CITY OF ALBUQUERQUE

April 10, 2015

Eugenio Valdez, P.E.
Wilson & Company, Inc.
4900 Lang Ave. NE
Albuquerque, NM 87109

Re: El Dorado High School
Drainage Master Plan (G22D004)
Engineer's Stamp Date 1-16-2015

Dear Mr. Valdez,

Based upon the information provided in your submittal received 1-16-15, the above referenced submittal is approved. It is our understanding that the improvements to this site have already been made, so a Grading and Paving Permit are not necessary.

In should be noted that NOAH Atlas 14 Precipitation Frequency estimates were used as opposed to that shown in the DPM Table A.2. (based on NOAH Atlas 2). As such, the flowrates were about 15% less than that of the original Drainage Master Plan for this site. Future improvements should be based on those values used in the DPM.

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

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

Orig: Drainage file
c.pdf via Email: Recipient, Monica Ortiz,

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

ELDORADO HIGH SCHOOL

DRAINAGE MASTER PLAN

January 2015

Prepared For:

APS Facilities Planning & Construction

City of Albuquerque

Prepared By:

Wilson & Company

4900 Lang Avenue NE

Albuquerque, NM 87109

Project # 12-600-025-00

ELDORADO HIGH SCHOOL
DRAINAGE MASTER PLAN

JANUARY 2015

I, Eugenio Valdez, P.E., do hereby certify that this report was prepared under my direction and review and that I am a duly registered Professional Engineer under the laws of the State of New Mexico.

Eugenio Valdez, P.E.
NMPE No. 18404

ACCEPTED BY:

City of Albuquerque

Date

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Appendix

1 Introduction

Eldorado High School is located in the city of Albuquerque. Established in 1970, the High School has approximately 2,400 students. The Albuquerque Public Schools Facilities Department is currently developing Master Plans for each of the schools within the District. Plans for Eldorado High School include asphalt pavement, concrete removal and replacement, analysis of existing storm drainage system and expansion and repair of the Math, Humanities, and Gymnasium Buildings.

The urban campus, in addition to core buildings and vehicle parking lots, includes three baseball fields, football field, soccer field, and a paved band practice area.

1.1 Purpose

The purpose of this report is to evaluate existing on-site drainage conditions and recommend drainage patterns and concepts for drainage system infrastructure improvements required for the campus. At the time of this analysis, specific details regarding the phasing of the various elements of the proposed redevelopment are not known. Thus, this document provides drainage planning required for the final full build-out condition.

It is anticipated that detailed design of each of the individual recommended drainage improvements will be completed in tandem with subsequent phases of improvements, including paving and building renovations.

1.2 Existing Plans and Reports

The following previous reports and plans were used to provide data and site conditions in support of the hydrologic and hydraulic analyses:

"Eldorado High School Additions and Renovations, Building A- Music Building/PAC," Alliance Fire Protection, Inc., Albuquerque, NM, 2009.

"As-Built Drawing for PAC Addition," Wilson & Company, Albuquerque, NM, June 2009.

"Eldorado High School Reroofing Project – Lecture Hall, Upper and Lower Roof," Allison Engineering, Inc., Albuquerque, NM, July 2008.

"Albuquerque Public Schools Eldorado High School, Additions and Renovations, Building B-Gymnasium," Weller Architects, Albuquerque, NM, December 2007.

"Albuquerque Public Schools Eldorado High School, Additions and Renovations, Music Building/PAC/Restrooms," Weller Architects, Albuquerque, NM, December 2007.

"Courtyard Sanitary Sewer Replacement, Eldorado High School," Jeff Mortensen & Associates, Inc., Albuquerque, NM, April 2000.

"Eldorado High School Track and Field Improvements," Wilson & Company, Albuquerque, NM, July 1999.

"Drainage Management Report, Eldorado High School Science Building," SMPC Architects, Albuquerque, NM, October 1997.

"Eldorado High School Science Building," SMPC Architects and Bohannon-Huston, Albuquerque, NM, October 1997.

"Eldorado High School Master Drainage Plan," SMPC Architects, Albuquerque, NM, July 1997.

"Eldorado High School Soccer Field," Dennis C. Wilkinson & Associates, P.A., November 1995.

"Construction Plans for Eldorado High School 1992 Site Improvements," Jeff Mortensen & Associates, Inc., Albuquerque, NM, March 1992.

The plans and reports listed above provided information regarding existing drainage infrastructure, grading and drainage assumptions, and boundary information that served as the basis for the development of the proposed Drainage Master Plan. A surveyed topographic information was used to supplement LIDAR generated on-site contour data provided by the city of Albuquerque, to more closely reflect current grading conditions. It should be noted that only the LIDAR contour data is shown on the drainage maps included in this report.

1.3 Site Location

Eldorado High School is located on approximately 55 acres of land in the northeast section of Albuquerque (see Figure 1, Vicinity Map). The physical address of the High School is 11300 Montgomery Boulevard NE. The lot is triangular, with Montgomery Boulevard crossing on the north side of campus, Juan Tabo Boulevard on the west, and Eagle Trail and the city of Albuquerque Embudito Arroyo Channel forming the diagonal on the south and east side of the property. As an additional reference, this site can also be found within Zone G-22 on the Albuquerque Zone Atlas Map.

