-Treasurer
Daniel F Lyon, Director

Jerry M. Lovato, P.E.
Executive Engineer

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority
2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214
Website: www.amafca.org

November 6, 2013

Mr. Winston Brooks, Superintendent
Albuquerque Public Schools
c/o Facilities Design and Construction
915 Oak Street
Albuquerque, NM 87106

Re: Maintenance Acceptance for Ladera Dam Ponding and Diversion Facilities
To Serve APS Westside Stadium, AMAFCA Agreements 2012-16 and 2012-17

Dear Mr. Brooks:

AMAFCA staff inspected Ladera Dam 5S and Ladera Dam 9 Diversion at the recently completed APS Community Stadium and found the work to be satisfactory. The construction of the drainage facilities was completed under "Arroyo Vista Phase 1/APS Recreational Site/APS Westside Sports Complex Public Infrastructure," City Project No. 650274, and Turnkey Agreements between APS and AMAFCA, dated May 15, 2012.

As related to the AMAFCA work, we also received:

- Construction as-builts and engineer's certification
- Field inspection and testing reports
- Grant of Drainage Easements
- Cost accounting of work

The terms of the Agreements have been met, and AMAFCA hereby agrees to accept maintenance of the improvements, specifically as follows:

Lower Pond 5S

1. The riprap intake along the south side of Arroyo Vista Boulevard and grouted boulder rundown.
2. The dam pool inner and outer slopes and maintenance road.
3. The ported riser and the concrete spillway.
4. Trash and debris clean-up.

Upper Pond 5S

1. Structural maintenance of the inner dam pool and maintenance road, including erosions.
2. The grouted boulder rundown on the west embankment.
3. The three 24-inch culverts through the west embankment.

Dam 9 Diversion

1. The entire facility within the easement limits. AMAFCA may do minor grading outside the easement to protect the integrity of the facility.
2. The 54-inch and 66-inch storm drain and manhole between Dam 9 Diversion and Lower Pond 5S.
3. Trash and debris clean-up.

Excluded from AMAFCA maintenance and repairs are the following:

Lower Pond 5S

1. AMAFCA has noted three tree wells and irrigation in the emergency spillway on the as-built plans. If the spillway experiences damage due to vegetation or irrigation, APS will be responsible for repairs at its sole cost. Plans for the repairs must be approved by AMAFCA prior to start of repair work.
2. The 54-inch outlet pipe from the ported riser.

Upper Pond 5S

1. Any aesthetic enhancements to the dam pool and trash and debris clean-up.
2. The graded swale and berm entering the dam pool from the south at the grouted boulder rundown.
3. The outer dam pool embankments, including vegetation and erosions.

The one-year warranty period for the work begins from the date of this letter. If you have any questions, please call me or Lynn Mazur, Development Review Engineer, at (505) 884-2215.

Sincerely,
AMAFCA

Jerry M. Lovato, P.E.
Executive Engineer

C: Kurt Wagener, AMAFCA
Tyler Mason, APS
Curtis Cherne, City of Albuquerque
Matthew Santistevan, BHI

WESTERN ALBUQUERQUE LAND HOLDINGS LLC
POST OFFICE BOX 56790
ALBUQUERQUE, NEW MEXICO 87187

April 8, 2012

Mr. Richard Dourte, P.E., CFM
City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Western Albuquerque Land Holdings LLC & APS Easements
Required for Construction Drawing Approval

Dear Mr. Dourte:

It is my understanding that (1) the civil engineering construction plans ("Plans") for the infrastructure improvements required for the Albuquerque Public Schools' ("APS") Westside Educational and Recreational Complex ("Project") are ready for final approval and signature, (2) the City of Albuquerque ("City") has requested that Western Albuquerque Land Holdings LLC ("WALH") submit a letter to the City promising to grant the five easements further detailed, bubbled and highlighted in the attached Exhibit A ("Easements") required for the Project and (3) the City, including the City Parks Department, have reviewed and approved of WALH granting the Easements. Based on the above understandings, WALH, at no cost to WALH, hereby agrees to grant the Easements, in a form acceptable to WALH, to AMAFCA and APS required for the Project. If the City is in agreement with the understandings detailed within this letter, please proceed with executing the Plans for the Project.

