CITY OF ALBUQUERQUE

Timothy M. Keller, Mayor

May 16, 2018

Jonathan Niski, P.E.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM, 87109

RE: Primrose School
Grading Plan
Engineer's Stamp Date: 05/04/18
Hydrology File: C13D029

Based upon the information provided in your resubmittal received 05/04/2018, the Grading Plan **is not** approved for Building Permit and Grading Permit. The following comments need to be addressed for approval of the above referenced project:

1. Please provide an approval by AMAFCA. An email will be ok. This is needed prior to Hydrology approval.

2. You had referenced the AMAFCA Detention Pond AHYMO calculations in your submittal. However, these calculations were specifically for the design of the AMAFCA detention pond. You must provide your own hydrology calculation for the watershed that contributes to the flow within Paradise Blvd. Please include a drainage map showing this watershed along with AHYMO calculations.

3. According to "Addendum No. 1 to the Final Design Report for Proposed AMAFCA Detention Pond (Tract 2-B)" dated April 2009, this referenced project was in Basin 305B. It also states, "The City Hydrologist said that the developer of the vacant tract south of Paradise will be responsible for construction a concrete curb and inlet."

   The previously approved drainage channel on Paradise Blvd never provided the calculations as outlined above and it appears that it did not have the drainage capacity needed. The current design calculations provided have the wrong Manning's value. In Table 22.3 B-1 in the DPM, riprap has a value of 0.045. Your calculations used 0.022. After to actual flow is determined in #2 above, the

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Albuquerque

NM 87103

www.cabq.gov

Orig: Drainage File

ditch and culvert capacity can be reassessed. For the culvert design please use a nomograph per NMDOT standards. Culvert design is not in the DPM.

Based on the lack of drainage capacity in the proposed channel design, the recommendation of the AMAFCA report, and the design criteria outlined in the DPM, it is recommended to change the design to inlets and storm pipe system that discharges into the Movie Pond. The AHYMO and inlet capacity calculations should support this recommended design. Also the Infrastructure List may need to be updated and approved by the DRB.

Grading Plan

1. Please add the thickness and size of the riprap in the private cobble swale detail.

2. Please provide a detail of the 10' wide 6" deep weir at the LID pond outfall. Also please provide weir calculations for this 10' weir.

3. I noticed you have a curb and gutter transition for Transportation on Paradise Blvd. However the drainage from the church and drainage swale adjacent to the roadway has not been addressed with this proposed curb and gutter. The drainage will pond in front of the PNM transformer. This needs to be addressed somehow on the Grading Plan.

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If the proposed channel is to be riprap lined, then the channel and culvert will be privately maintained and therefore need a Agreement and Covenant. If the channel is to be concrete lined and maintained by the City, then it must follow City standards.

Please provide a Private Facility Drainage Covenant per Chapter 17 of the DPM for LID pond prior to Certificate of Occupancy. Please submit this on the 4th floor of Plaza de Sol. A $25 fee will be required.

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

Sincerely,

Renée C Brissette

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

Orig: Drainage File

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 10/2015)

Project Title: Primrose School Building Permit #: _____ Hydrology File #: _____

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: Tract A-1 of Tract A, Unit 2, Albuquerque West

City Address: 4550 Paradise Blvd. NW Albuquerque NM 87114

Applicant: Tierra West, LLC Contact: Jonathan Niski

Address: 5571 Midway Park Place NE Albuquerque NM 87109

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: jniski@tierrawestllc.com

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

___ TRAFFIC/ TRANSPORTATION

___ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

___ ENGINEER/ARCHITECT CERTIFICATION

___ CONCEPTUAL G & D PLAN

X GRADING PLAN

___ DRAINAGE MASTER PLAN

X DRAINAGE REPORT

___ CLOMR/LOMR

___ TRAFFIC CIRCULATION LAYOUT (TCL)

___ TRAFFIC IMPACT STUDY (TIS)

___ EROSION & SEDIMENT CONTROL PLAN (ESC)

___ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: X Yes ___ No

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY

___ PRELIMINARY PLAT APPROVAL

___ SITE PLAN FOR SUB'D APPROVAL

___ SITE PLAN FOR BLDG. PERMIT APPROVAL

___ FINAL PLAT APPROVAL

___ SIA/ RELEASE OF FINANCIAL GUARANTEE

___ FOUNDATION PERMIT APPROVAL

X GRADING PERMIT APPROVAL

___ SO-19 APPROVAL

___ PAVING PERMIT APPROVAL

___ GRADING/ PAD CERTIFICATION

___ WORK ORDER APPROVAL

___ CLOMR/LOMR

___ **PRE-DESIGN MEETING?**

___ OTHER (SPECIFY) _____

DATE SUBMITTED: 5-4-18 By: Jonathan Niski

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

TIERRA WEST, LLC

5571 Midway Park Pl. NE Albuquerque, NM 87109
(505) 858-3100 fax (505) 858-1118 1-800-245-3102
tierrawestllc.com

May 3. 2018

Renee C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department
P.O. Box 1293
Albuquerque, NM 87109

RE: PRIMROSE SCHOOL
GRADING PLAN
HYDROLOGY FILE: C13D029

Dear Ms. Brissette:

Please find the following responses addressing your comments listed below:

1. Please provide an engineer's stamp with a signature and date.
   All of the plans are now stamped, signed and dated.

2. Please provide a drainage report that supports the proposed design with street capacity and all supporting drainage calculations. This report should reflect my comments instead of a regurgitated report from the previous design.
   A drainage report is enclosed addressing your comments.

3. Since the site drains into an AMAFCA facility, approval by AMAFCA will be needed prior to Hydrology approval. Please contact Nicole Friedt, PE at (505) 884-2215 or nfriedt@amafca.org.
   This drainage report and plan was sent to AMAFCA for review.

4. Proposed drainage swale within Paseo Del Norte Right-of Way requires an approval from New Mexico Department of Transportation prior to the City's approval.
   No work within the NMDOT right of way will be completed without a permit. A copy of this drainage report was submitted to District 3 for review.

5. Please add a note, "Prior to any work within Paseo Del Norte Right-of Way, a New Mexico Department of Transportation (NMDOT) permit will be required."
   This note was added to the Grading Plan.

6. Please check the angle of repose for the proposed retaining wall with respect to the adjacent property. Per DPM Ch. 22.5.B, grading and construction of retaining walls at or near the property line must demonstrate that the adjacent property is not damaged or its use constrained. Any such encroachment by the wall or grading must be accompanied by written permission of both landowners.

7. Please show existing top of curb information along Paseo Del Norte at least at 50 feet apart. **The top of curb elevations were added to the Grading Plan.**

8. Please show the existing drop inlet drainage information within Paseo Del Norte. **The grate elevation for this inlet is now shown on the plan.**

9. Please provide proposed elevations at both edges of the 10ft asphalt trail, top of bank, flow line, and top of bank at 50 feet intervals along the southern property line. **These elevations are now shown on the Grading Plan.**

10. There are missing grades within the proposed parking areas. Please provide them. **Additional spot elevations were added to the parking areas.**

11. Please indicate if the proposed spot elevations within the proposed parking area are the top of curb or flow line information. **All spot elevations are flowline unless otherwise indicated. A note to this effect was added to the Grading Plan.**

12. What is the purpose of the 20' Drivable grass? If it is for fire protection, then the firetrucks can only drive on a 2% max slope. Please fix. **It is for fire access and the slope was adjusted to be 2%.**

13. Please correct the first flush calculation to 2,234 CF instead of 2.234 CF. **This typographical error was corrected.**

14. Please provide the weir calculation for the 3ft curb cut. **The weir calculation is included in Appendix "C" of the Drainage Report. The swale and opening were changed to 5.5' wide.**

15. Please provide a typical section of the 3 ft. cobble swale. **A cross section for the cobble swale was added to the plan.**

16. Please provide proposed top of curb along Paradise Blvd. **Top of curb elevations were added along Paradise Blvd.**

17. When providing for the street capacity calculations, please emulation existing conditions just upstream of the site. The church gave 20 ft to the R.O.W. so at this location it is 106ft then at the site becomes 86ft. How is this transition of drainage being handled? **An 8" extruded asphalt curb is shown on the plan to divert water from the wider street section to the street section being constructed with this project. The street capacities provide in Appendix "B" show the 86 foot wide street has the capacity to carry this storm water.**

18. The church site has a point discharge into Paradise Blvd which I do not think that you have taken into account.

That drainage information upstream of this project is included in the AMAFCA drainage report which is included in Appendix "A" and was taken into account when determining street and channel capacities.

19. The proposed drainage swale and culverts within the 20 ft. drainage easement collects public water, so therefore this needs to meet City Standards. Currently this does not meet them. The correct drainage solution for the street capacity overflow is to add public inlets and pipe that can handle the 54.11 cfs needed and have this pipe discharge into the existing detention pond. By having inlets and a storm pipe system will also alleviate the limited capacity of the existing concrete rundown.
The swale and culverts were a solution agreed upon with the City to deal with the existing storm water that flows down Paradise Blvd. The original drainage design completed by AMAFACA was to have this water contained within the street and drain to the pond through a concrete rundown at the east end of the street. During our research of the drainage in this area we discovered an error in that design as outlined in the Drainage Report. The street cannot contain the water based on the City's criteria which is different from the AMAFCA criteria. The solution we agreed to with the City Engineer removesthe water out of the drive lane and into the channel opening. This solution also does not endanger the general public and meets the original intent to surface drain to the concrete channel. Our client is not responsible for correcting existing drainage problems that are not created by this project. The swale and culvert was a solution to address this issue as agreed to by the City. Having to construct drop inlets and a pipe to the bottom of the AMAFCA pond is cost prohibitive and not the responsibility of the developer of this project. The Administrative Amendment didn't change the drainage in the street and therefore the previously approved solution shall remain in place.

20. Please provide a section from Paradise Blvd. through the LID pond to Paseo Del Norte. **This cross section was added to the Grading Plan.**

21. Please fix the outfall spillway for the LID pond. This should outfall into the street of Paradise at a proper angle so that the drainage is directed to the existing concrete rundown. **The angle of the spillway was changed to direct the water to the existing concrete channel.**

If you have any questions or require additional information regarding this matter, please feel free to contact me at (505) 858-3100.

Sincerely,

Ronald R. Bohannan, P.E.

Enclosure/s
JN: 2017092
RRB/jn/jg

DRAINAGE REPORT
FOR

Primrose School
City of Albuquerque, New Mexico

Prepared by:

Tierra West, LLC
5571 Midway Park Place
Albuquerque, New Mexico 87109

Prepared for:
Recoil Real Estate, LLC
11024 Montgomery NE, Suite 240
Albuquerque, NM 87111

May, 2018

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the State of New Mexico in good standing.

Ronald R. Bohannan
PE No. 7868

Job No: 2017092

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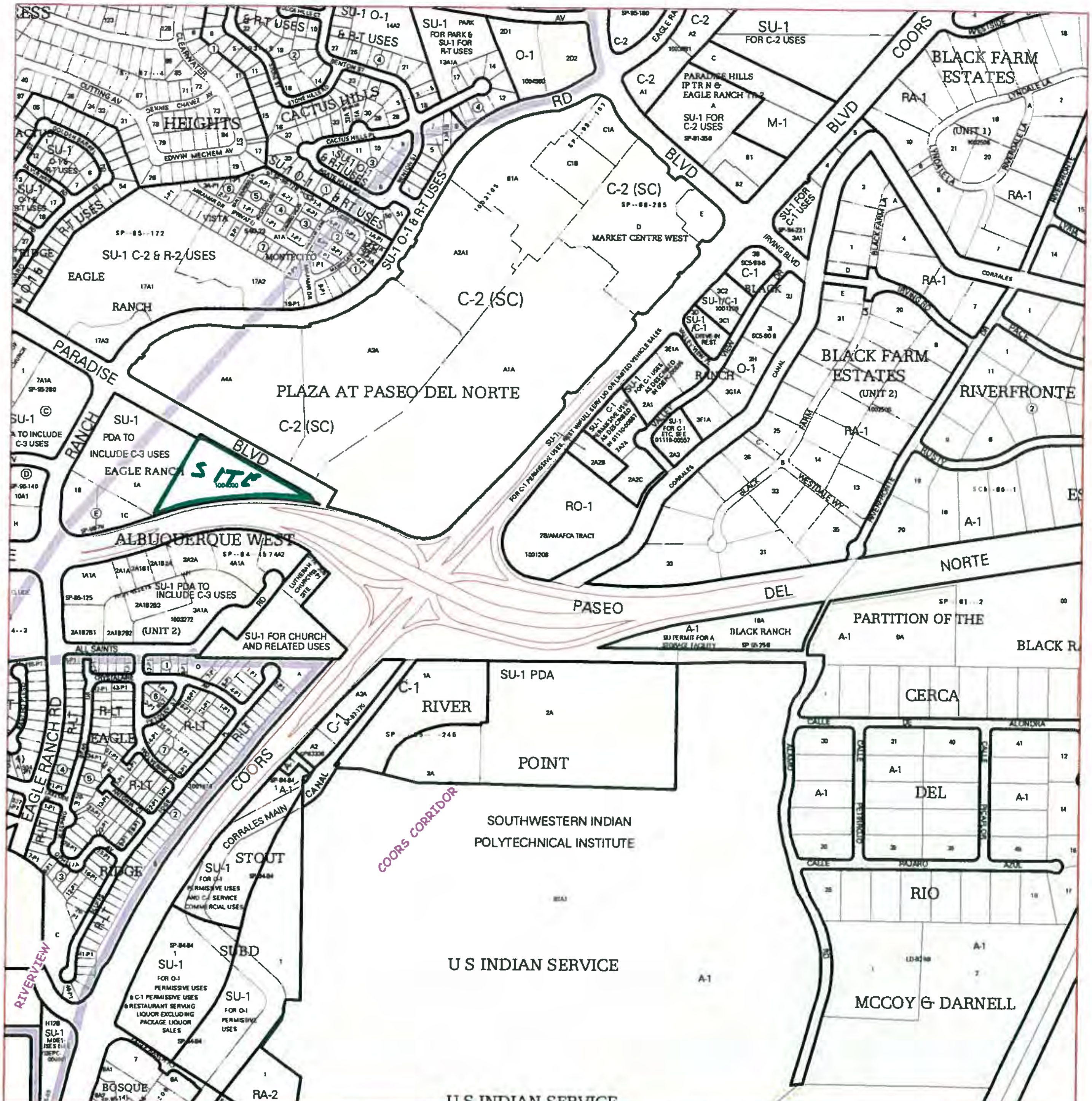
LIST OF APPENDICES

MAP POCKET



For more current information and more details visit: http://www.cabq.gov/gis

AGIS
Albuquerque Geographic Information System

Map amended through: 1/24/2011

Note: Grey Shading Represents Area Outside of the City Limits

Zone Atlas Page:

C-13-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet

Location

The existing parcel is currently vacant and located south of Paradise Boulevard between Eagle Ranch Road and Paseo Del Norte. The site is shown on the attached Zone Atlas Map (C-13). The purpose of this report is to establish a Master Drainage Plan for Phase I and future Phase II that will address the off-site flows from the west as well as the developed flows from the proposed development.

Background

The property lays within the AMFACA Detention Pond Master Drainage Area which identifies the storm water that will end up in the existing detention ponds located to the east of the site. This site is bounded on the north by Paradise Boulevard, on the west by an existing commercial building, and on the south and east by Paseo Del Norte. The site is currently undeveloped and contains 3.48 acres and currently drains from west to east into the Paseo Del Norte right-of-way and to an existing drop inlet. The only offsite flows that enter the site are confined within Paradise Boulevard and an existing 20-foot public drainage easement along Paradise Boulevard and consist of a 100-year developed flow of 77.87 cfs for a 24-hour storm.

Based on the AMAFCA Drainage Report this site was to freely discharge developed flows into Paradise Boulevard where the flows would be conveyed to an existing 12-foot drainage channel at the end of Paradise Boulevard at the properties eastern most edge. Those flows would continue to an AMAFCA Detention Pond that is sized to contain the 100-yr, 24-hour developed flows from the site.