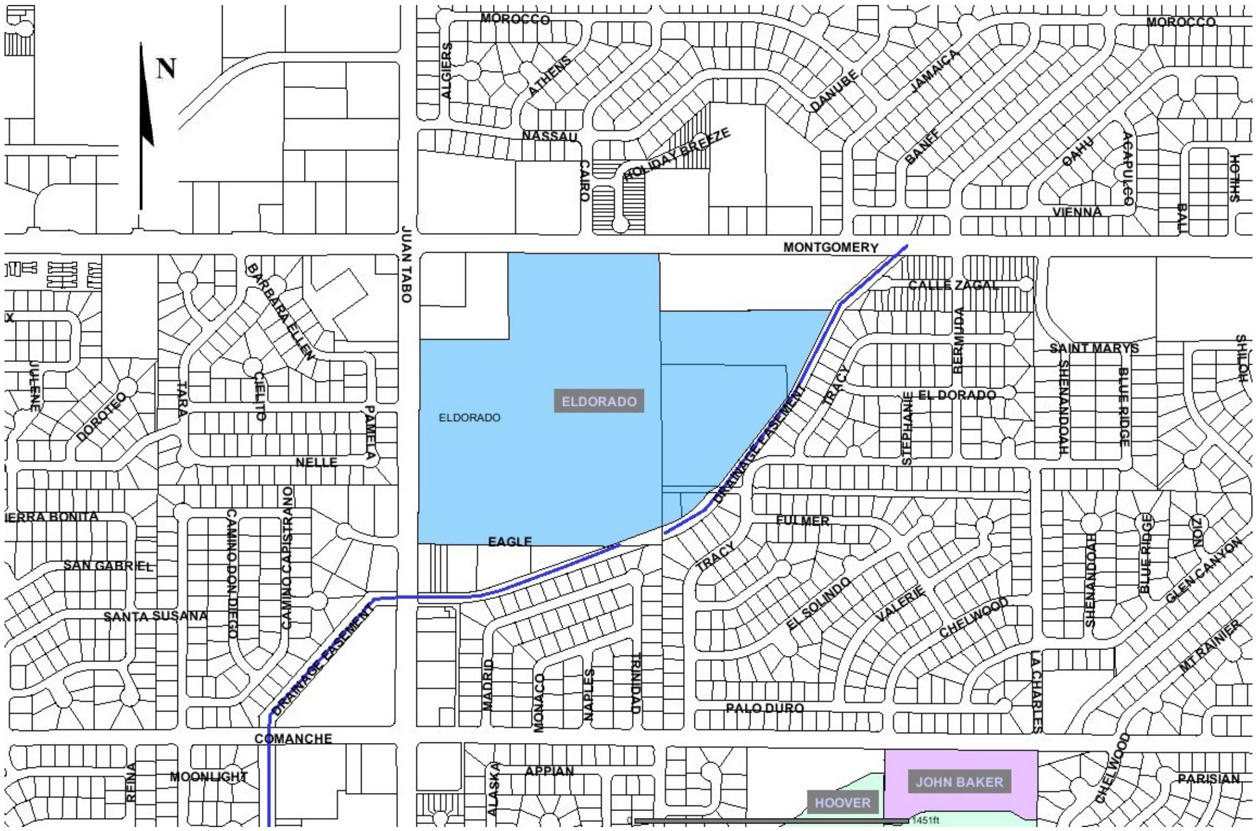


Figure 1: Vicinity Map

No portion of the existing site is located within a FEMA designated flood hazard zone as illustrated on FEMA Flood Insurance Rate Map (FIRM) Map Number 35001C0144G, revised September 26, 2008. The map indicates the presence of a Zone A floodplain along the diagonal on the south and east side of campus. This floodplain is associated with the Embudito Arroyo Channel. A copy of the FIRM map is included as Appendix A of this report.

1.4 Planning History

The existing drainage plans and reports, as outlined in Section 1.2, were used to identify the locations of storm drain inlets and grates, roof drains and downspouts, and existing drainage swales and channels. Multiple site visits were made to verify the location, size, and condition of the referenced drainage structures.

2 Hydrology

The Embudito Arroyo is located on the southeast side of the Eldorado High School campus. This project area lies within Precipitation Zone 4 as defined in Section 22.2, Hydrology, of the Development Process Manual (DPM) for the city of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA). Precipitation for the purposes of this study was determined using NOAA Atlas 14. Basin peak flows and volumes for the studied area were computed using the Arid Lands Hydrologic Model (AHYMO-S4). The AHYMO model results for both the existing and proposed conditions are included as Appendix B.

2.1 Methodology

The AHYMO Computer Program follows the procedures outlined in Chapter 22 of the DPM, dated July 1997. The program's input parameters were created by AMAFCA, in conjunction with the city of Albuquerque.

The Upland/Lag Time procedure, used in this model run, is based on the NRCS Upland Method for sub-basins shorter than 4,000 feet. The Muskingum-Cunge Method is used to route the calculated hydrographs through the channel reaches.

2.2 Design Storm Precipitation

The principle design storm used for the analysis of the existing and proposed drainage system is the 100-Year, 6-hour event. The principle storm was utilized in calculating peak runoff while the 100-Year, 24-hour event storm was utilized in determining runoff volumes for design of detention ponds. NOAA Atlas 14 shows that precipitation depths near the Eldorado campus are P_{60}=1.87 inches, P_{360}=2.51 inches, and P_{1440}=3.08 inches. NOAA Atlas 14 data is included in Appendix B.

2.3 Land Treatments

Four land treatments are defined by the DPM. Table A-4 of Section 22.2 of the DPM describes land contributions for each treatment. The following sections describe how the percentages of land treatments were determined for use in the current analysis.