Sincerely,

Western Albuquerque Land Holdings LLC, a Delaware limited liability company

By: Barclays Capital Real Estate Inc., as Servicing Member
By: _____
Mark Wuest, Authorized Signatory

Address: Western Albuquerque Land Holdings LLC
C/O Garrett Development Corporation
3131 Camelback Road, Suite 200
Phoenix, Arizona 85016
Phone:480-236-5059
Email: jeff@gdc-az.com

January 20, 2012

Draft

Craig W. Hoover, P.E.
Bohannan Huston, Inc.
7500 Jefferson St NE
Albuquerque, NM 87109

Re: Ladera Dam 5 and Dam 9 Arroyos: APS Projects DMP
Engineer's Stamp dated-no stamp- December 2011 (J08/D000)

Dear Mr. Hoover,

Based upon the information provided in your submittal received 12-27-11, the above referenced report DMP cannot be approved for Grading Permit until the following comments are addressed:

- Table 2 on p.3 lists 82% impervious for Basin UD.4D, whereas, Exhibit 2 does not show any development in this basin.
- Pond 5S is to drain in 24 hours if the 24 hour storm is to be used for design. Refer to Paragraph 8, p. 22-170 of the DPM.
- BHI should design the protection for the stadium, not rely on the contractor. How will the contractor know what to build? How will Hydrology be able to give a Certificate of Occupancy (CO) for the building without a design protecting the facility?
- The lower chamber of Pond 5S will contain more frequent runoff events? What frequency?
- It appears pond 5S spillway will be built with the Work Order rather than with the Grading Plan? The spillway will need to be built prior to CO of the facility.
- Why does this plan ask for Grading Permit when it appears the grading will be done by Work Order in an AMAFCA easement?
- On Exhibit 2, why are developed flows less than interim flows?
- The report mentions a 54" pipe as the principal spillway, while Exhibit 3 shows a 48" and there is no build note on it is not shown on the and the PNP sheets provided. Since this is not a dam, it may be more appropriate to change the name of the principal spillway to the pond outlet.
- Please explain why the storm drain in Tierra Pintada is not close to the centerline of the street.

Sincerely,

Curtis A. Cherne, P.E.
Principal Engineer, Planning Dept.

Development and Building Services

C: choover@bhinc.com

Bohannan Huston

Engineering
Spatial Data
Advanced Technologies

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335
www.bhinc.com
voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

CLIENT/COURIER TRANSMITTAL

To: Curtis A. Cherne, P.E.
City Hydrologist, Section Manager
City of Albuqerque
P.O. Box 1293
Albuquerque, NM 87103

Requested by: Craig / srd

Date: March 8, 2012

Time Due:
- ☐ This A.M.
- ☒ This P.M.
- ☐ Rush _____
- ☐ By Tomorrow

Phone: (505) 924-3986
Job No.: 20110349.014.01 WRABQ

Job Name: APS-WALH Offsite Infrastr/Studies

DELIVERY VIA

- ☒ Courier ☐ Federal Express
- ☐ Mail ☐ UPS
- ☐ Other

PICK UP

Item: ____

ITEM NO.	QUANTITY	DESCRIPTION
1	1	Cover Letter
2	1	Ladera Dam 5 and Dam 9 Arroyos: APS Projects Final Design Analysis Report
3	1	Drainage & Transportation Information Sheet

COMMENTS / INSTRUCTIONS

RECEIVED
MAR 08 2012
HYDROLOGY SECTION

REC'D BY:_____ **DATE:**_____ **TIME:**_____

Bohannan Huston

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

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

March 8, 2012

Curtis A. Cherne, P.E.,
Principal Engineer, Planning Dept.
Development and Building Services
PO Box 1292
Albuquerque, NM 87103

Re: Response to City of Albuquerque Hydrology Department comments for the Ladera Dam 5 and Ladera Dam 9 Arroyos: APS Projects DMP.

Dear Mr Cherne:

In December 2011, Bohannan Huston, Inc. (BHI) submitted a Design Analysis Report (DAR) to your office for the Ladera Dam 5 and Dam 9 Arroyos: APS Projects. We have received City Hydrology review comments authored by Curtis A. Cherne, P.E. dated January 20, 2012. This letter and revised DAR serves as a Response those comments and also transmits additional information to supplement the original DAR. We greatly appreciate your expedited review of this DAR. In response to your comments we offer the following responses:

- Comment: Hydrology would prefer plan-size exhibits that show basins, flows, proposed and existing infrastructure, platted and future streets, storm drain capacity, storm drain flows, as well as pond/dam information. NO ~~OK~~ did not address as requested
  Response: Plan-size exhibits have been provided. See Exhibits 1-13.