FEMA Map

The site is located on FIRM Map 35001C0116G as shown on the attached excerpt. The Map shows that the site does not lie within a flood plain.

MAP SCALE 1" = 500'

0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0116G

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO

AND INCORPORATED AREAS

PANEL 116 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0116	G
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0116	G
LOS RANCHOS DE ALBUQUERQUE, VILLAGE OF	350123	0116	G

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
35001C0116G

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

Onsite Drainage Plan

The site is divided into three basins for the ultimate build out. Basin 1 consists of the proposed Phase I building and north parking area that will drain a 100-year, 6-hour flow of 2.18 cfs to Paradise Boulevard. Basin 2 consists of a landscape strip along Paradise Blvd. and will drain to a proposed drainage swale along Paradise Boulevard. Basin 2 will contribute a 100-year, 6-hour flow of 0.76 cfs to the channel. sBasin 3 consists of the proposed parking lot in Phase I and the future parking lot in Phase II. Those flows will ultimately drain to a proposed LID pond located in the eastern corner of the site. Prior to the construction of Phase II a temporary de-silting pond will be constructed at the end of Phase I to contain the 100-year, 6-hour flow of 8.57 cfs. The pond will be sized for the 0.279 acre feet of volume. If the pond overflows the storm water will follow the historic path to an existing drop inlet in the NMDOT right-of-way.

The off-site flows being conveyed down Paradise Boulevard were quantified to be a 100-year, 24-hour flow of 77.87 cfs based on the AHYMO data provided in the AMAFCA Drainage Report which can be found in Appendix "A". Of that 77.87 cfs, 13.35 cfs was generated from the Albuquerque Sporting Center Site.

The AMAFCA report was based on the 100-year, 24-hour storm and the City requires all drainage analysis to be based on the 100-year, 6 hour storm which potentially provides a higher peak flow and less volume than the 24-hour storm. In this case the AMAFCA report uses an overall land treatment of 90% impervious area and 10% pervious. However, most of the area is residential with a few commercial buildings, which would provide more of an 80% impervious and 20% pervious land treatment. Since the City requires 15% of a parcel be landscaped it can be assumed that at a minimum the land treatment should be no more than 85% pervious.

A quick comparison of this site shows that the AMAFCA report at a 90/10 impervious ratio generates the 13.35 cfs mentioned previously. This report analyzed the same parcel at its true land treatment ratio of 80/20 using the 100-year, 6-hour storm and generated a peak discharge of 12.82 cfs, which is lower than the AMAFCA peak discharge. The peak discharge flow in Paradise Boulevard, based on the AMAFCA report of 77.87 cfs (100–year, 24-hour event), is greater than the 100-year, 6-hour peak flow that the City would require. Based on the 100–year, 6-hour event a more

conservative flow rate, this site will only contribute 5.15 cfs to the Paradise Boulevard flows.

Using the 100–year, 6-hour event of 69.67 cfs a street capacity analysis was completed which shows all of the flows are contained within the street. The street along this property has two slopes, one at 3.12% for the west half of the project and one at 0.50% for the east half of the project. For the steeper section of the street all of the flow will remain below the top of the curb. Once the storm water hits the flatter section the flow will overtop the curb but remain within the City right-of-way. However, the City has required that this project not allow any flows to go over the crest of the roadway once it reaches the flatter slope. Therefore all of the flows not captured up to the crest of the roadway must be captured in a drainage swale along Paradise Boulevard. This section of the roadway will only contain 7.78 cfs up to the crown.

The remaining flow will be captured in the drainage swale along Paradise Boulevard and will contain 54.11 cfs. This swale captures the total flow anticipated in the area and uses both the roadway crest for each side of the roadway to its limits and then the swale captures the total peak flow contained in Paradise Boulevard. As such, the channel was sized to carry that amount of flow. The calculations for the street, channel, and curb opening can be found in Appendices “B” and “C”.

The flows from Paradise Boulevard that are located in the street will be captured in an existing 12-foot wide concrete channel at the end of the street, which has a capacity to carry 97 cfs. The flows in the channel will be contained in a surge pond located at the east end of the property and then conveyed to the existing concrete channel by a new 4-foot wide concrete channel from the pond to the existing channel. The placement of the new channel is based on avoiding existing utilities in the area. Although it does impact the cul-de-sac of the street it is not enough to keep traffic from turning around at that location. The new roadway cross-section in the cul-de-sac was analyzed and shows that it will contain the 61.76 cfs, however an analysis of the existing concrete channel opening shows that only 36.88 cfs will actually get into the channel. The remaining 24.88 cfs will bypass the channel and continue north within the existing private access road. The excess storm water will enter the same pond as intended via a concrete swale located on the south side of the movie theater parking lot.

Summary

This project will be developed in two phases. This drainage report is set up to address the drainage once the project is completely built out. Along with the Grading and Drainage Plan, a Phase I Grading Plan is included to show how the storm water will be handled until Phase II is completed.

The City is limiting the amount of flow the street can carry to what is held up to the crest of the roadway. The rest of the flow is contained in a drainage channel that runs parallel to Paradise Boulevard. All of the flows will drain to an existing concrete channel at the end of Paradise Boulevard and be conveyed to a series of detention ponds as outlined in the AMAFCA Master Drainage plan for this area.

APPENDIX A

(AHYMO data from Addendum No. 1 to Final Design Report for Proposed AMAFCA Detention Pond (Tract 2-B) located at the NE corner of Paseo Del Norte and Coors Blvd., dated June 28, 2004)

ADDENDUM No. 1
TO

FINAL
DESIGN REPORT FOR

Proposed AMAFCA Detention Pond **(Tract 2-B)**
located at the NE corner of
Paseo Del Norte and Coors Blvd.

June 28, 2004, SEC Proj. No. 500100F

Original Report as Follows:

Drainage Review and Analysis of the Proposed Detention Pond Tract 2B
As identified in the –

"Design Memorandum for the North Coors Drainage Management Plan Middle Area,
La Orilla to Calabacillas, Hydrology (Fully Developed Conditions
Hydraulics Sediment Control)
Smith Engineering Company, February,1997"

June 9, 2003, SEC Proj. No. 100109E

Prepared for:

Albuquerque Metropolitan Arroyo Flood Control Authority
(AMAFCA)

Prepared by:

Smith Engineering Company

SEC Proj. No. 107112C

April, 2009

AHYMO_97 MODEL SUMMARY TABLE
100-YR. 24-HOUR STORM

FILENAME 6UP100.TXT

```
□(s16.67h8.5v0T□&l8D
   AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c      RUN DATE (MON/DAY/YR) =03/25/2009
   INPUT FILE = Q:\SEOCVM-P\2DUZ2I~6\1Y3U0H~8\AUZIUP~B\ahymo\6up100.txt                  USER NO.= AHYMO-S-9702c01SEC01A-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

   START                                                                                                    TIME=        .00
   *S
   *S FINAL DESIGN HYDROLOGIC MODEL FOR THE AMAFCA TRACT 2-B POND
   *S LOCATED AT THE NE CORNER OF PASEO DEL NORTE AND COORS BLVD
   *S ALBUQUERQUE, NM
   *S
   *S FILENAME -  6up100.TXT
   *S            (a copy of update5.txt, which is a copy of update3.txt
   *S              and update3.txt is a copy of update2.txt
   *S            that is a copy of the original DMP model update1.txt
   *S            dated 11-20-96 developed for the following DMP
   *S
   *S                 ********************************************
   *S                 *   DESIGN MEMORANDUM FOR THE REVISION TO  *
   *S                 *   NORTH COORS DRAINAGE MANAGEMENT PLAN   *
   *S                 *   MIDDLE AREA (La Orilla to Calabacillas)*
   *S                 *   HYDROLOGY (FULLY DEVELOPED CONDITIONS) *
   *S                 *   HYDRAULICS SEDIMENT CONTROL.           *
   *S                 *   FEBRUARY 1997. SMITH ENGINEERING COMPANY*
   *S                 *   SEC Proj. No. 195104
   *S                 *   100 YEAR STORM - 24 HOUR DURATION      *
   *S                 *   IMPROVED CORRALES MAIN CANAL           *
   *S                 *            MIDDLE AREA                   *
   *S                 *   CALABACILLAS ARROYO TO LA ORILLA OUTLET*
   *S                 *   UPDATED FOR 1996 DRAINAGE CRITERIA     *
   *S                 ********************************************
   *S
   *S
   *S DESCRIPTION - This model 6up100.txt (prepared 3-10-09)
   *S 6up100.txt contains the following revisions to 5up100.txt as follows:
   *S
   *S Modified basins and previously divided hydrographs near Paseo Del Norte West
```

```
*S management decisions could be imposed on the developments because the
*S downstream drainage capacities are inadequate to take the flows from these
*S basins.
*S
*S        INTO IRVING BLVD. AS STREET FLOW.  ALL FLOW FROM THESE BASINS
*S        SHOULD BE COLLECTED AS REQUIRED AND DISCHARGE INTO THE CONGRESS
*S        AVE. STORM DRAIN SYSTEM THAT OUTFALLS TO THE CALABACILLAS ARROYO
*S
*S    2.  MOST OF THE RUNOFF FROM BASINS 410 AND 411 ARE ANTICIPATED TO
*S        DISCHARGE INTO THE CONGRESS AVE. STORM DRAIN THAT PASSES THROUGH
*S        BASIN 411 ALONG THE REAR LOT LINE.  IF ANY FLOWS FROM THESE BASINS
*S        MUST DISCHARGE TO IRVING BLVD, THESE MUST BE LIMITED TO A VERY SMALL
*S        RELEASE RATE DUE TO LIMITED DOWNSTREAM CAPACITY AT THE INTERSECTION
*S        OF IRVING AND COORS BLVD.
*S
*S    3.  ALL RUNOFF FROM BASINS 302, 303 AND 304 SHOULD BE COLLECTED IN THE
*S        DETENTION POND LOCATED NEAR THE BOTTOM OF BASIN 303, AND THE
*S        ENTIRE VOLUME SHALL OUTFALL TO THE EXISTING STORM DRAIN SYSTEM
*S        FROM THAT POND TO THE EAGLE RANCH BLVD. STORM DRAIN SYSTEM
*S
*S IMPORTANT CHANGES TO MODEL UPDATE2.TXT:
*S
*S The following changes were NOTED, AND/OR applied to model(update2.txt)
*S     to correct errors or changes discovered during review of update1.txt
*S
*S  1. The area of basin 504 was 0.0257 sq mi (wrong),correct is 0.0426 sq mi
*S
*S  2. All of  Basin 305 was previously added to Tract 2B Pond (proposed
*S      AMAFCA pond), however, only 2/3 of that basin will reach proposed
*S      AMAFCA pond, therefore, add a DIVIDE HYD command to correct
*S
*S  3. Detention Pond 502.RES actually outfalls into Detention Pond 503.RES
*S     However, in Update1.txt, it was added after 503.RES.  Therefore,
*S     it is now added prior to Pond 503.res routing.
*S
*S  4. Basins 409, 410 and 411 were divided and a fraction of those basins
*S     were lost in the update1.txt model.  A the lost fraction of Basins
*S     410 AND 411 could possibly drain to Tract 2-B AMAFCA Pond.  The lost
*S     Hyd's and fractional areas and volumes lost are as follows:
*S         HYD NO.'S                 410.03 and 411.03
*S         DRAINAGE AREAS (sq mi)    0.00016    0.00188      TOTAL = 0.00204
*S         RUNOFF VOLUME  (ac-ft)    0.018      0.218        TOTAL = 0.236
*S
*S     THESE LOST HYD'S HAVE NOT BEEN ADDED INTO THIS MODEL.
*S
*S Beginning of the original update1.txt model
*S
*S
*S The rainfall depths here are from NOAA Atlas 14 (new August 2003) and
*S are a little lower than used in the original DMP as follows:
*S  old 1-hr = 1.90,  new 1 hr  = 1.62
*S  old 6-hr = 2.20,  new 6-hr  = 2.11
*S  old 24-hr= 2.65,  new 24-hr = 2.44
```

```
ADD HYD          104EA.5 14&13  15      .08140      84.17      3.885      .89488   1.700   1.616
*S* ROUTE FLOW COMING FROM 102EA THRU 106EA **
ROUTE MCUNGE     102EA.6    4   16      .08170      69.72      3.645      .83664   1.850   1.333 CCODE =    .1
ADD HYD          106EA.25 15&16 17      .16310     136.41      7.530      .86570   1.750   1.307
*S SINGLE FAMILY RESIDENTIAL @ 2 DU PER ACRE
COMPUTE NM HYD    107EA   -     19      .02130      19.10       .712      .62676   1.550   1.401 PER IMP=   6.00
*S* ROUTE FLOW COMING FROM 106EA.25 THRU 107EA **
ROUTE MCUNGE     107EA.6   17    2      .16310     135.87      7.533      .86605   1.850   1.302 CCODE =    .2
ADD HYD          107EA.6  2&19   3      .18440     143.02      8.245      .83840   1.800   1.212
*S GOLF COURSE, PARKING LOT AND SINGLE FAMILY RESIDENTIAL @ 2 DU PER ACRE
COMPUTE NM HYD    108EA   -     7       .04700      35.80      1.851      .73859   1.650   1.190 PER IMP=  12.00
ADD HYD          107EA.8  3& 7   8      .23140     168.07     10.097      .81813   1.800   1.135
*S* ROUTE COMBINED 107EA.8 THRU RESERVOIR (DUCK POND & EMPTY HOLE) **
ROUTE RESERVOIR  107EA.8    8    9      .23140     104.49      6.157      .49887   2.050    .706 AC-FT=    5.056
*S
*S  OUTFLOW(CFS)  STORAGE(AF)   ELEV(FT)
*S     0.00          0.00         5241.0
*S     0.01          0.22         5242.0
*S     0.02          0.54         5243.0
*S     0.03          0.95         5244.0
*S     0.035         1.20         5244.5
*S     0.04          1.44         5245.0
*S     0.045         2.70         5245.5
*S     0.05          3.96         5246.0
*S    14.00          4.19         5246.1
*S    27.00          4.41         5246.2
*S    52.00          4.64         5246.3
*S    76.00          4.86         5246.4
*S   108.00          5.08         5246.5
*S   139.00          5.30         5246.6
*S   177.00          5.53         5246.7
*S   215.00          5.75         5246.8
*S   258.00          5.98         5246.9
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 4 NOTATION
*S 300.00	6.20		5247.0							
*S 500.00	9.00		5250.0							
*S 1000.00	12.00		5255.0							
*S										
*S GOLF COURSE, AND OTHER RECREATION										
COMPUTE NM HYD	109EA	-	10	.00900	12.30	.439	.91425	1.500	2.136	PER IMP= 23.00
S ROUTE FLOW COMING FROM RESERVOIR THRU 109EA **										
ROUTE MCUNGE	109EA.78	9	11	.23140	103.89	6.151	.49837	2.100	.701	CCODE = .1
ADD HYD	109EA.87	10&11	12	.24040	105.21	6.589	.51394	2.100	.684	
*S PKG LOT, CLUBHOUSE, ENTR. RD, PROSHOP, BED & BRKFST										
COMPUTE NM HYD	110EA	-	13	.00600	12.16	.547	1.70968	1.500	3.167	PER IMP= 70.00
ADD HYD	110EA.1	12&13	14	.24640	107.08	7.136	.54305	2.100	.679	
ROUTE MCUNGE	103.22	14	3	.24640	105.90	7.110	.54106	2.300	.672	CCODE = .1
*S RESIDENTIAL										
COMPUTE NM HYD	104.00	-	1	.06720	89.79	4.954	1.38224	1.600	2.088	PER IMP= 50.00

```
*S        160          11.42          5076
*S        178          13.59          5077
*S        195          15.89          5078
*S
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
*S										PAGE = 5
COMPUTE NM HYD	201.00	-	1	.02580	45.54	1.902	1.38224	1.500	2.758	PER IMP= 50.00
*S ROUTING 201 ON CROYDEN ST TO EXISTING DETENTION POND										
ROUTE MCUNGE	201.02	1	2	.02580	44.70	1.899	1.37998	1.650	2.707	CCODE = .1
COMPUTE NM HYD	202.00	-	1	.02880	49.83	2.055	1.33804	1.500	2.704	PER IMP= 47.30
*S**** HYD 202.1 IS AP #4	*****									
ADD HYD	202.10	1& 2	4	.05460	74.97	3.954	1.35784	1.600	2.145	
*S EXISTING DROP INLET IN BASIN 202										
ROUTE RESERVOIR	202.RES1	4	2	.05460	73.91	3.954	1.35784	1.600	2.115	AC-FT= .010