2.3.1 Existing Land Treatment

Existing on-site land treatments were delineated using 2012 aerial photography acquired from the Bernalillo County Website, 2010 LIDAR contour data, and historical construction and survey drawings. Soil information for the site was obtained from the NRCS Web Soil Survey. A copy of the soils report is included as Appendix C.

2.3.2 Proposed Land Treatment

The Eldorado High School Master Site Priority Plan (Figure 2) illustrates the proposed location and approximate sizes of future buildings, parking lots, and landscaped areas. These were included in the proposed model where estimating runoff potential. Although all proposed improvements will not be constructed in 2013-2015, the Master Plan was used for proposed land treatments. Figure 3 illustrates which proposed improvements will be constructed in 2013-2015 and which are Master Plan improvements. Land use assumptions have been divided into two categories: treatment C and treatment D.

Treatment C, as defined in Chapter 22.2 of the DPM, refers to areas containing soil compacted by human activity, with minimal vegetation, unpaved parking, roads, and trails. It also refers to steep slopes with minimal desert landscaping.

Treatment D is defined as impervious areas, including pavement and roofs. For the purpose of the Eldorado site, this treatment was used primarily within the central campus and paved areas. It also includes the concrete conveyance channel.

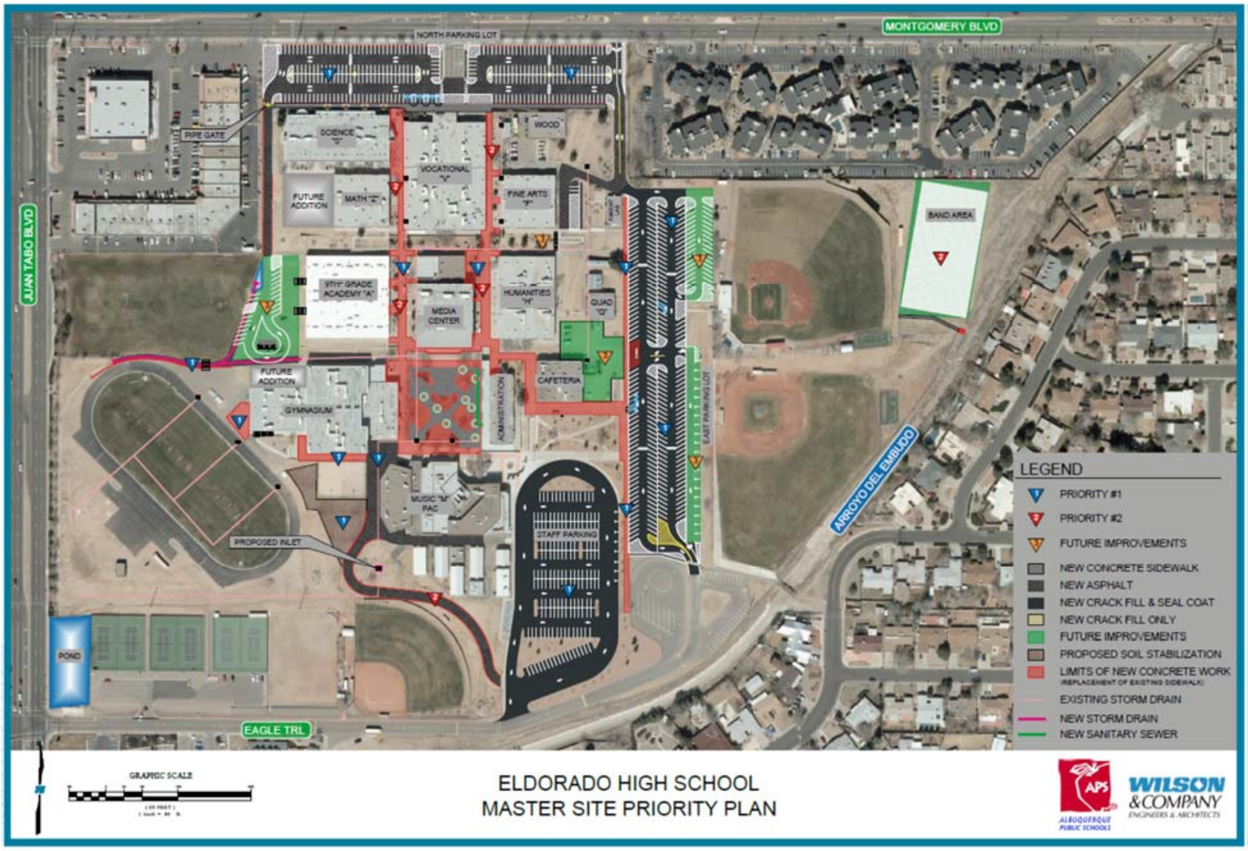


Figure 2: Master Site Priority Plan

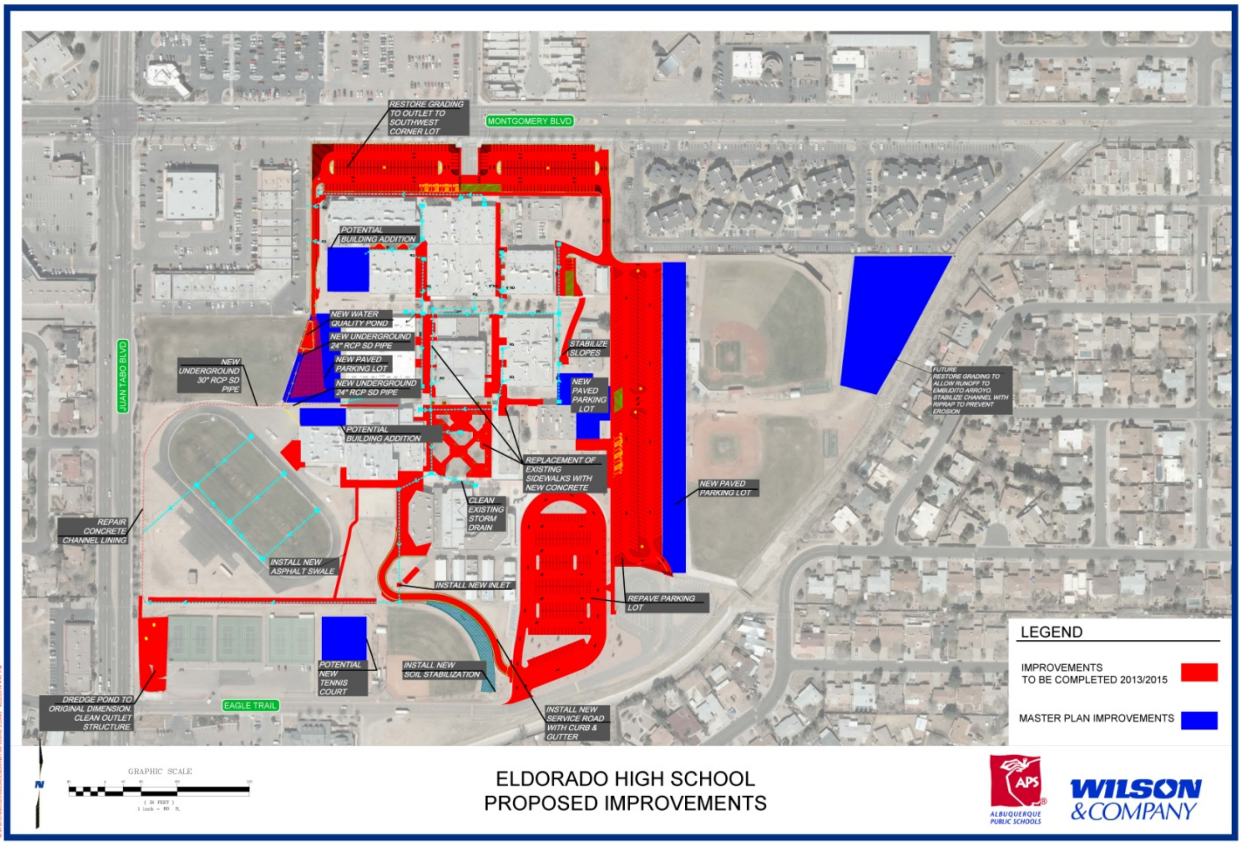


Figure 3: Proposed Improvements

2.4 Time of Concentration

In accordance with DPM Chapter 22, Equation B-9, the time to peak (t_p) is equal to ⅔ of the time of concentration (t_c). Based on the small sub-basin size, the times of concentration for the existing and proposed conditions in the on-site hydrologic analysis have been estimated to be 12 minutes or less. Thus, in accordance with the DPM, minimum time-to-peak values of 0.1333 hours were used in the AHYMO model.

2.5 Peak Discharge Rates

Peak discharge rates for existing and proposed conditions were calculated using the AHYMO computer program as outlined in the DPM. Soils report data obtained from the NRCS Web Soil Survey indicated that the primary soils in and around the subject site are classified as Hydrologic Soil Group B or the Embudo-Tijeras Complex (EtC). Bulking factors were not considered in this analysis due to the fact that the campus is not subject to off-site or undeveloped runoff. The soils are described in the Soil Survey as well-drained and having a moderately low runoff potential. Peak discharge rates for the existing and proposed conditions are presented in Tables 1 through 6 in Section 4 of this report.