- Comment: How long does it take Pond 5S to drain?
  Response: At 60 hours Pond 5S will have an outflow of less than 1 cfs. ~24 hr storm

- Comment: Please explain what is expected for water quality inlets.
  Response: The ported riser is the only water quality inlet designed for the storm drain system. OK

- Comment: The West I-40 DMP shows Pond 5S as 49 ac-ft, whereas this report shows it as 30 ac-ft.
  Response: Figure 8A from the West I-40 DMP Update 2011 had a typo for the size of Pond 5S. The finalized West I-40 DMP shows Pond 5S as being 30 ac-ft in size. OK

- Comment: Provide the WSEL on the exhibit showing Pond 5S.
  Response: Water surface elevation is given on Exhibit 4. The calculated 100-year WSEL for Pond 5S is 5447.3'. ?

- Comment: Provide a short narrative for the Stormcloud subdivision including the capacity of the storm drain that the 36" proposed storm drain ties into.
  Response: Added a reference to the "Design Analysis Report: Arroyo Vista Blvd. & Tierra Pintada Blvd". This design analysis report has analysis of the Stormcloud Diversion along with analysis of the capacity of structure 'S-1'. NO did not provide capacity.

- Comment: Is Pond 5S required to protect the APS Stadium? If so, should it be built before the building?

Engineering ▲

Spatial Data ▲

Advanced Technologies ▲

Response: Pond 5S primarily serves to detain and attenuate flow in the Ladera Dam 5 Arroyo that currently is located north of the Stadium. There is however a portion of Basin UD.2 that could potentially impact the Stadium and the contractor will need to protect the site from runoff from this basin as part of their construction activities. The Upper Pond portion of Pond 5S will ultimately serve this purpose but is not essential to the construction of the Stadium provided the contractor provides other interim protection during construction. BHI's construction plans for the Stadium include this requirement for the contractor.

NO BHI CO?

req'd by CO

- Comment: Show the flood plains.
  Response: Flood plains have been added to Exhibits 1 and 2.

ok

- Comment: Show Arroyo Vista Blvd in plan and profile where the 54" storm drain crosses it.
  Response: Exhibit 13, added, shows plan and profile information for the 54" storm drain where it crosses Arroyo Vista Blvd. ok

- Comment: Provide calculations for the ported riser in Pond 5S.
  Response: Provided calculations for the ported riser in Pond 5S. These calculations can be found in Appendix B. ok

- Comment: A grading plan is required to obtain a Grading Permit.
  Response: A grading plan for Pond 5S has been developed as part of the design phase and is included as Exhibit 3. ask AMAFCA

- Comment: Hydrology is storing files electronically now. It would be helpful to put the AHYMO output on a CD in PDF format.
  Response: Provided a CD containing the AHYMO output files in PDF format. The CD can be found in Appendix D. ok

- Comment: A CLOMR/LOMR will be required.
  Response: A CLOMR for the Dam 5 and Dam 9 Arroyos has been prepared based on the proposed improvements. The CLOMR is being submitted to the City under a separate cover. A LOMR will be prepared and will be submitted to FEMA for approval once the project is constructed.

Concurrently, we have also addressed AMAFCA's comments on the DAR and are submitting the Final DAR to both the City and AMAFCA for approval. If you have any questions or concerns, please do not hesitate to contact me at 505-798-7835.

Sincerely,

Craig W. Hoover, P.E.
Senior Vice President
Water Resources Group

CWH/srd

Enclosures

INFRASTRUCTURE EXHIBIT

PARCELS C-3 & D-1
WESTLAND NORTH

APRIL 23, 2012

TRAFFIC SIGNAL (50/50 COST SHARING WITH WALH)

SOUTH HALF ROADWAY (3 LANES) WITH MEDIAN AND SOUTH ROW LANDSCAPING

ARROYO VISTA BOULEVARD NW (180' RW)

NEW 12" SAS LINE (SEE NOTE 2)

EX 36" TRANSMISSION WATER LINE

TIERRA PINTADA ST.

12" SAS LINE (BY OTHERS)

EASEMENT GRANTED BY WALH, AS NECESSARY

54" STORM DRAIN LINE (I-40 DMP) (SEE NOTE 4)

PARCEL C-2 10.1577 Acres

NEW 12" WATERLINE

12" WATERLINE TO PUBLIC LOOP ON STADIUM SITE (BY OTHERS)

54" STORM DRAIN LINE (BY OTHERS)

WATERLINE STUBOUT

ZONE 5W

ZONE 4W

EX. 36" TRANSMISSION WATER LINE

PARCEL C-1 110.0000 Acres

REALIGNED 118TH ST.