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
0	0	5138.7
20.12	0.0009	5139.7
24.07	0.0019	5140.7
41.69	0.0028	5141.7
53.82	0.0037	5142.7
63.69	0.0047	5143.7
70.59	0.0054	5144.5
74.58	0.0111	5145.0
81.98	0.0603	5146.0
83.46	0.1024	5146.2
87.97	0.1700	5146.5
94.77	0.2611	5147.0

*S EXISTING DETENTION BASIN IN BASIN 401
*S ROUTING RESERVOIR WITH 21" ORIFACE

ROUTE RESERVOIR	202.RES2	2	4	.05460	40.14	3.961	1.36007	1.800	1.149	AC-FT= .853

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)	
0	0	5114	
11.58	0.0026	5115	
16.38	0.0052	5116	
20.06	0.0078	5117	
23.16	0.0091	5118	
25.89	0.0521	5119	
28.37	0.1097	5120	
30.64	0.1829	5121	
32.75	0.2747	5122	
34.74	0.3856	5123	
36.62	0.5174	5124	
38.41	0.6717	5125	
40.11	0.8496	5126	
41.76	1.03	5127	EXISTING TOP OF POND
61	1.08	5127.25	

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ROUTE MCUNGE          303.02    8    2        .05920        34.00       6.394      2.02513    1.750      .897 CCODE =      .1
ROUTE MCUNGE          OLF.32   12   16        .00590        35.52        .625      1.98638    1.900     9.407 CCODE =      .1
*S INCLUDES AREA FROM PARADISE BLVD - COMMERCIAL
COMPUTE NM HYD        304.00    -    1        .03490        78.86       3.770      2.02538    1.500     3.531 PER IMP=   90.00
ADD HYD               304.10  1& 4   7        .03920        83.69       4.235      2.02566    1.500     3.336
ADD HYD               304.20  7&16   5        .04510        83.69       4.860      2.02050    1.500     2.899
*S DIVIDE AT MH# S-702
DIVIDE HYD                CB1    5   4        .02637        20.00       2.842      2.02050    1.350     1.185
                      304.13  and   7        .01873        63.69       2.018      2.02050    1.500     5.313
*S
*S HYD CB1 WILL DRAIN INTO THE EAGLE RANCH STORM DRAIN SYSTEM
*S
*S HYD 304.13 WAS TO BE THE EXCESS STREET FLOW, BUT NOW BY PROPOSED
*S     DRAINAG MANAGEMENT BY AMAFCA AND COA, THIS FLOW WILL NOT BE ALLOWED
*S     TO DRAIN INTO PARADISE BLVD.
*S
*S  *      *     *      *       *     *        *         *        *
*S
*S NOTE -HYD 304.13 IS ACTUALLY LOST FROM THIS MODEL AS HDYR 402.20 HAS
*S       HAS BEEN COMMENTED OUT (SEE BELOW)
*S  *      *     *      *       *     *        *         *        *
*S
ADD HYD               CB1.1  2& 4   5        .08557        54.00       9.236      2.02370    1.750      .986
ADD HYD               CB1.2  5& 6   2        .14017        94.11      13.196      1.76510    1.800     1.049
*S  HYD CB1.2 WILL DRAIN INTO THE EAGLE RANCH STORM DRAIN SYSTEM
*S
*S DOES NOT INCLUDE AREA FROM PARADISE BLVD - COMMERCIAL
*S UPDATE 6 -  HYD BASIN 305 AND SPLIT INTO BASINS 305.A AND 305.B AND ASSUME
*S ALL FLOW FROM BASIN 305 IS COLLECTED AND DRAINS INTO THE
*S APARTMENT POND AND MOVIE POND
*S
*S
*S UPDATE 6  - NEW BASIN 305.A
*S
COMPUTE NM HYD        305.A    -   17        .03180        71.91       3.435      2.02538    1.500     3.534 PER IMP=   90.00
*S CACTUS RIDGE
COMPUTE NM HYD        401.00    -    1        .02360        42.48       1.795      1.42644    1.500     2.812 PER IMP=   52.70
ADD HYD               401.10  1&11   3        .02360        42.48       1.795      1.42643    1.500     2.812
*S DIVIDE HYD 401.1 BY MAXIMUM INFLOW OF CATCH BASINS, WEST OF
*S SUB-BASIN 401,ALONG PARADISE ROAD (7 CB AT 10 CFS EACH)
DIVIDE HYD                CB2    3   4        .02360        42.48       1.795      1.42643    1.500     2.812
                      401.13  and   5        .00000          .00        .000       .00000    -.050      .000
*S SUB-BASIN 402 IS PART OF WEST PARK APARTMENTS
COMPUTE NM HYD        402.00    -    1        .00880        15.71        .621      1.32294    1.500     2.789 PER IMP=   42.70
ADD HYD               402.10  5& 1   6        .00880        15.71        .621      1.32290    1.500     2.789
*S
*S  UPDATE3.txt  proposed drainage management change
*s
*S            commented out HYD 402.2 in update3.txt to remove all flow
*S            IN EXCESS OF STORM DRAIN CAPACITY
*S            from basins 302, 303 and 304 from reaching the detention
*S            pond in Basin 504 that outfalls to the proposed Tract 2-B Pond
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ROUTE MCUNGE          406.12    6    3        .01089        18.81        .804      1.38510     1.550     2.698 CCODE =      .2
*S SUB-BASIN 407 IS NORTH OF CONGRESS AVE - COMMERCIAL
COMPUTE NM HYD        407.00    -    1        .02240        50.62       2.420      2.02538     1.500     3.531 PER IMP=   90.00
*S CUBBY HOLE DETENTION BASIN
*S ROUTING RESERVOIR WITH 12" ORIFACE
ROUTE RESERVOIR      407.RES    1    5        .02240        61.53       2.420      2.02537     1.450     4.292 AC-FT=       .175
*S
*S       OUTFLOW(CFS)     STORAGE(AC-FT)     ELEV(FT)
*S              0                0             5063
*S           3.78             0.0387            5064
*S           5.35             0.0597            5065
*S           6.55             0.0808            5066
*S           7.56             0.1019            5067
*S           8.46             0.1230            5068
*S           9.26             0.1440            5069
*S          10.00             0.1651            5070
*S             29             0.170             5070.25
*S             62             0.175             5070.5
*S            104             0.180             5070.75
*S            153             0.185             5071
*S
DIVIDE HYD            407.03    5   89        .01440        10.00       1.556      2.02536     1.400     1.085
                      OLF.4   and   13        .00800        51.53        .864      2.02536     1.450    10.067
*S ROUTE CB5.3 IN 60" PIPE UNTIL BETWEEN MH # S-951 TO MH # S-962

                                  FROM  TO                    PEAK      RUNOFF                TIME TO   CFS        PAGE =   8
                      HYDROGRAPH   ID    ID        AREA      DISCHARGE  VOLUME      RUNOFF     PEAK     PER
COMMAND          IDENTIFICATION    NO.   NO.     (SQ MI)      (CFS)    (AC-FT)   (INCHES)   (HOURS)  ACRE     NOTATION

*S Q(CAP) = 260 CFS, AT SLOPE=0.01
ROUTE MCUNGE          CB5.33   25   85        .21320       173.83      18.340      1.61296     1.600     1.274 CCODE =      .2
ADD HYD               407.10 3&13   17        .01889        66.20       1.668      1.65619     1.550     5.476
*S SUB-BASIN 408 IS STATE FARM INSURANCE
*S OLF GOING TO THE EAST AND DOES NOT EFFECT EAGLE RANCH SD
COMPUTE NM HYD        408.00    -   14        .00660        14.92        .713      2.02538     1.500     3.533 PER IMP=   90.00
*S EXISTING DETENTION BASIN IN SUB-BASIN 408
*S ROUTING RESERVOIR WITH 12" WEIR
ROUTE RESERVOIR      408.RES   14   18        .00660         2.62        .712      2.02243     2.100      .620 AC-FT=       .398
*S
*S      OUTFLOW(CFS)     STORAGE(AC-FT)     ELEV(FT)
*S             0                0             5050.8
*S          1.08             0.2198            5052.3    EXISTING TOP OF POND
*S          1.66             0.2931            5052.8
*S          2.31             0.3663            5053.3
*S          3.02             0.4396            5053.8
*S            22             0.4763            5054.05
*S
*S
*S  UPDATE3.TXT  -  COMMMENT OUT HYD 408.10 TO REMOVE ANY FRACTIONS
*S                  OF BASINS 406 AND 407 FROM REACHING THE INTERSECTION
*S                  OF IRVING AND COORS BLVD.
*S
*S
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*S SUB-BASIN 414 IS WEST OF EAGLE RANCH COMMMERCIAL*
COMPUTE NM HYD        414.00   -    10        .00297        6.73       .321      2.02538   1.500    3.539 PER IMP=  90.00
ADD HYD               CB6.53  3&10   5        .01857       42.01      2.006      2.02535   1.500    3.535
ADD HYD               CB6.63  5& 9  11        .63673      185.72     36.988      1.08920   1.950     .456
*S SUB-BASIN 415 IS WEST OF EAGLE RANCH - COMMERCIAL *
COMPUTE NM HYD        415.00   -     1        .01190       26.92      1.285      2.02538   1.500    3.535 PER IMP=  90.00
ADD HYD                OUT.2  1&11  98        .64863      192.76     38.274      1.10638   1.950     .464
ADD HYD                OUT.3 98&99  99        .89553      380.77     60.025      1.25677   1.650     .664
*S   **************************************************************************
*S
*S HYDROGRAPH OUT.3 LEAVES MODEL IN A STORM DRAIN THAT OUTFALLS TO THE
*S
*S CALABACILLAS ARROYO
*S
*S   **************************************************************************
*S EAGLE RANCH ROAD
*S 86 FT ROW
COMPUTE NM HYD        501.00   -     1        .01000       14.84      1.080      2.02538   1.700    2.318 PER IMP=  90.00
*S
*S UPDATE3.TXT REVISION - HYD. 501.1 IS THE FLOW ON IRVING BLVD. THAT WILL
*S                        REACH THE WEST SIDE OF INTERSECTION OF COORS BLVD.
*S                        (DOES NOT YET INCLUDE BASINS 505 AND 505A
*S
ADD HYD               501.10 14& 1   3        .01679       24.78      1.808      2.01935   1.600    2.306
*S ROUTE OLF 501.1 THRU 505 IN IRVING BLVD **
ROUTE MCUNGE          501.12    3    7        .01679       24.56      1.809      2.01998   1.600    2.286 CCODE =      .2
*S COMMERCIAL
COMPUTE NM HYD        502.00   -     1        .04350       98.29      4.699      2.02538   1.500    3.531 PER IMP=  90.00
*S DIVIDE HYD 305.1 IN PARADISE BLVD BY ASSUMED 18" CAPACITY *
DIVIDE HYD            402.24   19    2        .03507       20.00      3.219      1.72074   1.350     .891
                      402.25  and    3        .02373       57.87      2.177      1.72074   1.500    3.811
ADD HYD               502.10  2& 1   5        .07857      118.29      7.918      1.88939   1.500    2.352
*S HYD 502.10 IS THE INFLOW HYD TO THE APARTMENT POND
*S
*S EXISTING DETENTION BASIN IN SUB-BASIN 502
*S ROUTING RESERVOIR WITH 24" RCP AND 6'2" HIGH 18" STANDPIPE
*S
*S APARTMENT POND RES. ROUTE DATA COMPUTED BY SEC MARCH 2009
*S
ROUTE RESERVOIR      502.RES    5    8        .07857      104.70      7.726      1.84365   1.550    2.082 AC-FT=    1.671
*S
*S APARTMENT POND  -  OUTFLOW HYDROGRAPH IS 502.RES
*S
*S COMMERCIAL
COMPUTE NM HYD        503.00   -     1        .01880       33.05      2.031      2.02538   1.600    2.747 PER IMP=  90.00
ADD HYD               503.10  1& 3   2        .04253       84.52      4.208      1.85540   1.550    3.106
*S  UPDATE 6 NEW BASIN 305.B
*S
COMPUTE NM HYD         305.B   -     1        .00590       13.35       .637      2.02538   1.500    3.536 PER IMP=  90.00
ADD HYD               305.B9  2& 1   2        .04843       97.08      4.846      1.87611   1.500    3.132
*S
*S HYD 305.B9 IS THE SURFACE INFLOW HYD TO MOVIE POND, DOESN'T INCLUDE
*S            FLOW FROM APARTMENT POND OUTFLOW JUST ABOVE MOVIEW POND
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*S ROUTING RESERVOIR WITH 18" STANDPIPE AT POND BOTTOM
ROUTE RESERVOIR     504B.RES    1    2        .00270        4.47        .292      2.02526    1.600    2.585 AC-FT=      .048
*S
*S SOUTH POND IS HYDROGRAPH 504B.RES
*S
*S
*S
*S ADD HYD 503.RES TO HYD 504B.RES  ***
ADD HYD              504B.9  2& 5   5        .12970       117.73       12.339      1.79095    1.800    1.418
*S
*S HYD 504.B9 IS THE MOVIE POND OUTFLOW PLUS THE SOUTH POND OUTFLOW
*S     WITHOUT NORTH POND (NEXT)
*S
*S NEW BASIN 504.A
COMPUTE NM HYD         504.A   -    1        .03780        70.36        4.083      2.02538    1.550    2.909 PER IMP=  90.00
*S
*S HYD 504.A IS THE INFLOW HYD TO THE NORTH POND
*S
*S
*S UPDATE 6 NEW RESERVOIR ROUTING IS FOR  NORTH POND
*S
*S EXISTING DETENTION BASIN IN SUB-BASIN 504.A  -  NORTH POND
*S
*S ROUTING RESERVOIR WITH 36" RCP AND 5'2" HIGH 18" STANDPIPE
*S
ROUTE RESERVOIR     504A.RES    1    3        .03780        69.59        4.075      2.02113    1.600    2.877 AC-FT=      .331
*S
*S NORTH POND (EXISTING - WITHOUT PROPOSED IMPROVEMENTS)
*S
*S
*S EXISTING NORTH POND IS HYD 504A.RES
*S
*S
*S NOW MODEL   PROPOSED   NORTH POND IF THE PROPOSED 48-INCH HOBAS PIPE IS
*S BUILT
*S
ROUTE RESERVOIR  504APRO.RES    1   79        .03780        65.79        4.083      2.02537    1.600    2.719 AC-FT=      .235
*S
*S NORTH POND (PROPOSED WITH 48-INCH HOBAS PIPE TO AMAFCA TRACT 2B POND
*S
*S PROPOSED NORTH POND IS HYD 504APRO.RES
*S
*S
```

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

PAGE = 11

```
*S
*S NOW ADD EXISTING NORTH POND RES ROUTE TO SUM OF MOVIE POND AND
*S         SOUTH POND RES ROUTE
*S
ADD HYD              504B.09  3& 5  11        .16750       155.45       16.463      1.84289    1.800    1.450
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```
*S
*S
ADD HYD              506.90 45&10   5        .12356       184.89       10.556       1.60179     1.550     2.338
*S
*S
*S HYD 506.90 IS TOTAL HYDROGRAPH FROM COORS PLUS
*S            BASIN 506 LOCATED JUST NORTH OF TRACT 2-B POND INTO POND
*S
ADD HYD              506.91  5&11  46        .29106       268.48       27.019       1.74054     1.600     1.441
*S
*S HYD 506.91 IS FINAL TOTAL HYDROGRAPH INTO TRACT 2B POND
*S
*S
*S %      %       %       %       %       %       %       %       %