3 Hydraulics

Basic hydraulic capacity calculations were performed on the existing storm drain system using basic hydraulic equations. Outlet structure calculation spreadsheets can be found in Appendix B.

4 Hydrologic and Hydraulic Analysis

4.1 Existing Site Description

As illustrated in Figure 9, Existing Conditions Basin Map, the existing campus is almost completely developed. The playing fields and the transition areas from the campus to the track and lower baseball fields are pervious and only partially landscaped. The east campus baseball fields, track, and soccer fields are well-vegetated and level. The main campus is primarily impervious with concrete pads throughout, sidewalks and concrete walkways between buildings, and asphalt paved parking.

Existing on-site topography slopes generally from the northeast to the southwest. There are steep slopes on the west and southwest side of the cluster of academic buildings. Several slopes have been stabilized with asphalt and wire-wrapped riprap where there is evidence of surface runoff. The west side of the 9^{th} Grade Academy is used as an informal parking area and has no landscaping or slope stabilization. This area and the slope on the west side of the Gymnasium are reported to carry sediment onto the track. There are some informal retaining walls that have been stacked, but not anchored, on the northeast and east sides of the track to minimize transport of sediment onto the track surface and field areas.

The existing drainage system includes both surface and storm drain discharge. The storm drain system was designed to overflow to the lower sections of the campus, primarily towards a concrete lined channel located on the west side of the campus and the southwest corner of the site. The surface flow is carried over asphalt and riprap swales between the Science Building and 9^{th} Grade Academy, located south of the Academy, and south of the Gymnasium. The storm drain system collects flow at inlets throughout the campus and discharges to the surface between the Gymnasium and the 9^{th} Grade Academy, and south of the track. A separate storm drain system carries flow from the central area of the campus and north side of tennis courts to an existing 12-inch city storm sewer pipe within Juan Tabo Boulevard.