~~PROPOSED~~ AMAFCA POND (BY OTHERS)

PARCEL C-3-A

PARCEL C-3-B

NEW 12" SEWER LINE

EAST HALF ROADWAY (3 LANES) WITH MEDIAN AND EAST ROW LANDSCAPING

ZONE 3W

ZONE 4W

54" STORM DRAIN (TO I-40 DIVERSION CHANNEL)

NEW 12" WATERLINE

PARCEL D-1-B

TO OTTO RESERVOIR AND PUMP STATION

STORM DRAIN (PIPE) OR NATURAL ARROYO (ASSUME DEVELOPED UPSTREAM FLOWS)

DRAINAGE CROSSING, OR APPROVED ALTERNATE (IE., DIVERSION, ETC.) FOR DEVELOPED UPSTREAM FLOWS. EASEMENTS BY WALH (WEST OF 118th STREET)

PARCEL C-3-C

PARCEL D-1-A

DRAINAGE CROSSING (DEVELOPED UPSTREAM FLOWS)

TRAFFIC SIGNAL (50/50 COST SHARING WITH WALH)

LADERA DRIVE NW

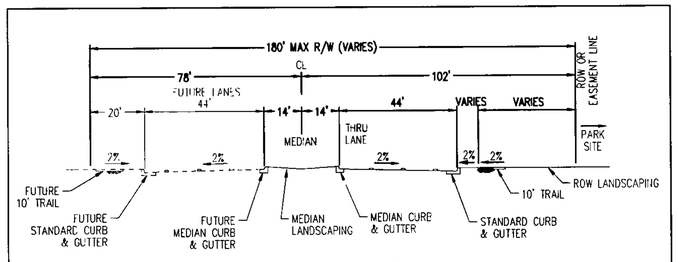
NOTE:
LINE WORK SHOWN IS APPROXIMATE. REFER THE 'SKETCH PLAT (BULK LAND)' FOR ACTUAL LINE WORK AND ACREAGES.

N

600 300 0 600

NOTES:

1. Water Authority will decide final water and sewer line sizes.
2. Sewer line in Arroyo Vista is required, unless constructed prior by others.
3. "Roadway" assumes and includes all storm drain improvements, as necessary, and in accordance with approved drainage reports.
4. 54" storm drain through 118th Street (at Arroyo Vista) is minimum improvements. Additional storm infrastructure may be required.
5. No offsite traffic mitigation is required from WALH.
6. TIS, drainage reports, archeologist studies by City. Sanitary sewer lines in 118th Street shall comply with ongoing WALH and WUA study.



ARROYO VISTA BLVD & 118th ST.
HALF ROADWAY IMPROVEMENTS
(LOOKING NORTH OR EAST)

NOT TO SCALE

Bohannan Huston

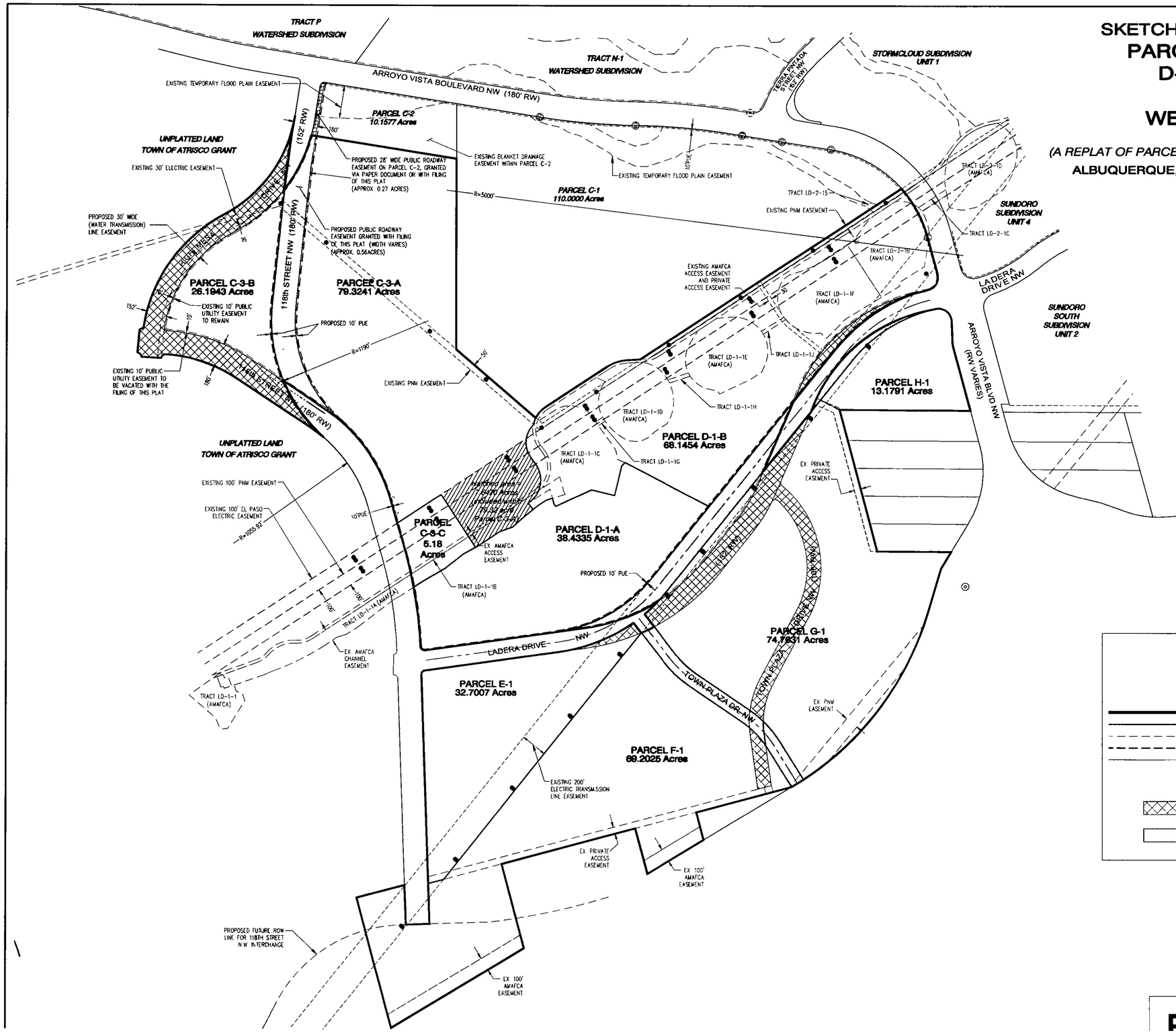
P \20120318\CDP\Exhibits\Infrastructure Exhibits\INFRASTRUCTURE-EXHIBIT2012-04-05.dwg