                                 FROM  TO                          PEAK          RUNOFF                    TIME TO   CFS       PAGE =  12
                    HYDROGRAPH   ID    ID          AREA          DISCHARGE     VOLUME          RUNOFF      PEAK      PER
COMMAND          IDENTIFICATION  NO.   NO.       (SQ MI)         (CFS)       (AC-FT)       (INCHES)    (HOURS)   ACRE      NOTATION

*S
*S FINAL DESIGN FOR THE AMAFCA TRACT 2-B POND LOCATED AT THE NE INTERSECTION
*S OF PASEO DEL NORTE AND COORS BLVD. IN ALBUQUERQUE NM
*S DETENTION POND DESIGN AND CONSTRUCTION PLANS AS PREPARED BY
*S SMITH ENGINEERING COMPANY MAY - JUNE - JULY 2004
*S
*S GENERAL DETENTION POND AND OUTFALL DESCRIPTION –
*S
*S EXISTING PONDING AREA NOW OUTFALLS TO EXISTING "2 – 36-INCH CMP'S" THAT
*S OUTFALL INTO THE 10 ft. wide x 6 ft. tall BOX CULVERT THAT CONVEYS THE
*S CORRALES MAIN CANAL UNDER PASEO DEL NORTE.
*S
*S
*S *    *    *    *    *    *    *    *    *    *    *    *
*S
*S BEGIN OPTION P(RES. EMPTY EMERG. SPILL. –TRAPEZOIDAL CONCRETE WEIR EQUATION)
*S
*S     * * *       - STORAGE VOLUME ASSUMES RESERVOIR IS EMPTY
*S                   AT BEGINNING OF RAINFALL
*S                 – STORAGE VOLUME REPRESENTS EMBANKMENT PARALLEL TO PROPOSED
*S                   PASEO DEL NORTE OFF RAMP –REMOVE EXISTING TREES
*S                 - PRINCIPAL SPILLWAY DESIGNED TO REMOVE FLOATABLE DEBRIS
*S                   AND INCREASE DETENTION TIME FOR WATER QUALITY IMPROVEMENT
*S                 - 3 TRICKLE FLOW 10" PIPES AT INVERT
*S                 - 1 LOW ROW OF 12 – 6-IN. PVC PIPES
*S                 - NO UPPER ROW OF  – 6-IN. PVC PIPES
*S     * * *       - PRINCIPAL SPILLWAY WEIR (top of concrete box) WAS NOT
*S                   INCLUDED IN THIS OPTION WITHIN THE RATING CURVE
*S     * * *         CREST ELEV. OF CONCRETE BOX SET AT  5001.50
*S     * * *       - EMERGENCY SPILLWAY IS AT ELEVEATION 5002.5, ASSUME
*S                   A BROAD CRESTED WEIR EQUATION TRAPEZOID SECTION 20 FT.
*S                   BOTTOM WIDTH 8% SIDE SLOPES
*S
*S
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```
*S                    OUTFLOW(CFS)     STORAGE(AC-FT)     ELEV(FT)
*S                         0                0               4997
*S                         6                0.01            4998
*S                         14               0.02            4999
*S                         25               0.03            5000
*S                         31               0.04            5001
*S                         55               1.1899          5002
*S                         163              6.3251          5003
*S                         430              11.5975         5004
*S
ROUTE RESERVOIR      506.RES   46   10        .29106        156.30       26.840      1.72898    2.000      .839 AC-FT=    6.006
*S
*S THIS HYD 506.RES IS THE RESULT OF THE TRACT 2-B DETENTION POND RESERVOIR
*S                  ROUTING WITH RESERVOIR FULL TO ELEVATION 5001 AT
*S                  BEGINNING OF STORM
*S
*S NOTE AGAIN, THE PRINCIPAL SPILLWAY CREST (top of concrete)IS SET AT 5001.5
*S
*S
*S END OPTION Q (RES. FULL -EMERG SPILL. -TRAPEZOIDAL CONCRETE WEIR EQUATION)
FINISH
```

AHYMO_97 Model INPUT FILE
100-yr. 24-hour storm

FILENAME – 6up100.TXT

```
*
* 24 HOUR ALB. DPM  RAINFALL DISTRIBUTION (DPM.RAINTABLE) LAG 3.0 HOURS
*
START           TIME=0.00 HR  PUNCH CODE=0  PRINT LINES=-6
*S
*S FINAL DESIGN HYDROLOGIC MODEL FOR THE AMAFCA TRACT 2-B POND
*S LOCATED AT THE NE CORNER OF PASEO DEL NORTE AND COORS BLVD
*S ALBUQUERQUE, NM
*S
*S FILENAME – 6up100.TXT
*S        (a copy of update5.txt, which is a copy of update3.txt
*S         and update3.txt is a copy of update2.txt
*S        that is a copy of the original DMP model update1.txt
*S        dated 11-20-96 developed for the following DMP
*S
*S            ********************************************
*S            *  DESIGN MEMORANDUM FOR THE REVISION TO   *
*S            *  NORTH COORS DRAINAGE MANAGEMENT PLAN    *
*S            *  MIDDLE AREA (La Orilla to Calabacillas) *
*S            *  HYDROLOGY (FULLY DEVELOPED CONDITIONS)  *
*S            *  HYDRAULICS SEDIMENT CONTROL.            *
*S            *  FEBRUARY 1997. SMITH ENGINEERING COMPANY*
*S            *  SEC Proj. No. 195104
*S            *  100 YEAR STORM - 24 HOUR DURATION       *
*S            *  IMPROVED CORRALES MAIN CANAL            *
*S            *        MIDDLE AREA                       *
*S            *  CALABACILLAS ARROYO TO LA ORILLA OUTLET *
*S            *  UPDATED FOR 1996 DRAINAGE CRITERIA      *
*S            ********************************************
*S
* CURRENT SEC PROJECT NO. = 500100F (April 2004)
*S
*S DESCRIPTION – This model 6up100.txt (prepared 3-10-09)
*S 6up100.txt contains the following revisions to 5up100.txt as follows:
*S
*S Modified basins and previously divided hydrographs near Paseo Del Norte West
*S Bound On Ramp to ensure that all flow will be diverted to the Movie Pond.
*S
*S Added the South Pond, even though it is small, this is connected with the
*S Movie Pond and the North Pond.
*S
*S Revised the Elevation – Storage – Discharge data for the following Ponds:
*S
*S      Apartment Pond,   Movie Pond,    South Pond,    North Pond
*S
*S based on field surveys of elevations of ponds, pipes and manholes
*S by Smith Engineering Company (SEC) in March 2009)and 1999 lidar contour
*S mapping of the ponds.
*S The Bohannon-Huston Inc, (BHI)discharge rating curves were not detailed,
*S and have been used in the models previous to this
*S current model.  Smith Engineering Company computed detailed rating curves for
*S the detention pond stand pipes and emergency spillways (berms where flow will
*S spill).
*S
*S
*S
*S
```

```
*S    410 AND 411 could possibly drain to Tract 2-B AMAFCA Pond.  The lost
*S    Hyd's and fractional areas and volumes lost are as follows:
*S       HYD NO.'S              410.03 and 411.03
*S       DRAINAGE AREAS (sq mi)   0.00016   0.00188     TOTAL = 0.00204
*S       RUNOFF VOLUME  (ac-ft)   0.018     0.218       TOTAL = 0.236
*S
*S    THESE LOST HYD'S HAVE NOT BEEN ADDED INTO THIS MODEL.
*S
*S Beginning of the original update1.txt model
*S
* SMITH ENGINEERING COMPANY
* 6400 UPTOWN BLVD SUITE 500E
* ALBUQUERQUE, NEW MEXICO 87112
* (505) 884-0700
*
*  THE MODEL IS BROKEN UP INTO DIFFERENT SEGMENTS BASED UPON THE
*  NUMBER OF ASTERISKS.  THE CODING IS AS FOLLOWS:
*                 *** MAJOR BASIN ***
*                ***** ANALYSIS POINT *****
*                  **** SUB-BASIN ****
*                 *** ADD HYDROGRAPHS ***
*                    ** ROUTING **
*                  * DIVIDE HYDROGRAPHS *
*
* THE LAND TREATMENT CLASSIFICATIONS IS AS FOLLOWS:
*              TYPE A= BACKYARD PONDING, LANDSCAPE, AND UNDEVELOPED
*              TYPE B= GRASS
*              TYPE C= COMPACTED SOIL
*              TYPE D= IMPERVIOUS AREAS (ROOFS,PAVEMENT)
*S
*S The rainfall depths here are from NOAA Atlas 14 (new August 2003) and
*S are a little lower than used in the original DMP as follows:
*S  old 1-hr = 1.90,  new 1 hr  = 1.62
*S  old 6-hr = 2.20,  new 6-hr  = 2.11
*S  old 24-hr= 2.65,  new 24-hr = 2.44

*S
RAINFALL          TYPE=2
                QUARTER=0
                ONE=1.62 IN
                SIX=2.11 IN
                DAY=2.44 IN
                DT=0.05 HR
*
*S COMPUTED 24-HOUR RAINFALL DIST BASED ON NOAA ATLAS 2 - PEAK AT 1.4+3 HR
*
**** SUB-BASIN 8.3E ****
*
*S SUB-BASIN 8.3E
*S RIVERFRONTE ESTATES
*
COMPUTE NM HYD      ID=3 HYD NO=8.3W-318
                DA=0.05305 SQ MI
                    A=80
                    B=0
                    C=10
                    D=10
                TP=0.1333 HR  MASSRAIN=-1
*
* AREA 8.3 E RUNOFF HYDROGRAPH. ENTERS CANAL DIRECTLY.
* ********** SIDE INLET DESIGN Q *********
*
PRINT HYD          ID=3 CODE=1
*
```

```
*S DURING 100 YEAR FLOOD.
*
PRINT HYD         ID=5 CODE=0
MODIFY TIME       ID=5 TIME SHIFT=0.0001 BASE FLOW=-38 CFS
PRINT HYD         ID=5 CODE=0
*
*S* ROUTE BASE FLOW DOWN CANAL TO 8.3 DISCHARGE POINT. **
*
COMPUTE RATING CURVE ID=1 VS NO=8.3   NO SEGS=3
              MIN ELEV=100    MAX ELEV=104.5
              CH SLOPE=.0006   FP SLOPE=.0006
              N=.045          DIST=6.0
              N=-0.030        DIST=26.0
              N=0.045         DIST=32.0
              DIST   ELEV    DIST   ELEV    DIST   ELEV
              0     104.5   0.01   103.5   6.0    103.5
              13.0   100.0   19.0   100.0   26.0   103.5
              31.99  103.5   32.0   104.5
ROUTE MCUNGE      ID=6 HYD NO=12 INFLOW ID=5  DT=0.0 HR
              LENGTH=2650.0  NS=0  SLOPE=0.0006
              MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD         ID=6 CODE=0
*
*S BASE FLOW CORRECTION.
*
MODIFY TIME       ID=6  TIME SHIFT=0.0001  BASE FLOW=-38 CFS
PRINT HYD         ID=6 CODE=0
*
*** ADD AREA 8.3E TO CANAL FLOW. ***
*
ADD HYD           ID=6 HYD NO=139 ID=6 ID=3
*
PRINT HYD         ID=6 CODE=0
*
*S ROUTE 8.3E DOWN CANAL TO 8.1 DISCHARGE POINT. **
*
ROUTE MCUNGE      ID=5 HYD NO=13 INFLOW ID=6  DT=0.0 HR
              LENGTH=750.0  NS=0  SLOPE=0.0006
              MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD         ID=5 CODE=0
*
* BASE FLOW CORRECTION.
*
MODIFY TIME       ID=5  TIME SHIFT=0.0001  BASE FLOW=-38 CFS
*
* AREA 8.3E ROUTED DOWNSTREAM AND BASE FLOW CORRECTED TO 38 CFS MIN.
*
PRINT HYD         ID=5 CODE=0
*
*S ROUTE 8.3E DOWN CANAL TO DISCHARGE POINT OF PROPOSED POND AT BLACK RANCH.**
*
ROUTE MCUNGE      ID=83 HYD NO=14 INFLOW ID=5  DT=0.0 HR
              LENGTH=3250.0  NS=0  SLOPE=0.0006
              MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD         ID=83 CODE=0
*
*S BASE FLOW CORRECTION.
*
MODIFY TIME       ID=83  TIME SHIFT=0.0001  BASE FLOW=-38 CFS
*
* AREA 8.3E ROUTED DOWN CANAL TO NEXT AP AND BASE
* FLOW CORRECTED.
*
PRINT HYD         ID=83 CODE=0
*
*S CONTRIBUTING BASINS FROM PARADISE HILLS GOLF COURSE
```

```
                TP=0.133 HR  MASSRAIN=-1
*
PRINT HYD         ID=5 CODE=1
*
**** SUB-BASIN 104EA ****
*
*S SINGLE FAMILY RESIDENTIAL @ 2 DU PER ACRE
*
COMPUTE NM HYD      ID=6  HYD NO=104EA
              DA=0.0248 SQ MI
                   A=10
                   B=39
                   C=25
                   D=26
              TP=0.133 HR MASSRAIN=-1
*
PRINT HYD         ID=6 CODE=1

*
*S* ROUTE 103EA THRU 104EA **
*
COMPUTE RATING CURVE  CID=1 VS NO=1    NO SEGS=2
              MIN ELEV=100.0    MAX ELEV=101.8
              CH SLP=0.050     FP SLP=0.050
              N=0.020         DIST=33
              N=0.030         DIST=38
              DIST     ELEV
              0.0      101.33
              20.0     100.50
              32.0     100.00
              33.0     100.80
              38.0     101.80
*
ROUTE MCUNGE        ID=7 HYD NO=103EA.4 INFLOW ID=5  DT=0.0 HR
              LENGTH=1900   NS=0   SLOPE=0.050
              MATCODE=0   REGCODE=0   CCODE=0
PRINT HYD         ID=7      CODE=1
*

*** ADD ROUTED 103EA.4 TO 104EA ***
*
ADD HYD           ID=9 HYD NO=103EA.4
            ID I=7 ID II=6
PRINT HYD         ID=9 CODE=1
*
**** SUB-BASIN 105EA ****
*
*S SINGLE FAMILY RESIDENTIAL @ 2 DU PER ACRE
*
COMPUTE NM HYD      ID=10  HYD NO=105EA
              DA=0.0236 SQ MI
                   A=10
                   B=39
                   C=25
                   D=26
              TP=0.176 HR  MASSRAIN=-1
*
PRINT HYD         ID=10  CODE=1
*
*S* ROUTE FLOW COMING FROM 103EA.4 THRU 105EA **
*
COMPUTE RATING CURVE  CID=1 VS NO=1    NO SEGS=2
              MIN ELEV=100.0    MAX ELEV=101.8
              CH SLP=0.0111     FP SLP=0.0111

              N=0.020         DIST=33
```

```
                DIST    ELEV

                0.0     101.0
                10.0    100.0
                30.0    100.0
                40.0    101.0
 ROUTE MCUNGE       ID=16 HYD NO=102EA.6 INFLOW ID=4 DT=0.0 HR
                LENGTH=575 NS=0 SLOPE=0.0104
                MATCODE=0 REGCODE=0 CCODE=0
 PRINT HYD          ID=16 CODE=1
 *
 ** ADD ROUTED 102EA.6 TO ROUTED 104EA.5 HYD **
 *
 ADD HYD            ID=17   HYD NO=106EA.25

               ID I=15  ID II=16
 PRINT HYD          ID=17   CODE=1
 *
 **** SUB-BASIN 107EA ****
 *
 *S SINGLE FAMILY RESIDENTIAL @ 2 DU PER ACRE
 *
 COMPUTE NM HYD     ID=19  HYD NO=107EA
              DA=0.0213 SQ MI
                 A=20
                 B=64
                 C=10
                 D=6
              TP=0.181 HR  MASSRAIN=-1
 *
 PRINT HYD          ID=19          CODE=1
 *
 *S* ROUTE FLOW COMING FROM 106EA.25 THRU 107EA **
 *
 COMPUTE RATING CURVE  CID=1 VS NO=1    NO SEGS=1
              MIN ELEV=100.0   MAX ELEV=103.5 FT
              CH SLP=0.0094    FP SLP=0.0094
              N=0.030          DIST=55 FT
              DIST     ELEV
              0.0      103.5
              10.0     100.0
              45.0     100.0
              55.0     103.5