4.2 Existing Conditions Analysis

The following sections discuss existing site drainage patterns and define drainage issues that have been identified through analysis and multiple site inspections. Figure 9 outlines the existing drainage patterns, analysis basins, analysis points, and flow rates associated with the existing conditions. Peak flow rates, volumes, and basin areas are also provided in Table 1.

For the purposes of discussion, the site has been subdivided into four regions which include the pond system, Juan Tabo city storm drain system, surface flow into the Embudito Arroyo system, and surface flow into Eagle Trail city storm drain system, shown on Figure 10.

4.2.1 Pond System

The basins flowing into the pond system include the north parking lot (Basin 103), academic buildings (Basin 104), half the soccer field (Basin 102B), track (Basin 101A), area surrounding the track to the south (Basin 101B), tennis courts (Basin 109A), and the parking lot near tennis courts (Basin 109B), and the primary detention pond (Basin 112). The total watershed for this area encompasses approximately 22 acres. Runoff from this area is discharged into the detention pond.

Surface runoff produced within Basins 103 and 104 is conveyed through concrete swales, curb and gutter sections and existing underground storm drain pipes then into a concrete channel which discharges into the detention pond. This pond collects flow indirectly from the central campus, the north parking area, the soccer field, and the track.

The south side of the soccer field, Basin 102B, slopes towards the southwest and into the concrete drainage ditch leading to the detention pond. It appears that the field may drain into other sections of the channel on the south side but the well-vegetated area is not showing signs of erosion. On the east side of the soccer field there is a 30-inch culvert under an access walkway. Analysis of the culvert section indicates that it has sufficient capacity to convey storm water generated in Basins 103 and 104 to the north and east. This culvert has minimal sediment.

The existing rough concrete channel extends along the south and east side of the soccer field, then west of the track into the detention pond. The channel is trapezoidal and is approximately 5 feet wide and 2 feet deep. It is finished in rough concrete and inset with rocks. Installed in 1992, it has several sections that appear to have been repaired or replaced. Other sections are cracked and have weeds growing through them.

Basin 101A includes the track and a sloped area to the east of the track below the Gymnasium. This area was renovated in 1999 to include six 12-inch inlets. Flows from these inlets is conveyed under the track and discharge into the concrete channel that discharges into the detention pond through a 36-inch RCP (Reinforced Concrete Pipe). The slope to the east of the track shows minor erosion. Bricks have been stacked in several areas to impede the sediment, but the informal retaining wall has collapsed in certain sections.

Basin 109A contributes a small amount of flow to the pond on the north side of the tennis courts. Basin 109B drains directly into the pond through a concrete run-down structure.

The detention pond is located within Basin 112. The pond is partially vegetated, with a large tree in the center, and has accumulated sediment over time. The estimated existing residual volume is 1.14 acre-feet, indicating approximately 0.10 acre-feet of sediment in the pond. Flows discharge into the pond from the existing concrete channel that transitions the flow into a 36-inch RCP, a concrete rundown on the northeast corner, and a concrete run-down from the parking lot near the tennis courts. The raised 4 foot by 4 foot outlet structure includes a 36-inch RCP that is connected to the Juan Tabo city storm drain system(See Figure 4 and 5).

According to the July 1997 Eldorado High School Master Drainage Plan, prepared by Bohannan Huston, the peak outlet discharge from the pond is to be 92.1 cfs if an existing 24" CMP located in Basin 102B was upsized. As mentioned above there is currently a 30"-culvert and analysis of the culvert section indicates that it has sufficient capacity to convey storm water generated in Basins 103 and 104. Field survey indicates the top elevation of the outlet structure is 5697.05 ft with the pipe invert at 5688.58 ft. Currently, the weep holes are clogged with gravel and need to be cleaned (See Figure 5). The pond also has an emergency spillway that out-falls to Eagle Trail. The emergency spillway crest elevation is 5699.5 ft. Since the weep holes are currently clogged, only 2 holes at the top were modeled to outflow.

Figure 4: Pond Outlet Structure looking South-West

Figure 6: Pond Outlet Structure

Figure 5: Weep Hole

4.2.2 Juan Tabo

The Juan Tabo system can be separated into surface runoff and storm drain runoff. The surface runoff comes from the north part of the soccer fields (Basin 102A) and the storm drain flow originates from the campus/courtyard. Roof drains and walkway runoff is captured throughout the campus and are tied into existing 8-inch and 12-inch RCP. The total area encompasses approximately 1 acres for surface runoff and 4 acres toward the storm drain.

Storm water captured in the central system is conveyed and discharged to the city storm drain along Juan Tabo Boulevard.

Irregular maintenance is evident throughout campus as inlets are full of leaves, trash, and sediment. Several places through the central concrete walkways show evidence of water damage and ponding.

The storm drain system within Basin 105 is part of the original storm drain system constructed during the original construction of the campus. Based on the area draining to this system, it is evident that it is undersized. Therefore, excess surface flow is conveyed south of the basketball court, down a partially stabilized slope, and into the lower baseball field and Eagle Trail. This is one area that contributes substantial sediment deposition and shows evidence of significant erosion.