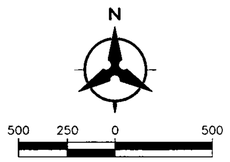
JOB NO 20110349 003 01

SKETCH PLAT (BULK LAND) OF PARCELS C-3-A, C-3-B, D-1-A, D-1-B, E-1, F-1, G-1 & H-1 WESTLAND NORTH

(A REPLAT OF PARCELS C-3, D-1, E, F, G & H WESTLAND NORTH)

ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
APRIL 23, 2012





ROADWAY	VACATED ROW (AC)	GRANTED ROW (AC)
HIGH MESA DR	5.84	0
118TH STREET	5.54	7.47
LADERA DR.	7.79	7.59
TOWN PLAZA DR.	5.57	3.64
GUNNISON PL		0.86
TOTAL*	**24.74**	**19.56**

* DIFFERENCE = (-5.18 ACRES)

LEGEND

- CITY OF ALBUQUERQUE CONTROL MONUMENT
- SET #5 REBAR WITH YELLOW PLASTIC SURVEY CAP STAMPED "GROMATZKY PS 16469"
- FND #5 REBAR AND PLASTIC CAP STAMPED "PS 11993"
- BOUNDARY LINE
- LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- ADJOINING PROPERTY LINE
- PUE — PUBLIC UTILITY EASEMENT GRANTED WITH THE FILING OF THIS PLAT
- EXISTING RIGHT OF WAY TO BE VACATED
- NEW ROW GRANTED TO THE CITY OF ABQ

Bohannan Huston

Bohannan Huston

Engineering
Spatial Data
Advanced Technologies

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335
www.bhinc.com
voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

CLIENT/COURIER TRANSMITTAL

To: Curtis Cherne, PE
COA-PDS

Requested by: Brian Patterson

Date: 2-3-12

Time Due:
- ☐ This A.M.
- ☐ This P.M.
- ☐ Rush _____
- ☐ By Tomorrow

Phone:

Job No.: 20110349

Job Name: APS Stadium

DELIVERY VIA

- ☒ Courier ☐ Federal Express
- ☐ Mail ☐ UPS
- ☐ Other

PICK UP

Item: _____

ITEM NO.	QUANTITY	DESCRIPTION
1	1	Drainage Analyis Report
2	1	Drainage Info Sheet

COMMENTS / INSTRUCTIONS

Curtis,
Attached is the DAR for Arroyo Vista Blvd and Tierra Pintada Blvd which is an amendment to the DAR for Basalt View St., Ladera Blvd and Prieta Vista Blvd.

Thanks,
Brian

RECEIVED
FEB 03 2012
HYDROLOGY SECTION

REC'D BY:_____ **DATE:**_____ **TIME:**_____