ROUTE MCUNGE        ID=2 HYD NO=107EA.6 INFLOW ID=17  DT=0.0 HR

              LENGTH=1600 NS=0 SLOPE=0.0094
              MATCODE=0 REGCODE=0 CCODE=0
PRINT HYD           ID=2 CODE=1
*
** ADD ROUTED 106EA.5 TO BASIN 107EA HYD **
*
ADD HYD             ID=3    HYD NO = 107EA.6
             ID I=2   ID II=19
PRINT HYD           ID=3    CODE=1

*
**** SUB-BASIN 108EA ****
*
*S GOLF COURSE, PARKING LOT AND SINGLE FAMILY RESIDENTIAL @ 2 DU PER ACRE
*
COMPUTE NM HYD      ID=7  HYD NO=108EA
            DA=0.0470 SQ MI
                A=17
                B=58
                C=13
```

```
                    A=16
                    B=51
                    C=10
                    D=23
                TP=0.133 HR  MASSRAIN=-1
 PRINT HYD          ID=10 CODE=1
 *
 *S* ROUTE FLOW COMING FROM RESERVOIR THRU 109EA **
 *
 COMPUTE RATING CURVE  CID=1 VS NO=1    NO SEGS=1
                MIN ELEV=100.0    MAX ELEV=101.0 FT
                CH SLP=0.018      FP SLP=0.018
                N=0.030           DIST=40 FT
                DIST      ELEV
                0.0       101.0
                10.0      100.0
                30.0      100.0
                40.0      101.0

 ROUTE MCUNGE         ID=11 HYD NO=109EA.78 INFLOW ID=9  DT=0.0 HR
                LENGTH=500 NS=0 SLOPE=0.018

                MATCODE=0 REGCODE=0 CCODE=0
 PRINT HYD          ID=11 CODE=1
 *
 *** ADD ROUTED POND OUTFLOW TO BASIN 109EA HYD ***
 *
 ADD HYD            ID=12    HYD NO=109EA.87
               ID I=10  ID II=11
 PRINT HYD          ID=12    CODE=1
 *
 **** SUB-BASIN 110EA  ****
 *
 *S PKG LOT, CLUBHOUSE, ENTR. RD, PROSHOP, BED & BRKFST
 *
 COMPUTE NM HYD      ID=13  HYD NO=110EA
                DA=0.006 SQ MI
                    A=5
                    B=15
                    C=10
                    D=70
               TP=0.133 HR MASSRAIN=-1
PRINT HYD          ID=13  CODE=1
*
** ADD SUB-BASIN 109EA TO SUB-BASIN 110EA
*
ADD HYD            ID=14    HYD NO=110EA.1
              ID I=12  ID II=13
PRINT HYD          ID=14    CODE=1

*
* INPUT MODEL FROM MAY 30, 1995 "PROPOSED POND AT THE
* NORTHWEST CORNER COORS BOULEVARD NW AND PASEO DEL NORTE NW"
* SOURCE: SMITH ENGINEERING COMPANY 3/95
*
*
** ROUTE (103) 110EA.1 THROUGH 104 **
COMPUTE RATING CURVE  CID=1  VS NO=1   NO SEGS=1
               MIN ELEV=0      MAX ELEV=3.67
               CH SLOPE=0.0143  FP SLOPE=0.0143
               N=0.017         DIST=48
               DIST    ELEV       DIST     ELEV
                0      3.67       0.1       0
               24      0.48       47.9      0
               48      3.67
```

```
COMPUTE RATING CURVE  CID=1  VS NO=1   NO SEGS=1
                MIN ELEV=0      MAX ELEV=2
                CH SLOPE=0.0251  FP SLOPE=0.0251
                N=0.017         DIST=48
                DIST    ELEV        DIST     ELEV
                 0     2.00        0.1      0
                24     0.48        47.9     0
                48     2.00

ROUTE MCUNGE        ID=4   HYD NO=105.12 INFLOW ID=2

                DT=0.0  L=1950
                NS=0  SLOPE=0.0251   MATCODE=0
                REGCODE=0     CCODE=0
PRINT HYD           ID=4   CODE=1
*
**** SUB-BASIN 106 ****
*S SUB-BASIN 106 IS NORTH OF CONGRESS AVE - RESIDENTIAL
*
COMPUTE NM HYD      ID=1  HYD NO = 106
                DA= 0.0954  SQUARE MI

                     A=10
                     B=25
                     C=15
                     D=50

                TP=0.1463  HR   MASSRAIN=-1
PRINT HYD           ID=1  CODE=1
*
**** SUB-BASIN 106A1 ****
*
*S SUB-BASIN 106A IS SKY CREST ESTATES
* SOURCE: D. MARK GOODWIN & ASSOCIATES, SKY CREST ESTATES DRNGE REPORT 2/95
*
COMPUTE NM HYD      ID=7  HYD NO=106A1
                DA=0.00846 SQUARE MI
                    A=0
                    B=27.74
                    C=27.74
                    D=44.52
                TP=0.1333  HR MASSRAIN=-1
PRINT HYD           ID=7  CODE=1
** ROUTE RESERVOIR **
*S ROUTING RESERVOIR WITH 21" DIAM ORIFACE
*S EXISTING POND AT SW CORNER OF ARROWHEAD AVE AND CHANTILLY RD
*
ROUTE RESERVOIR     ID=9   HYD NO=106A1.RES   INFLOW=7   CODE=1
                OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                   0              0            5057
                 4.675          0.062          5058
                16.379          0.140          5059
                22.510          0.235          5060
                27.298          0.349          5061
*S
*S      OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
*S         0              0            5057
*S        4.675          0.062          5058

*S       16.379          0.140          5059
*S       22.510          0.235          5060
*S       27.298          0.349          5061  EXISTING TOP OF POND
*S
*
*S ROUTING 106A1.RES ON EXISTING ASPHALT SWALE DOWN CHANTILLY ROAD TO CONGRESS
*
```

```
                DA= 0.0240  SQUARE MI
                     A=10
                     B=27.4
                     C=15
                     D=47.6
                TP=0.1333  HR   MASSRAIN=-1
 PRINT HYD          ID=1  CODE=1
 *
 *S ROUTING 108 ON STONE HILLS RD TO EXISTING DETENTION POND
 *S THRU CACTUS HILLS
 *
 COMPUTE RATING CURVE  CID=1  VS NO=1   NO SEGS=1
                MIN ELEV=0      MAX ELEV=2.67
                CH SLOPE=0.04    FP SLOPE=0.04
                N=0.017         DIST=48
                DIST    ELEV   DIST     ELEV
                 0      2.67    0.1       0
                24      0.48   47.9       0
                48      2.67

 ROUTE MCUNGE        ID=2   HYD NO=108.02 INFLOW ID=1
                DT=0.0  L=825
                NS=0  SLOPE=0.04     MATCODE=0
                REGCODE=0     CCODE=0
 PRINT HYD          ID=2   CODE=1
 *
 *** ADD HYD 108.02 TO HYD 107.3 ***

 *
 ADD HYD            ID=4    HYD NO=108.1   ID I=2  ID II=11
 PRINT HYD          ID=4    CODE=1
 *
 **** SUB-BASIN 109 ****
 *S SUB-BASIN 109 IS PART OF CACTUS HILLS AND EXISTING DET BASIN
 *
 COMPUTE NM HYD       ID=1  HYD NO = 109
                DA= 0.0207  SQUARE MI
                     A=20
                     B=22.5
                     C=15
                     D=42.5
                TP=0.1333  HR   MASSRAIN=-1
 PRINT HYD          ID=1  CODE=1
 *
 *** ADD HYD 109 TO HYD 108.1 ***

 *S**** HYD 109.1 IS AP #3    *****
 *
 ADD HYD            ID=2    HYD NO=109.1   ID I=1  ID II=4
 PRINT HYD          ID=2    CODE=1
 *
 *S FUTURE DETENTION BASIN IN BASIN 109
 * SOURCE: WILSON & CO, AHYMO FOR SPECIAL ASSESMENT DISTRICT 224
 *
 ROUTE RESERVOIR     ID=66   HYD NO=109.RES   INFLOW=2   CODE=1
                OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                  0              0              5069
                  7             0.98            5070
                 25             2.41            5071
                 52             3.97            5072
                 82             5.65            5073
                112             7.45            5074
                140             9.37            5075
                160            11.42            5076
                178            13.59            5077
                195            15.89            5078
```

```
PRINT HYD         ID=4    CODE=1
*
*S EXISTING DROP INLET IN BASIN 202
* SOURCE: B.H. FEB, 1992 CACTUS RIDGE DRAINAGE REPORT, HYMO PRINTOUT
*
*
ROUTE RESERVOIR     ID=2  HYD NO=202.RES1  INFLOW=4  CODE=1
              OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                0            0          5138.7
               20.12         0.0009     5139.7
               24.07         0.0019     5140.7
               41.69         0.0028     5141.7
               53.82         0.0037     5142.7
               63.69         0.0047     5143.7
               70.59         0.0054     5144.5
               74.58         0.0111     5145.0
               81.98         0.0603     5146.0
               83.46         0.1024     5146.2
               87.97         0.1700     5146.5
               94.77         0.2611     5147.0
*S
*S     OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
*S       0            0          5138.7
*S      20.12         0.0009     5139.7
*S      24.07         0.0019     5140.7
*S      41.69         0.0028     5141.7
*S      53.82         0.0037     5142.7
*S      63.69         0.0047     5143.7
*S      70.59         0.0054     5144.5
*S      74.58         0.0111     5145.0
*S      81.98         0.0603     5146.0
*S      83.46         0.1024     5146.2
*S      87.97         0.1700     5146.5
*S      94.77         0.2611     5147.0
*S
*S EXISTING DETENTION BASIN IN BASIN 401
*S ROUTING RESERVOIR WITH 21" ORIFACE
* SOURCE: B.H. FEB, 1992 CACTUS RIDGE DRAINAGE REPORT, HYMO PRINTOUT
*
ROUTE RESERVOIR     ID=4  HYD NO=202.RES2  INFLOW=2  CODE=1
              OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                0            0          5114
               11.58         0.0026     5115
               16.38         0.0052     5116
               20.06         0.0078     5117
               23.16         0.0091     5118
               25.89         0.0521     5119
               28.37         0.1097     5120
               30.64         0.1829     5121
               32.75         0.2747     5122
               34.74         0.3856     5123
               36.62         0.5174     5124
               38.41         0.6717     5125
               40.11         0.8496     5126
               41.76         1.03       5127
               61            1.08       5127.25
               94            1.13       5127.5
              136            1.18       5127.75
              185            1.23       5128
*S
*S     OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
```

```
                48     0.67

 ROUTE MCUNGE        ID=33  HYD NO=301.02 INFLOW ID=1
                DT=0.0  L=1765

                NS=0  SLOPE=0.0499  MATCODE=0
                REGCODE=0     CCODE=0
 PRINT HYD          ID=33  CODE=1
 *
 **** SUB-BASIN 302 ****
 *S METHODIST CHURCH PROPERTY
 *
 COMPUTE NM HYD      ID=1  HYD NO = 302

                DA= 0.0043  SQUARE MI
                     A=0
                     B=10
                     C=0
                     D=90

                TP=0.1333  HR  MASSRAIN=-1
 PRINT HYD          ID=1  CODE=1
 *
 *S ROUTING 302 ON PARADISE BLVD TO SUB-BASIN 304
 *
 COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                MIN ELEV=0      MAX ELEV=2.67
                CH SLOPE=0.0443  FP SLOPE=0.0443
                N=0.017         DIST=48
                DIST    ELEV   DIST     ELEV
                 0      2.67    0.1       0
                24       0.48   47.9       0
                48       2.67

 ROUTE MCUNGE        ID=4  HYD NO=302.02 INFLOW ID=1
                DT=0.0  L=2165
                NS=0  SLOPE=0.0443  MATCODE=0
                REGCODE=0     CCODE=0
 PRINT HYD          ID=4  CODE=1
 *
 *** ADD HYD 301.02 AND 302.02 ***
 * COMMENT OUT
 *
 *ADD HYD           ID=4    HYD NO=302.10  ID I=2  ID II=5
 *PRINT HYD         ID=4    CODE=1
 *
 **** SUB-BASIN 303 ****

 *S COMMERCIAL
 *
 COMPUTE NM HYD      ID=1  HYD NO = 303
                DA= 0.0651  SQUARE MI
                     A=0
                     B=10
                     C=0
                     D=90
                TP=0.1773 HR  MASSRAIN=-1
 PRINT HYD          ID=1  CODE=1
 *
 *S EXISTING DETENTION BASIN IN BASIN 303
 *S ROUTING RESERVOIR WITH 21" OUTLET WITH 2.6% SLOPE OF PIPE
 * ASSUME NO SEDIMENT VOLUME DISPLACEMENT
 * SOURCE OF TOTAL POND CAPACITY AND SIZE OF OUTLET PIPE:
 * SOURCE: ISAACSON AND ARFMAN OCT, 1990 DRAINAGE REPORT
 *
 ROUTE RESERVOIR     ID=5  HYD NO=303.RES  INFLOW=1  CODE=1
```

```
*
COMPUTE RATING CURVE  CID=1  VS NO=1   NO SEGS=1
                MIN ELEV=0      MAX ELEV=2.67
                CH SLOPE=0.0128  FP SLOPE=0.0128
                N=0.017         DIST=48
                DIST     ELEV   DIST     ELEV
                 0      2.67    0.1       0
                24      0.48   47.9       0
                48      2.67

ROUTE MCUNGE        ID=16   HYD NO=OLF.32 INFLOW ID=12
                DT=0.0  L=1250
                NS=0  SLOPE=0.0128   MATCODE=0
                REGCODE=0     CCODE=0
PRINT HYD           ID=16   CODE=1

*
**** SUB-BASIN 304 ****

*S INCLUDES AREA FROM PARADISE BLVD - COMMERCIAL
*
COMPUTE NM HYD      ID=1  HYD NO = 304
                DA= 0.0349  SQUARE MI
                      A=0
                      B=10

                      C=0
                      D=90
                TP=0.1333 HR   MASSRAIN=-1
PRINT HYD           ID=1  CODE=1
*

*** ADD HYD 304 TO HYD 302.02   NOTE - WAS ADD 304 T0 302.10 ***
*
ADD HYD             ID=7    HYD NO=304.1   ID I=1  ID II=4

PRINT HYD           ID=7    CODE=1
*
*** ADD HYD 304.1 TO HYD OLF.32 ***
*
ADD HYD             ID=5    HYD NO=304.2   ID I=7  ID II=16
PRINT HYD           ID=5    CODE=1
*
* DIVIDE HYD 304.1 BY MAXIMUM INFLOW OF CATCH BASINS *

*S DIVIDE AT MH# S-702
*
DIVIDE HYD          INFLOW ID=5   Q=20    ID I=4    HYD NO=CB1
                          ID II=7    HYD NO=304.13
PRINT HYD           ID=4  CODE=1
*S
*S HYD CB1 WILL DRAIN INTO THE EAGLE RANCH STORM DRAIN SYSTEM
PRINT HYD           ID=7  CODE=1
*S
*S HYD 304.13 WAS TO BE THE EXCESS STREET FLOW, BUT NOW BY PROPOSED
*S    DRAINAG MANAGEMENT BY AMAFCA AND COA, THIS FLOW WILL NOT BE ALLOWED
*S    TO DRAIN INTO PARADISE BLVD.
*S
*S *    *    *    *    *    *    *    *    *
*S
*S NOTE –HYD 304.13 IS ACTUALLY LOST FROM THIS MODEL AS HDYR 402.20 HAS
*S     HAS BEEN COMMENTED OUT (SEE BELOW)
*S *    *    *    *    *    *    *    *    *
*S
*
*** ADD PIPE HYD 303.02 TO HYD CB1 ***
```