4.2.3 Embudito Arroyo system

The Embudito Arroyo system includes the parking lots (Basins 106 and 107), the lower baseball diamond and portables (108A), the east baseball fields (Basin 110) and the band area (Basin 111). The watershed has total drainage area of 21 acres. All basins discharge directly into the Embudito Arroyo. All basins with the exception of Basin 108A, are paved and flows discharge across Eagle Trail and into the Embudito Arroyo. There is a shallow concrete swale that diverts flow from the Eagle Trail through a parking lot and into the Embudito Arroyo for all basins except for Basin 111, which discharges directly into the arroyo through an earthen swale.

The northeast portion of Basin 108A includes a steep, unstabilized slope than is significantly eroded and rilled. The sediment deposited in the lower portion is likely to wash onto Eagle Trail. There is an outlet on the south side of Basin 108A that is damaged, filled with weeds, and located at a higher grade than the actual field. It appears that the majority of the flow at this point comes from the unpaved entrance just west of the staff parking entrance.

The east parking lot, Basin 110, discharges to the east of the bus lot. This bus area is graded almost a foot higher than the east parking lot. The turnaround area on the north end creates a small ponding area.

Basin 110 consist of the two primary baseball diamonds and Basins 111 is the band practice area. While this area is vegetated and permeable, the grading allows ponding to occur on the southern field around the backstop. The upper (northern) field drains into the lower, carrying sediment. There is a concrete berm around the southwest portion of the field that controls runoff from the lower field. However, there is also a drainage swale on the west side that should carry flow from the parking area to Eagle Trail**.**

The band practice area is paved and graded to discharge to the Embudito Arroyo. The transition outlet is not stabilized but there is an obvious swale and some riprap to indicate that the water flows to the Channel.

4.2.4 Eagle Trail city storm drain system

The city storm drain system on Eagle Trail includes runoff from area east of the track and the softball practice area just east of the tennis courts (Basin 108B). The total area encompasses approximately 5 acres. This area drains onto Eagle Trail and enters into the Juan Tabo storm drain through curb inlets.

4.2.5 Existing Conditions Hydrologic Analysis Summaries

The AHYMO model was developed based on the general land use and topographic characteristics of each of the sub-basins. Flow was routed through the existing hydraulic structures and either to the pond, the existing city storm drain system, or the Embudito Arroyo. Each of the structures was evaluated to verify that the rated capacity was sufficient to accommodate the calculated flow rates. The storm drain, channel, and pond were determined to have adequate capacity for the 100-year storm event. The sole exception was the courtyard area, where the current storm drain pipe is undersized and does not have the capacity to convey the flows generated from the surrounding structures and concrete walkways.

Table 1 summarizes the assumptions for land use, sub-basin areas, peak flow rates, and runoff volumes associated with the 14 analyzed sub-basins.

Table 1: Existing Sub-Basin Peak Discharge and Volumes

Sub-Basin	Area (Acres)	Land Treatment Percentage (%)		$Q_{100,6}$ (cfs)	$V_{100,24}$ (ac-ft)
		C	D		
101A	3.46	65.8%	34.2%	12.69	0.491
101B	4.64	80.2%	19.8%	16.13	0.562
102	2.60	100.0%	0.0%	8.38	0.242
103	4.04	5.0%	95.0%	17.97	0.924
104	8.36	14.2%	85.8%	35.94	1.809
105	3.62	13.7%	86.3%	15.70	0.783
106	3.85	8.9%	91.1%	16.90	0.857
107	3.75	14.7%	85.3%	16.20	0.805
108A	4.03	65.4%	34.6%	14.79	0.574
108B	1.25	58.8%	41.2%	4.71	0.190
109A	1.30	15.2%	84.8%	5.61	0.277

Sub-Basin	Area (Acres)	Land Treatment Percentage (%)		$Q_{100,6}$ (cfs)	$V_{100,24}$ (ac-ft)
		C	D		
109B	0.90	0%	100%	4.06	0.212
110	9.39	93.6%	6.4%	31.02	0.959
111	1.59	33.3%	66.7%	6.51	0.300
112	0.34	83.5%	16.5%	1.19	0.039

Table 2 summarizes the contributing peak flow rates and runoff volumes at 11 Points.