```
 * SOURCE OF AREA: B.H. FEB 1992 DRAINAGE REPORT
 *
 COMPUTE NM HYD      ID=1  HYD NO = 401
                DA= 0.0236  SQUARE MI
                     A=10
                     B=22.3
                     C=15
                     D=52.7
                TP=0.1333 HR   MASSRAIN=-1
 PRINT HYD          ID=1  CODE=1
 *
 *** ADD HYD OLF.2 TO SUB-BASIN 401 ***
 *
 ADD HYD            ID=3    HYD NO=401.1  ID I=1  ID II=11
 PRINT HYD          ID=3    CODE=1
 *
 *S DIVIDE HYD 401.1 BY MAXIMUM INFLOW OF CATCH BASINS, WEST OF
 *S SUB-BASIN 401,ALONG PARADISE ROAD (7 CB AT 10 CFS EACH)
 *
 DIVIDE HYD         INFLOW ID=3   Q=70    ID I=4    HYD NO=CB2
                          ID II=5    HYD NO=401.13
 PRINT HYD          ID=4  CODE=1
 PRINT HYD          ID=5  CODE=1

 *
 **** SUB-BASIN 402 ****
 *S SUB-BASIN 402 IS PART OF WEST PARK APARTMENTS
 * SOURCE: D.M.G. MAY 1994 DRAINAGE REPORT
 *

 COMPUTE NM HYD      ID=1  HYD NO = 402
                DA= 0.0088  SQUARE MI
                     A=0
                     B=28.6
                     C=28.7
                     D=42.7
                TP=0.1333  HR   MASSRAIN=-1
 PRINT HYD          ID=1  CODE=1
 *
 *** ADD OLF HYD 401.13 TO 402 ***
 *
 ADD HYD            ID=6    HYD NO=402.10   ID I=5  ID II=1
 PRINT HYD          ID=6    CODE=1
 *
 *S
 *S  UPDATE3.txt  proposed drainage management change
 *s
 *S         commented out HYD 402.2 in update3.txt to remove all flow
 *S         IN EXCESS OF STORM DRAIN CAPACITY
 *S         from basins 302, 303 and 304 from reaching the detention
 *S         pond in Basin 504 that outfalls to the proposed Tract 2-B Pond
 *S         NO FLOW FROM THOSE BASINS IS TO BE ALLOWED TO DRAIN INTO PARADISE
 *S         BLVD.
 *S
 *** ADD OLF HYD 304.13 TO OLF HYD 402.1 ***
 **S OLF HYD 402.2 CONTINUES SOUTH EAST ON PARADISE ROAD
 **S**** OLF HYD 402.2 IS AP #5    *****
 *
 *ADD HYD            ID=18    HYD NO=402.2   ID I=6  ID II=7
 *PRINT HYD          ID=18    CODE=1
 *S
 *S UPDATE3.TXT REVISION -  ADD BASIN 301 TO APPROPRIATE FRACTION
 *S                  OF BASIN 401 AND ALL OF BASIN 402
 *S
 ADD HYD            ID=18    HYD NO=402.66   ID I=6  ID II=33
 PRINT HYD          ID=18    CODE=1
```

```
PRINT HYD          ID=2  CODE=1
*
**** SUB-BASIN 404 ****
*S LESLIE HOMES
* SOURCE: D.M.G. JAN 1993 DRAINAGE REPORT
*
COMPUTE NM HYD      ID=1  HYD NO = 404
               DA= 0.0161  SQUARE MI
                    A=10
                    B=25.1
                    C=15
                    D=49.9
               TP=0.1333  HR   MASSRAIN=-1
PRINT HYD          ID=1  CODE=1
*

*** ADD HYD 404 TO HYD CB3.13 ***
* ASSUME ALL SUB-BASIN 404 ENTERS SD
*
ADD HYD            ID=5    HYD NO=CB4.1   ID I=1  ID II=2
PRINT HYD          ID=5    CODE=1
*
*S ROUTE CB4.1 IN 60" PIPE BETWEEN MH # S-732 AND MH # S-531
*S Q(CAP) = 184 CFS, AT SLOPE=0.005
*

COMPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1 SLP=0.005
                    DIAM=5 FT  N=0.015
ROUTE MCUNGE        ID=2  HYD NO=CB4.13  INFLOW ID=5
               DT=0.0  L=1051
               NS=0  SLOPE=0.005   MATCODE=0
               REGCODE=0     CCODE=0
PRINT HYD          ID=2  CODE=1
*

**** SUB-BASIN 405 ****
*S SUB-BASIN 405 IS PART OF CACTUS HILLS
* SOURCE: D.M.G. JAN 1993 DRAINAGE REPORT
*
COMPUTE NM HYD      ID=1  HYD NO = 405
               DA= 0.0270  SQUARE MI
                    A=10
                    B=42
                    C=10
                    D=38
               TP=0.1333 HR MASSRAIN=-1
PRINT HYD          ID=1  CODE=1
*
*S  DIVIDE SUB-BASIN 405 BY REMAINING MAXIMUM PIPE CAPACITY *
*
DIVIDE HYD         INFLOW ID=1   Q=40   ID I=6   HYD NO=CB5
                         ID II=7   HYD NO=405.03
PRINT HYD          ID=6  CODE=1
PRINT HYD          ID=7  CODE=1
*
*S ROUTING 405.03 TO CONGRESS AVE
*
COMPUTE RATING CURVE  CID=1  VS NO=1   NO SEGS=1
               MIN ELEV=0      MAX ELEV=2.67
               CH SLOPE=0.004   FP SLOPE=0.004
               N=0.017         DIST=48
               DIST    ELEV   DIST     ELEV
               0      2.67    0.1       0
               24      0.48   47.9       0
               48      2.67
```

```
              NS=0  SLOPE=0.0083  MATCODE=0
              REGCODE=0     CCODE=0
PRINT HYD          ID=3   CODE=1
*
**** SUB-BASIN 407 ****
*S SUB-BASIN 407 IS NORTH OF CONGRESS AVE - COMMERCIAL
* INCLUDES AREA FROM IRVING BLVD
*
COMPUTE NM HYD       ID=1  HYD NO = 407
              DA= 0.0224  SQUARE MI
                   A=0
                   B=10

                   C=0

                   D=90
              TP=0.1333  HR   MASSRAIN=-1
PRINT HYD          ID=1  CODE=1
*


* EXISTING DETENTION BASIN IN BASIN 407
*S CUBBY HOLE DETENTION BASIN
*S ROUTING RESERVOIR WITH 12" ORIFACE
* SOURCE: D.M.G. JAN, 1993 DRAINAGE REPORT, PG 42
*
ROUTE RESERVOIR     ID=5   HYD NO=407.RES   INFLOW=1   CODE=1
              OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                0            0          5063
                3.78         0.0387       5064

                5.35         0.0597       5065
                6.55         0.0808       5066
                7.56         0.1019       5067
                8.46         0.1230       5068
                9.26         0.1440       5069
                10.00         0.1651       5070
                29           0.170        5070.25
                62           0.175        5070.5
                104          0.180        5070.75
                153          0.185        5071
*S
*S     OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
*S        0            0          5063

*S        3.78         0.0387       5064
*S        5.35         0.0597       5065
*S        6.55         0.0808       5066
*S        7.56         0.1019       5067
*S        8.46         0.1230       5068
*S        9.26         0.1440       5069
*S        10.00         0.1651       5070
*S        29           0.170        5070.25
*S        62           0.175        5070.5
*S        104          0.180        5070.75

*S        153          0.185        5071
*S
* DIVIDE HYD 407.RES BY MAXIMUM PIPE OUTFLOW *
*
DIVIDE HYD          INFLOW ID=5   Q=10   ID I=89   HYD NO=407.03

                         ID II=13   HYD NO=OLF.4
PRINT HYD          ID=27 CODE=1
PRINT HYD          ID=13 CODE=1
*
```

```
*S
*S  UPDATE3.TXT REVISION – ADD BASIN 408 WITH THE EXCESS FLOW FROM
*S          BASIN 405 THAT IS NOT COLLECTED BY THE EAGLE RANCH
*S          BLVD. STORM DRAIN THIS FLOW WILL DRAIN EAST ON IRVING
*S
ADD HYD          ID=14   HYD NO=408.66  ID I=14  ID II=15
PRINT HYD        ID=14   CODE=1
*S
**** SUB-BASIN 409 ****
*S SUB-BASIN 409 IS EAST OF IRVING, TRACT D
*
COMPUTE NM HYD      ID=1  HYD NO = 409

               DA= 0.0098  SQUARE MI
                    A=0
                    B=10
                    C=0
                    D=90
               TP=0.1333 HR   MASSRAIN=-1
PRINT HYD        ID=1  CODE=1
*
*S DIVIDE HYD 409 BY 36" STUB OUT PIPE CAPACITY *
*
DIVIDE HYD       INFLOW ID=1   Q=25  ID I=28   HYD NO=CB6
                        ID II=15  HYD NO=409.03
PRINT HYD        ID=28 CODE=1
PRINT HYD        ID=15 CODE=1
*
**** SUB-BASIN 411 ****
*S SUB-BASIN 411 IS EAST OF IRVING, TRACT B
*
COMPUTE NM HYD      ID=1  HYD NO = 411
               DA= 0.0092  SQUARE MI
                    A=0
                    B=10
                    C=0
                    D=90
               TP=0.1333  HR   MASSRAIN=-1
PRINT HYD        ID=1  CODE=1
*
*S DIVIDE HYD 411 BY INLET CAPACITY *
DIVIDE HYD       INFLOW ID=1   Q=10   ID I=2   HYD NO=CB7
                        ID II=7  HYD NO=411.03
PRINT HYD        ID=2  CODE=1
PRINT HYD        ID=7  CODE=1
*
**** SUB-BASIN 410 ****
*S SUB-BASIN 410 IS EAST OF IRVING, TRACT A
*
COMPUTE NM HYD      ID=1  HYD NO = 410
               DA= 0.0047  SQUARE MI
                    A=0
                    B=10
                    C=0
                    D=90
               TP=0.1333  HR   MASSRAIN=-1
PRINT HYD        ID=1  CODE=1
*
*S DIVIDE HYD 410 BY INLET CAPACITY *
DIVIDE HYD       INFLOW ID=1   Q=10   ID I=9   HYD NO=CB8

                        ID II=16  HYD NO=410.03
PRINT HYD        ID=9  CODE=1
PRINT HYD        ID=16 CODE=1
*
*** ADD HYD 411.03 TO HYD 410.03 ***
```

```
*** ROUTE PROPOSED PIPE UNTIL CUBBY HOLE DETENTION POND ***
*S Q(CAP) =233 CFS, AT SLOPE = 0.008
*
COMPUTE RATING CURVE  CID=1  NO=1   CODE=-1   SLP=0.008
                      DIAM=5.5 FT       N=0.013
ROUTE MCUNGE          ID=2  HYD NO=CB6.23      INFLOW ID=66
                DT=0.0 L=690
                NS=0  SLOPE=0.008  MATCODE=0
                REGCODE=0         CCODE=1
PRINT HYD             ID=2             CODE=1
*

*** ADD HYD 407 TO PROPOSED PIPE SYSTEM ***
*
ADD HYD               ID=86  HYD NO=CB6.33   ID I=2  ID II=89
PRINT HYD             ID=86  CODE=1
*
*S** ROUTE PROPOSED PIPE UNTIL IT REACHES EAGLE RANCH ROAD AGAIN ***
*S Q(CAP) =233 CFS AT SLOPE = 0.008
*
COMPUTE RATING CURVE  CID=1  NO=1   CODE=-1   SLP=0.008

                      DIAM=5.5 FT       N=0.013
ROUTE MCUNGE          ID=8  HYD NO=CB6.33      INFLOW ID=86
                DT=0.0 L=300
                NS=0  SLOPE=0.008  MATCODE=0
                REGCODE=0         CCODE=1
PRINT HYD             ID=8             CODE=1
*

** ADD BASIN 409 TO PROPOSED PIPE **
*
ADD HYD               ID=9   HYD NO=CB6.43   ID I=28 ID II=8
PRINT HYD             ID=9   CODE=1
*
**** SUB-BASIN 413 ****
*S SUB-BASIN 413 IS WEST OF EAGLE RANCH COMMERCIAL*
*
COMPUTE NM HYD        ID=3    HYD NO= 413
                DA=0.0156  SQUARE MI
                     A=0
                     B=10
                     C=0
                     D=90
                TP=0.133 HR MASSRAIN=-1
PRINT HYD             ID=3 CODE=1
*
**** SUB-BASIN 414 ****
*S SUB-BASIN 414 IS WEST OF EAGLE RANCH COMMMERCIAL*
*
COMPUTE NM HYD        ID=10   HYD NO=414
                DA=0.00297 SQUARE MI
                     A=0
                     B=10
                     C=0
                     D=90
                TP=0.133 HR MASSRAIN=-1
PRINT HYD             ID=10 CODE=1
*
*** ADD 413 AND 414 ***
*
ADD HYD               ID=5   HYD NO=CB6.53   ID I=3 ID II=10
PRINT HYD             ID=5   CODE=1
*
*** ADD 413 AND 414 TO PROPOSED PIPE ***
*
```

```
                NS=0  SLOPE=0.021   MATCODE=0
                REGCODE=0    CCODE=0
 PRINT HYD          ID=7  CODE=1
 *
 **** SUB-BASIN 502 ****
 *S COMMERCIAL
 * SOURCE OF AREA: B.H. APR, 1990 DRAINAGE REPORT
 *
 COMPUTE NM HYD      ID=1  HYD NO = 502
                DA= 0.0435  SQUARE MI
                     A=0
                     B=10
                     C=0
                     D=90
                TP=0.1333 HR   MASSRAIN=-1
 PRINT HYD          ID=1  CODE=1
 *
 *S DIVIDE HYD 305.1 IN PARADISE BLVD BY ASSUMED 18" CAPACITY *
 *
 DIVIDE HYD         INFLOW ID=19  Q=20     ID I=2   HYD NO=402.24
                          ID II=3   HYD NO=402.25
 PRINT HYD          ID=2  CODE=1
 PRINT HYD          ID=3  CODE=1
 *
 *** ADD OLF HYD 402.24 TO SUB-BASIN 502 ***
 *
 ADD HYD            ID=5    HYD NO=502.10    ID I=2   ID II=1
 PRINT HYD          ID=5    CODE=2
 *
 *S HYD 502.10 IS THE INFLOW HYD TO THE APARTMENT POND
 *S
 PUNCH HYD          ID=5
 *S EXISTING DETENTION BASIN IN SUB-BASIN 502
 *S ROUTING RESERVOIR WITH 24" RCP AND 6'2" HIGH 18" STANDPIPE
 * SOURCE OF STORAGE AND DISCHARGE was: B.H. APR, 1990 DRAINAGE REPORT *
 * commented out as follows.
 *ROUTE RESERVOIR     ID=8   HYD NO=502.RES   INFLOW=5   CODE=1
 *               OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
 *                 0            0          5030
 *                38.9526       2.1993       5038
 *                58           2.268        5038.25
 *                91           2.337        5038.5
 *S
 *S APARTMENT POND RES. ROUTE DATA COMPUTED BY SEC MARCH 2009
 *S
 ROUTE RESERVOIR     ID=8   HYD NO=502.RES   INFLOW=5   CODE=1
               OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                 0            0          5034
                 0.1          0.10       5035
                 0.2          0.24       5036
                 1.4          0.44       5037
                 3.4          0.70       5038
                 5.8          1.03       5039
                 16.7         1.41       5040
                 155.1        1.82       5041
 PRINT HYD          ID=8   CODE=1
 *S
 *S APARTMENT POND - OUTFLOW HYDROGRAPH IS 502.RES
 *S
 **** SUB-BASIN 503 ****
 *S COMMERCIAL
 * SOURCE OF AREA: B.H. APR, 1990 DRAINAGE REPORT
 * REVISED BY SEC MARCH 2009
 COMPUTE NM HYD      ID=1  HYD NO = 503
               DA= 0.0188  SQUARE MI
                    A=0
```

```
*                153          4.698        5011
*                209          4.805        5011.25
*PRINT HYD          ID=5     CODE=1
*S
*S
*S
*S MOVIE POND RESERVOIR ROUTE DATA COMPUTED BY SEC MARCH 2009
*S
ROUTE RESERVOIR      ID=5   HYD NO=503.RES  INFLOW=2   CODE=10
                OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                  0            0            5004
                  0.1          0.20         5005
                  0.2          0.44         5006
                  1.4          0.74         5007
                  3.4          1.09         5008
                  5.8          1.50         5009
                  8.7          1.96         5010
                  11.8         2.47         5011
                  15.3         3.02         5012
                  18.2         3.62         5012.73
                  20.3         3.63         5013
                  23.5         4.26         5013.27
                  109.9        4.28         5014
PRINT HYD          ID=5     CODE=1
*S
*S MOVIE POND HYDROGRAPH NUMBER IS 503.RES
*S
**S  DON'T NEED FOLLOWING ADD DUE TO PREVIOUS ADD OF 503.19
**S
**S*** ADD HYD 502.RES TO HYD 503.RES  ***
**S
**SADD HYD           ID=10   HYD NO=503.1  ID I=5  ID II=8
**SPRINT HYD         ID=10   CODE=1
*S
**** SUB-BASIN 504 ****
*S COMMERCIAL
* SOURCE OF AREA: B.H. APR, 1990 DRAINAGE REPORT
* CHANGE AREA FROM 0.0257 TO 0.0426
*S
*S UPDATE 6 CHANGE – DIVIDED ORIGINAL BASIN 504 INTO 504.A AND 504.B
*S TO DIVIDE DRAINAGE INTO THE NORTH POND (504.A) AND SOUTH POND (504.B)
*S
*COMPUTE NM HYD       ID=1  HYD NO = 504
*                DA= 0.0426  SQUARE MI
*                    A=0
*                    B=10
*                    C=0
*                    D=90
*               TP=0.2025 HR   MASSRAIN=-1
*PRINT HYD          ID=1  CODE=1
*S NEW BASIN 504.B
COMPUTE NM HYD       ID=1  HYD NO = 504.B
               DA= 0.0027  SQUARE MI
                    A=0
                    B=10
                    C=0
                    D=90
              TP=0.133 HR   MASSRAIN=-1
PRINT HYD          ID=1  CODE=2
*S
*S HYD 504.B IS THE INFLOW HYD TO THE SOUTH POND
*S
PUNCH HYD          ID=1
*S
*S UPDATE 6 NEW RESERVOIR ROUTING IS FOR SOUTH POND
*S
```

```
*S
PRINT HYD          ID=3    CODE=1
*S
*S NOW MODEL  PROPOSED  NORTH POND IF THE PROPOSED 48-INCH HOBAS PIPE IS
*S BUILT
*S
ROUTE RESERVOIR     ID=79  HYD NO=504APRO.RES  INFLOW=1   CODE=10
              OUTFLOW(CFS)  STORAGE(AC-FT)  ELEV(FT)
                 0          0          5004
                 5.2        0.02       5005
                 19.4       0.06       5006
                 41.8       0.13       5007
                 69.2       0.25       5008
                 218.7      0.40       5009
                 334.3      0.57       5009.5
*S
*S NORTH POND (PROPOSED WITH 48-INCH HOBAS PIPE TO AMAFCA TRACT 2B POND
*S
*S PROPOSED NORTH POND IS HYD 504APRO.RES
*S
PRINT HYD          ID=79    CODE=1
*S
*S
*S NOW ADD EXISTING NORTH POND RES ROUTE TO SUM OF MOVIE POND AND
*S      SOUTH POND RES ROUTE
*S
ADD HYD            ID=11    HYD NO=504B.99  ID I=3   ID II=5
PRINT HYD          ID=11    CODE=1
*S
*S HYD 504B.99 IS TOTAL OF ALL POND HYDROGRAPHS ADDED TOGETHER ON WEST SIDE
*S    OF COORS ROAD THAT WILL OUTFALL TO AMAFCA TRACT 2B POND(E. SIDE COORS)
*
**S
***S THIS IS REVISED ADD, CORRECTED ID NO'S
**S ADD HYD 503.RES TO HYD 504.RES  ***
*
*ADD HYD            ID=11    HYD NO=504.1  ID I=3   ID II=5
*PRINT HYD          ID=11    CODE=1
**S
**S HYD. 504.10 IS THE TOTAL HYDROGRAPH ON THE WEST SIDE OF COORS
**S NEAR THE EXISTING 36" CMP THAT PASSES UNDER COORS TO THE
**S TRACT 2-B POND -- PROPOSED AMAFCA POND
*S
**** SUB-BASIN 505 ****
*S EAST OF IRVING BLVD, NORTH OF COORS BLVD - COMMERCIAL
*
COMPUTE NM HYD       ID=2  HYD NO = 505
              DA= 0.0497  SQUARE MI
                  A=0
                  B=10
                  C=0
                  D=90
              TP=0.2066 HR   MASSRAIN=-1
PRINT HYD          ID=2  CODE=1
*
DIVIDE HYD         ID=2  PER=-75  ID=1 HYD NO=505.D1
                     ID=5 HYD NO=505.D2
*S
PRINT HYD          ID=1  CODE=1
*S HYD 505.D1 IS HYD BASIN 505 HYD DIVIDED BY 75% TO ACCOUNT FOR
*S    DETENTION / RETENTION AREAS IN NORTHERN PART OF BASIN
*S
PRINT HYD          ID=5 CODE=1
*S
*S HYD 505.D2 IS 25% OF BASIN 505, NOT USED IN REMAINDER OF MODEL and is
*S          THEREFORE LOST FROM THE MODEL
```

```
PRINT HYD          ID=29  CODE=1
*
*S
ADD HYD            ID=45    HYD NO=506.A9  ID I=46  ID II=29
PRINT HYD          ID=45    CODE=1
*S
*S HYD 506.A9 IS TOTAL FROM COORS INTO TRACT 2-B POND
*S
*S
ADD HYD            ID=5     HYD NO=506.90  ID I=45  ID II=10
PRINT HYD          ID=5     CODE=2
*S
PUNCH HYD          ID=5
*S
*S HYD 506.90 IS TOTAL HYDROGRAPH FROM COORS PLUS
*S         BASIN 506 LOCATED JUST NORTH OF TRACT 2-B POND INTO POND
*S
ADD HYD            ID=46    HYD NO=506.91  ID I=5  ID II=11
PRINT HYD          ID=46    CODE=1
*S
*S HYD 506.91 IS FINAL TOTAL HYDROGRAPH INTO TRACT 2B POND
*S
*S
*S %    %     %     %     %     %     %     %     %
*S
*S FINAL DESIGN FOR THE AMAFCA TRACT 2-B POND LOCATED AT THE NE INTERSECTION
*S OF PASEO DEL NORTE AND COORS BLVD. IN ALBUQUERQUE NM
*S DETENTION POND DESIGN AND CONSTRUCTION PLANS AS PREPARED BY
*S SMITH ENGINEERING COMPANY MAY - JUNE - JULY 2004
*S
*S GENERAL DETENTION POND AND OUTFALL DESCRIPTION –
*S
*S EXISTING PONDING AREA NOW OUTFALLS TO EXISTING "2 – 36-INCH CMP'S" THAT
*S OUTFALL INTO THE 10 ft. wide x 6 ft. tall BOX CULVERT THAT CONVEYS THE
*S CORRALES MAIN CANAL UNDER PASEO DEL NORTE.
*S
*S
*S*  *  *  *  *  *  *  *  *  *  *  *
*S
*S BEGIN OPTION P(RES. EMPTY EMERG. SPILL. --TRAPEZOIDAL CONCRETE WEIR EQUATION)
*S
*S   ***    - STORAGE VOLUME ASSUMES RESERVOIR IS EMPTY
*S           AT BEGINNING OF RAINFALL
*S          – STORAGE VOLUME REPRESENTS EMBANKMENT PARALLEL TO PROPOSED
*S           PASEO DEL NORTE OFF RAMP –REMOVE EXISTING TREES
*S          - PRINCIPAL SPILLWAY DESIGNED TO REMOVE FLOATABLE DEBRIS
*S           AND INCREASE DETENTION TIME FOR WATER QUALITY IMPROVEMENT
*S          - 3 TRICKLE FLOW 10" PIPES AT INVERT
*S          - 1 LOW ROW OF 12 – 6-IN. PVC PIPES
*S          - NO UPPER ROW OF  – 6-IN. PVC PIPES
*S   ***    - PRINCIPAL SPILLWAY WEIR (top of concrete box) WAS NOT
*S           INCLUDED IN THIS OPTION WITHIN THE RATING CURVE
*S   ***     CREST ELEV. OF CONCRETE BOX SET AT  5001.50
*S   ***    - EMERGENCY SPILLWAY IS AT ELEVEATION 5002.5, ASSUME
*S          A BROAD CRESTED WEIR EQUATION TRAPEZOID SECTION 20 FT.
*S          BOTTOM WIDTH 8% SIDE SLOPES
*S
*S
*S NOTE AGAIN, THE PRINCIPAL SPILLWAY CREST (top of concrete)IS SET AT 5001.5
*S
*S ROUTE RESERVOIR DATA  ID=10  HYD NO=506.RES  INFLOW=46  CODE=24.8
*S          OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
*S             0          0          4997
*S             6          0.01       4998
*S             14         3.6572     4999
*S             25         8.3014     5000
```