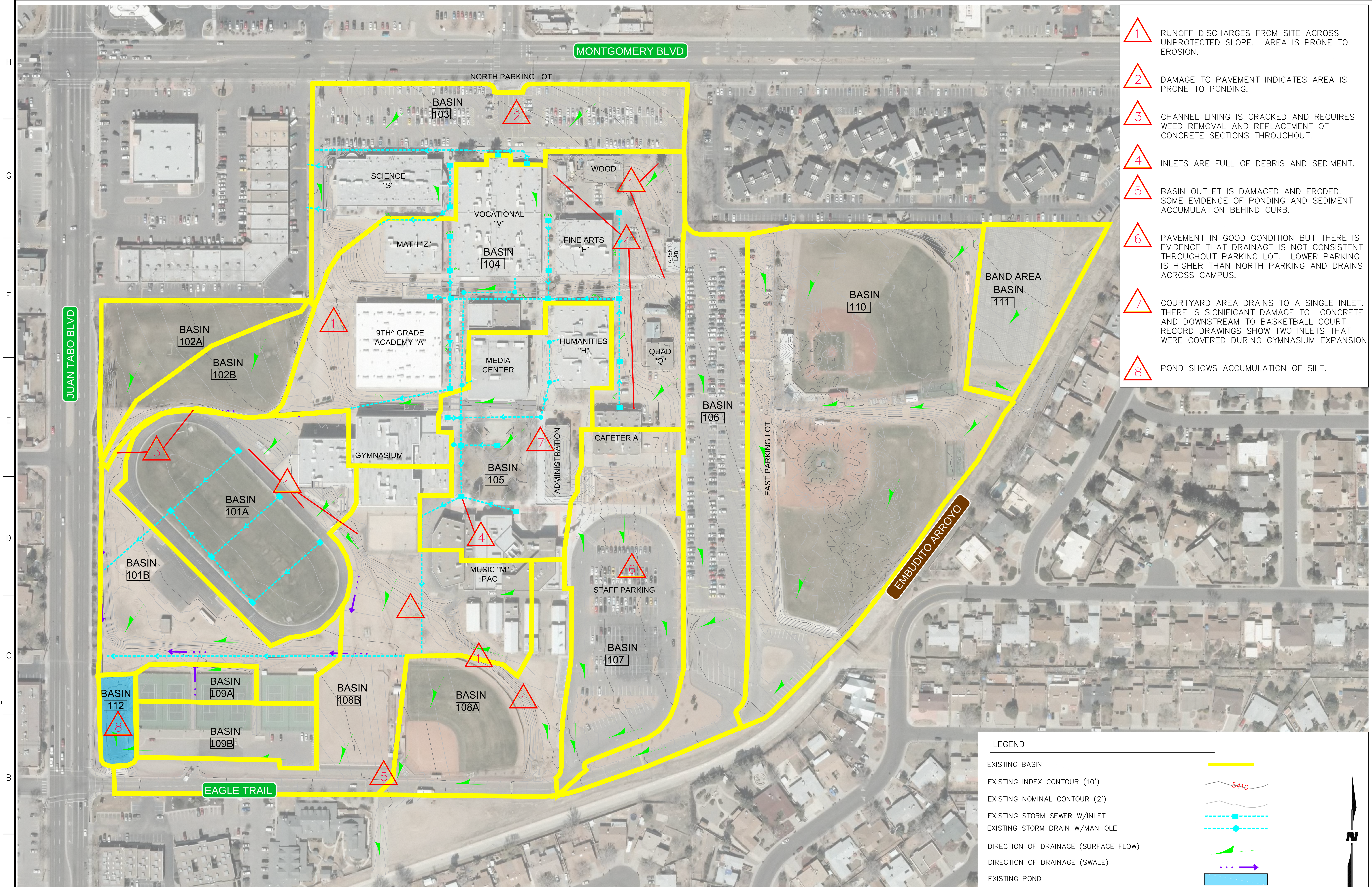
Table 2: Existing Analysis Point Peak Discharge and Volumes

Analysis Point	$Q_{100,6}$ (cfs)	$V_{100,24}$ (ac-ft)
AP-1	70.28	4.140
AP-2	53.25	2.734
AP-3	56.93	2.842
AP-4	69.56	3.738
AP-5	13.60	0.766
AP-6	63.45	2.623
AP-7	73.49	3.017
AP-8	77.37	4.140
AP-9	6.37	0.296
AP-10	17.27	0.707
AP-11	4.29	0.126

Table 3 summarizes the existing conditions pond.

Table 3: Existing Conditions Pond Data

$V_{required\ 100,24}$ (ac-ft) =	1.023
$V_{provided}$ (ac-ft) =	1.274
$Q_{in\ 100,6}$ (cfs) =	77.37
$Q_{out\ 100,6}$ (cfs) =	70.28
$WSEl_{100}$ (ft) =	5698.6
Top Elevation(ft) =	5700
Bottom Elevation(ft) =	5692
Emergency Spillway Elevation (ft) =	5699.5
Outfall Box Top Elevation (ft) =	5697.05
Outfall Box Bottom Elevation/ 36” RCP Outfall Pipe Invert (ft) =	5688.58



1. RUNOFF DISCHARGES FROM SITE ACROSS UNPROTECTED SLOPE. AREA IS PRONE TO EROSION.
2. DAMAGE TO PAVEMENT INDICATES AREA IS PRONE TO PONDING.
3. CHANNEL LINING IS CRACKED AND REQUIRES WEED REMOVAL AND REPLACEMENT OF CONCRETE SECTIONS THROUGHOUT.
4. INLETS ARE FULL OF DEBRIS AND SEDIMENT.
5. BASIN OUTLET IS DAMAGED AND ERODED. SOME EVIDENCE OF PONDING AND SEDIMENT ACCUMULATION BEHIND CURB.
6. PAVEMENT IN GOOD CONDITION BUT THERE IS EVIDENCE THAT DRAINAGE IS NOT CONSISTENT THROUGHOUT PARKING LOT. LOWER PARKING IS HIGHER THAN NORTH PARKING AND DRAINS ACROSS CAMPUS.
7. COURTYARD AREA DRAINS TO A SINGLE INLET. THERE IS SIGNIFICANT DAMAGE TO CONCRETE AND DOWNSTREAM TO BASKETBALL COURT. RECORD DRAWINGS SHOW TWO INLETS THAT WERE COVERED DURING GYMNASIUM EXPANSION.
8. POND SHOWS ACCUMULATION OF SILT.