```
                31          0.04        5001
                55          1.1899      5002
                163         6.3251      5003
                430         11.5975     5004
*S
*S THIS HYD 506.RES IS THE RESULT OF THE TRACT 2-B DETENTION POND RESERVOIR
*S              ROUTING WITH RESERVOIR FULL TO ELEVATION 5001 AT
*S              BEGINNING OF STORM
*S
*S NOTE AGAIN, THE PRINCIPAL SPILLWAY CREST (top of concrete)IS SET AT 5001.5
*S
PRINT HYD           ID=10    CODE=1
*S
*S END OPTION Q (RES. FULL -EMERG SPILL. --TRAPEZOIDAL CONCRETE WEIR EQUATION)
FINISH
```

APPENDIX B

(Street Capacity Analysis)

Street Capacity Calculations

Paradise Blvd.
42' F-F Street Section with 8" curb
Slope= 0.0312

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.43	0.00	0.76	0.01
0.02	0.00	0.34	0.01	0.00	0.00	0.69	0.01	0.86	0.02
0.04	0.01	0.68	0.02	0.01	0.03	1.09	0.04	0.96	0.04
0.06	0.03	1.02	0.03	0.04	0.08	1.43	0.09	1.03	0.06
0.08	0.05	1.36	0.04	0.09	0.18	1.73	0.14	1.08	0.09
0.10	0.08	1.70	0.05	0.16	0.32	2.01	0.20	1.12	0.12
0.12	0.12	2.04	0.06	0.26	0.52	2.27	0.27	1.15	0.14
0.13	0.13	2.13	0.06	0.29	0.58	2.33	0.29	1.16	0.15

For water depths greater than 0.125 ft but less than 0.505 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 21*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.31	0.62	2.28	0.30	1.12	0.15
0.18	0.30	4.93	0.06	0.71	1.42	2.38	0.43	0.99	0.18
0.25	0.70	8.51	0.08	2.06	4.12	2.93	0.73	1.03	0.26
0.30	1.12	11.06	0.10	3.75	7.49	3.35	1.01	1.08	0.33
0.38	2.05	15.35	0.13	8.29	16.58	4.04	1.55	1.15	0.46
0.40	2.28	16.21	0.14	9.50	19.00	4.17	1.67	1.16	0.49
0.41	2.45	16.85	0.15	10.47	20.94	4.27	1.77	1.17	0.51
0.45	2.99	18.71	0.16	13.62	27.24	4.55	2.05	1.20	0.57
0.51	3.92	21.51	0.18	19.43	38.86	4.96	2.50	1.23	0.66

For water depths greater than 0.505 ft but less than 0.667 ft

Y2= Y - 0.565
A3= A2 + Y2*21
P3= P2 + Y2

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.53	3.08	21.47	0.14	13.01	26.03	4.23	2.22	1.03	0.54
0.58	4.14	21.52	0.19	21.34	42.67	5.15	2.96	1.20	0.73
0.59	4.52	21.54	0.21	24.61	49.21	5.45	3.23	1.25	0.79
0.60	4.65	21.55	0.22	25.85	51.71	5.56	3.33	1.26	0.81
0.61	4.86	21.56	0.23	27.82	55.64	5.72	3.49	1.29	0.85
0.62	5.05	21.57	0.23	29.59	59.19	5.86	3.63	1.31	0.88
0.64	5.57	21.59	0.26	34.85	69.70	6.26	4.03	1.37	0.97
0.67	6.06	21.61	0.28	40.07	80.15	6.61	4.41	1.43	1.05

For water depths greater than 0.667 ft but less than 1.11 ft

Y3= Y - 0.667
A4= A3 + 21 * Y3 + 43 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.71	7.09	23.87	0.30	48.76	97.51	6.88	4.90	1.44	1.13
0.75	8.10	25.77	0.31	57.81	115.61	7.14	5.35	1.45	1.21
0.80	9.61	28.27	0.34	72.32	144.63	7.52	6.02	1.48	1.32
0.85	11.34	30.77	0.37	90.04	180.08	7.94	6.75	1.52	1.45
0.87	12.09	31.77	0.38	98.09	196.19	8.11	7.06	1.53	1.50
0.91	13.70	33.77	0.41	115.95	231.90	8.46	7.70	1.56	1.61
1.11	23.80	43.77	0.54	244.83	489.66	10.29	11.42	1.72	2.20

Street Capacity Calculations

Paradise Blvd.

42' F-F Street Section with 8" curb

Slope= 0.005

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.17	0.00	0.31	0.00
0.02	0.00	0.34	0.01	0.00	0.00	0.28	0.01	0.34	0.00
0.04	0.01	0.68	0.02	0.01	0.01	0.44	0.02	0.38	0.01
0.06	0.03	1.02	0.03	0.02	0.03	0.57	0.03	0.41	0.02
0.08	0.05	1.36	0.04	0.04	0.07	0.69	0.06	0.43	0.02
0.10	0.08	1.70	0.05	0.06	0.13	0.80	0.08	0.45	0.03
0.12	0.12	2.04	0.06	0.10	0.21	0.91	0.11	0.46	0.04
0.13	0.13	2.13	0.06	0.12	0.23	0.93	0.12	0.47	0.04

For water depths greater than 0.125 ft but less than 0.505 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 21*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.12	0.25	0.91	0.12	0.45	0.04
0.18	0.30	4.93	0.06	0.28	0.57	0.95	0.17	0.40	0.05
0.25	0.70	8.51	0.08	0.82	1.65	1.17	0.29	0.41	0.07
0.30	1.12	11.06	0.10	1.50	3.00	1.34	0.40	0.43	0.09
0.38	2.05	15.35	0.13	3.32	6.64	1.62	0.62	0.46	0.12
0.40	2.28	16.21	0.14	3.80	7.61	1.67	0.67	0.46	0.13
0.41	2.45	16.85	0.15	4.19	8.38	1.71	0.71	0.47	0.14
0.45	2.99	18.71	0.16	5.45	10.90	1.82	0.82	0.48	0.15
0.51	3.92	21.51	0.18	7.78	15.56	1.99	1.00	0.49	0.18

For water depths greater than 0.505 ft but less than 0.667 ft

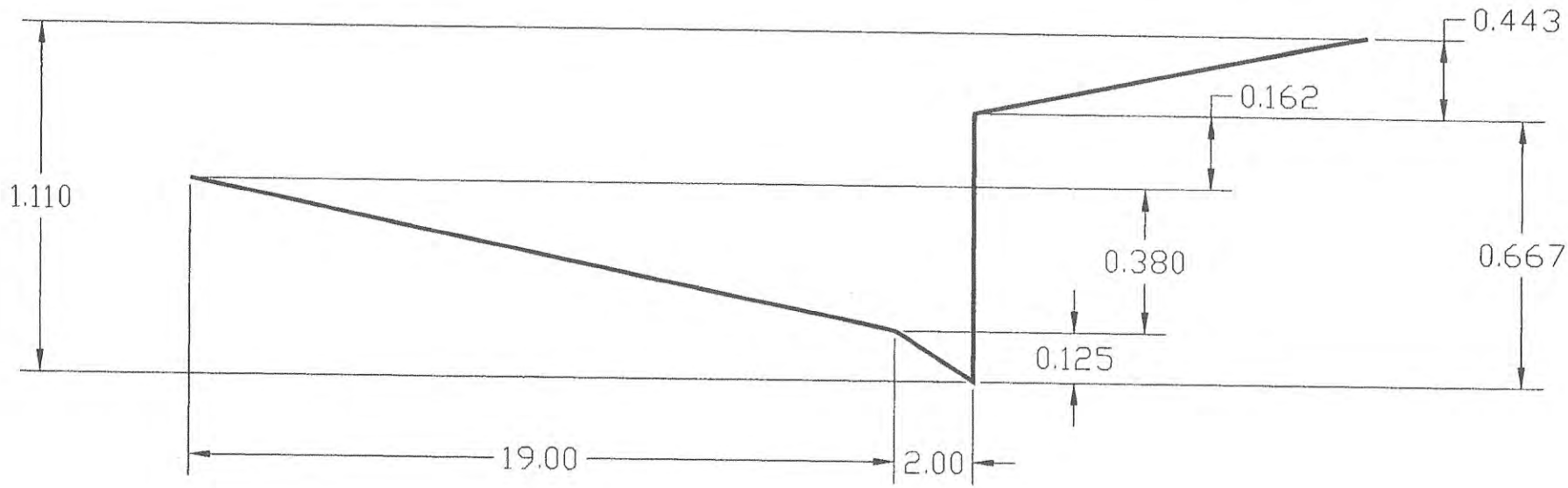
Y2= Y - 0.565
A3= A2 + Y2*21
P3= P2 + Y2

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.52	2.97	21.47	0.14	4.92	9.83	1.65	0.86	0.40	0.13
0.58	4.14	21.52	0.19	8.54	17.08	2.06	1.19	0.48	0.20
0.59	4.52	21.54	0.21	9.85	19.70	2.18	1.29	0.50	0.22
0.60	4.65	21.55	0.22	10.35	20.70	2.22	1.33	0.51	0.22
0.61	4.86	21.56	0.23	11.14	22.27	2.29	1.40	0.52	0.24
0.62	5.05	21.57	0.23	11.85	23.69	2.35	1.45	0.53	0.25
0.65	5.67	21.60	0.26	14.36	28.73	2.53	1.64	0.55	0.28
0.67	6.06	21.61	0.28	16.04	32.08	2.65	1.77	0.57	0.30

For water depths greater than 0.667 ft but less than 1.11 ft

Y3= Y - 0.667
A4= A3 + 21 * Y3 + 43 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.70	6.80	23.27	0.29	18.51	37.02	2.72	1.91	0.57	0.32
0.75	8.10	25.77	0.31	23.14	46.28	2.86	2.14	0.58	0.35
0.80	9.61	28.27	0.34	28.95	57.90	3.01	2.41	0.59	0.38
0.84	11.05	30.37	0.36	34.83	69.67	3.15	2.65	0.61	0.41
0.87	12.09	31.77	0.38	39.27	78.54	3.25	2.82	0.61	0.44
0.92	14.17	34.32	0.41	48.55	97.10	3.43	3.16	0.63	0.48
1.11	23.80	43.77	0.54	98.01	196.02	4.12	4.57	0.69	0.66



42' F-F STREET SECTION W/ 8" CURB
(86' ROW)

APPENDIX C

(Channel and Pipe Calculations)

Channel Opening and Weir Capacity

Weir Equation:

$$Q = CLH^{3/2}$$

Q= Flow
C = 2.95
L= Length of weir
H = Height of Weir

Basin 3 Curb Opening

$Q=2.95*5.5*0.67^{3/2}$

Q = 8.89 cfs
8.89 cfs > 8.57 cfs
Curb opening has capacity

40' Curb Opening

$Q=2.95*40*0.67^{3/2}$

Q = 64.71 cfs
64.71 cfs > 52.00 cfs
Curb opening has capacity

Concrete Channel Opening

$Q=2.95*12.5*1.0^{3/2}$

Q = 36.88 cfs
36.88 cfs < 61.76 cfs
The existing concrete channel will not capture all of the flow in Paradise Blvd. Therefore 24.88 cfs will bypass the channel down the private access road to the north and enter the pond at an opening in the west parking lot of the movie theater.

Cobble Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
Paradise Channel	14	0	2.33	16.31	14.76	1.1054	0.5	83.50	54.11	3.32
Basin 3 Channel	5.5	0	1	2.75	5.85	0.4699	1	11.26	8.57	3.12

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.022

Concrete Rundown Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
West Rundown	4	4	0.67	2.68	5.34	0.5019	5	25.63	42.46	15.84
Section B-B	44.45	0	1.44	32.00	44.54	0.7185	2.54	277.12	61.76	1.93

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
1	24	1.56	3.14	0.500	28.33	27.06	8.61

Manning's Equation:

$Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$

A = Area
R = D/4
S = Slope
n = 0.013

PIPE INLET CALCULATIONS

East Crossing

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

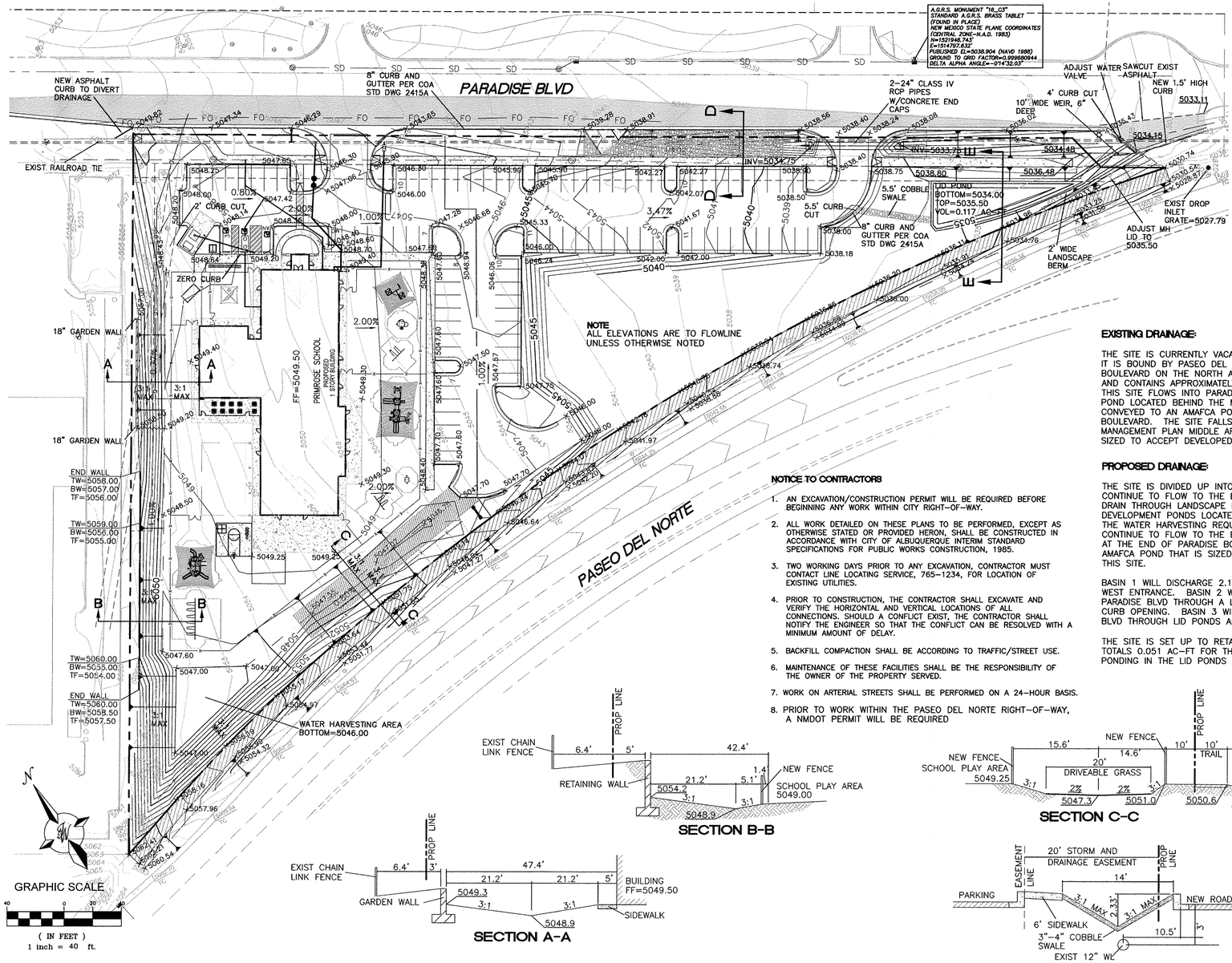
Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab =	0.00
At =	910.00
Dt =	4.25
C =	214.12

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5034.75	0.00	0.00	0.0000
5037.00	2.25	0.0000	16.9122
5037.50	2.75	0.0006	20.0107
5038.00	3.25	0.0025	22.6900
5038.50	3.75	0.0055	25.0848
5039.00	4.25	0.0098	27.2700

Orifice Equation
Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	24
Area (ft^2)=	3.142
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

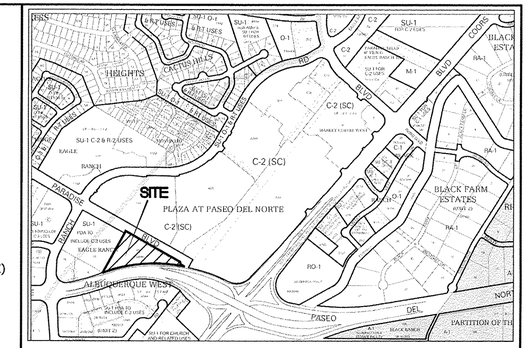


NOTICE TO CONTRACTORS

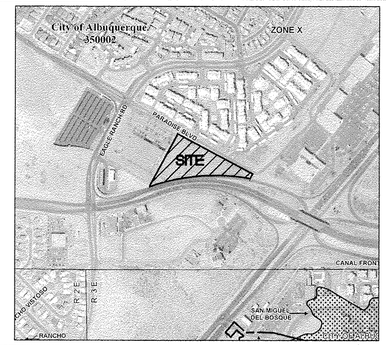
1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HERON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONNECTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.
8. PRIOR TO WORK WITHIN THE PASEO DEL NORTE RIGHT-OF-WAY, A NMDOT PERMIT WILL BE REQUIRED

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION (FLOWLINE)
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- x 5048.25 EXISTING SPOT ELEVATION



VICINITY MAP C-13Z



FIRM MAP: (EFFECTIVE DATE 9-26-2008) 35001C0116G

EXISTING DRAINAGE:

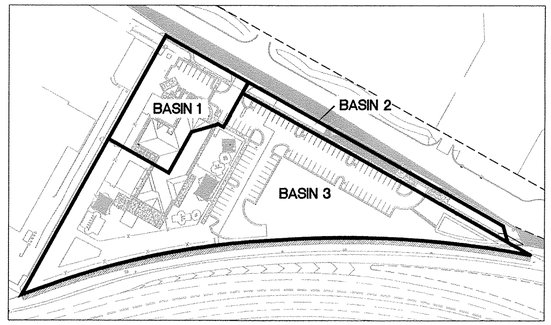
THE SITE IS CURRENTLY VACANT AND DRAINS FROM THE WEST TO EAST. IT IS BOUND BY PASEO DEL NORTE ON THE SOUTH AND EAST, PARADISE BOULEVARD ON THE NORTH AND AN EXISTING BUILDING ON THE WEST AND CONTAINS APPROXIMATELY 3.48 ACRES. THE STORM WATER FROM THIS SITE FLOWS INTO PARADISE BOULEVARD AND CONTINUES EAST TO A POND LOCATED BEHIND THE MOVIE THEATER. FROM THERE THE WATER IS CONVEYED TO AN AMAFCA POND LOCATED ON THE EAST SIDE OF COORS BOULEVARD. THE SITE FALLS WITHIN THE NORTH COORS DRAINAGE MANAGEMENT PLAN MIDDLE AREA AND THE EXISTING AMAFCA POND IS SIZED TO ACCEPT DEVELOPED FLOWS FROM THIS SITE.

PROPOSED DRAINAGE:

THE SITE IS DIVIDED UP INTO THREE ON-SITE BASINS AND WILL CONTINUE TO FLOW TO THE EAST. STORM WATER WILL BE DIRECTED TO DRAIN THROUGH LANDSCAPE ISLANDS AND INTO LOW IMPACT DEVELOPMENT PONDS LOCATED THROUGHOUT THE SITE TO COMPLY WITH THE WATER HARVESTING REQUIREMENTS. EXCESS STORM WATER WILL CONTINUE TO FLOW TO THE EXISTING POND BEHIND THE MOVIE THEATER AT THE END OF PARADISE BOULEVARD AND EVENTUALLY DRAIN TO THE AMAFCA POND THAT IS SIZED TO ACCEPT THE DEVELOPED FLOWS FROM THIS SITE.

BASIN 1 WILL DISCHARGE 2.18 CFS INTO PARADISE BLVD THROUGH THE WEST ENTRANCE. BASIN 2 WILL DISCHARGE 0.76 CFS AT THE END OF PARADISE BLVD THROUGH A LID POND AND A PROPOSED THREE FOOT CURB OPENING. BASIN 3 WILL DISCHARGE 8.57 CFS INTO PARADISE BLVD THROUGH LID PONDS AND THE EAST ENTRANCE.

THE SITE IS SET UP TO RETAIN THE "FIRST FLUSH" VOLUME WHICH TOTALS 0.051 AC-FT FOR THE SITE. A TOTAL OF 0.179 AC-FT OF PONDING IN THE LID PONDS IS PROVIDED.



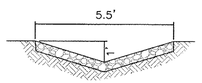
PROPOSED BASIN MAP

SECTION B-B

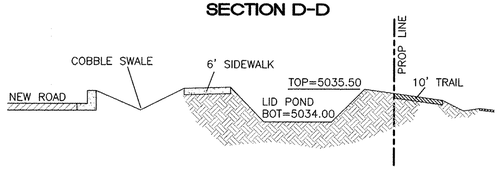
SECTION A-A

SECTION C-C

SECTION D-D



COBBLE SWALE



SECTION E-E

Weighted E Method

On-Site Basins

Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	100-Year Weighted E (in)	100-Year Volume (ac-ft)	100-Year Flow cfs	10-Year Weighted E (in)	10-Year Volume (ac-ft)	10-Year Flow cfs
1	27,711	0.64	0%	0	40%	0.25	0%	0.00	60%	0.38	1.450	0.077	2.18	0.832	0.044	1.30
2	10,371	0.24	0%	0	50%	0.12	0%	0.00	50%	0.12	1.320	0.026	0.76	0.730	0.014	0.43
3	113,692	2.61	0%	0	40%	1.04	10%	0.26	50%	1.31	1.352	0.294	8.57	0.752	0.164	4.95
		3.48								1.81		**0.397**	**11.52**			

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Excess Precipitation, E (inches)		
Zone 1	100-Year	10 - Year
E_a	0.44	0.08
E_b	0.67	0.22
E_c	0.99	0.44
E_d	1.97	1.24

Peak Discharge (cfs/acre)		
Zone 1	100-Year	10 - Year
Q_a	1.29	0.24
Q_b	2.03	0.76
Q_c	2.87	1.49
Q_d	4.37	2.89

FIRST FLUSH CALCULATION
78844 SF X 0.34"/12"=2,234 CF
=0.051 AC-FT

CAUTION:

ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.

ENGINEER'S SEAL

RONALD R. BOHANNAN P.E. #7868

PRIMROSE SCHOOL OF NW ALBUQUERQUE

GRADING PLAN

DRAWN BY: pm
DATE: 5-1-18
DRAWING:
SHEET #: 4
JOB #: 2017092

TIERRA WEST, LLC
5571 MIDWAY PARK PL NE
ALBUQUERQUE, NEW MEXICO 87109
(505) 858-3100
www.tierrawestllc.com