LEGEND

- EXISTING BASIN
- EXISTING INDEX CONTOUR (10') — 5410
- EXISTING NOMINAL CONTOUR (2')
- EXISTING STORM SEWER W/INLET
- EXISTING STORM DRAIN W/MANHOLE
- DIRECTION OF DRAINAGE (SURFACE FLOW)
- DIRECTION OF DRAINAGE (SWALE)
- EXISTING POND

N

0 50' 100'

A1 EXISTING DRAINAGE ISSUES MAP

1" = 100'

M:\IFS\12-600-025-00\CADD\EXHIBITS\EXISTING BASINS.dwg

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CONSULTANTS: APS ALBUQUERQUE PUBLIC SCHOOLS

SEAL: EUGENIO E. VALDEZ, NEW MEXICO, 18404, PROFESSIONAL ENGINEER — 1/15/15

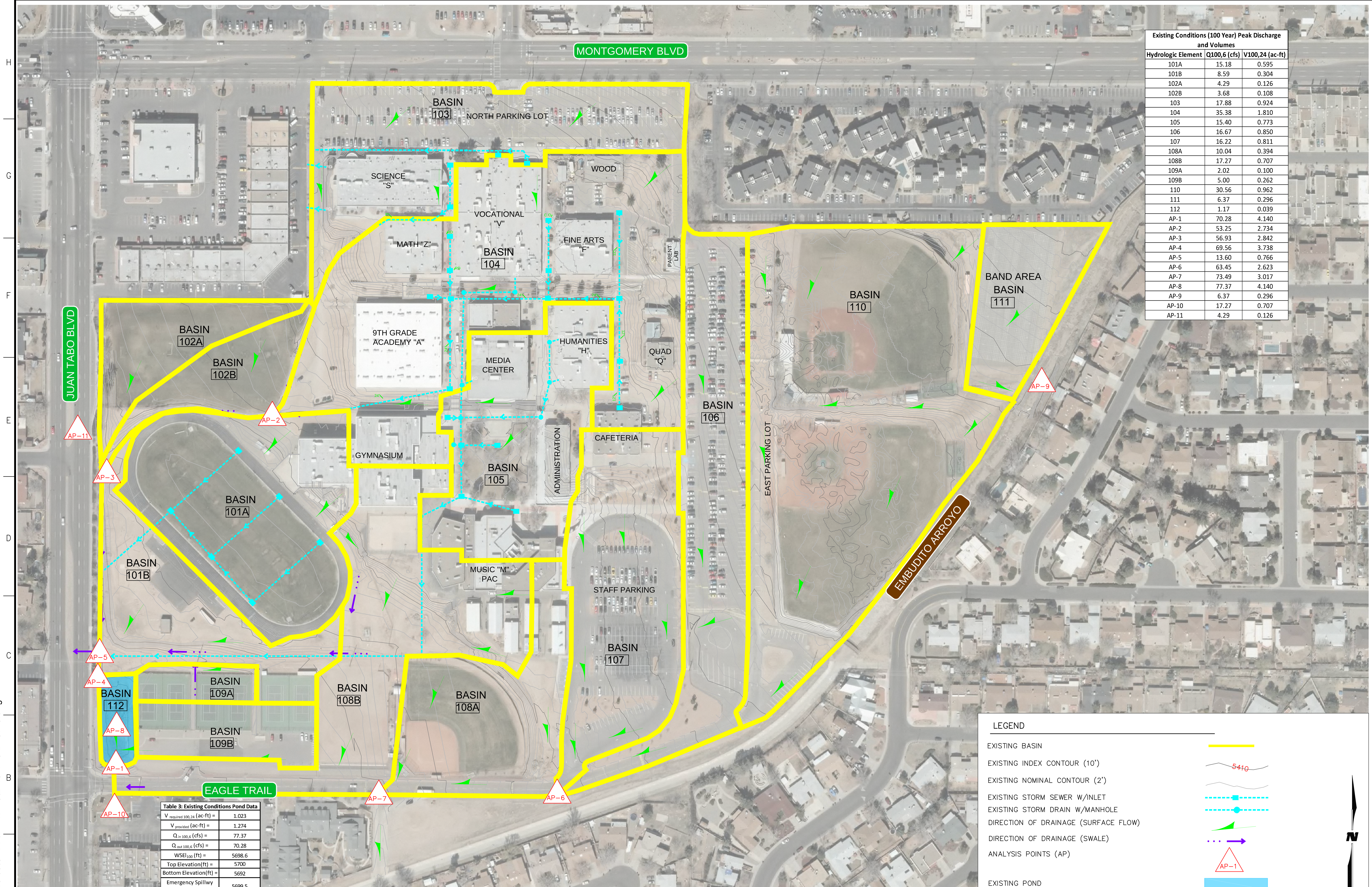
PROJECT NAME: ELDORADO HIGH SCHOOL DRAINAGE MASTER PLAN

REV.	DATE	DESCRIPTION	BY

PROJECT NO:	1260002500
DESIGNED BY:	CPD
DRAWN BY:	JEM
CHECKED BY:	MJI
DATE:	APRIL 2014

SHEET TITLE: EXISTING DRAINAGE ISSUES MAP

SHEET NO: FIGURE 7



Existing Conditions (100 Year) Peak Discharge and Volumes		
Hydrologic Element	Q100,6 (cfs)	V100,24 (ac-ft)
101A	15.18	0.595
101B	8.59	0.304
102A	4.29	0.126
102B	3.68	0.108
103	17.88	0.924
104	35.38	1.810
105	15.40	0.773
106	16.67	0.850
107	16.22	0.811
108A	10.04	0.394
108B	17.27	0.707
109A	2.02	0.100
109B	5.00	0.262
110	30.56	0.962
111	6.37	0.296
112	1.17	0.039
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$WSEl_{100}$ (ft) =	5698.6
Top Elevation(ft) =	5700
Bottom Elevation(ft) =	5692
Emergency Spillwy Elevation (ft) =	5699.5

A1 EXISTING CONDITIONS BASIN MAP

1" = 100'

0 50' 100'

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CONSULTANTS

APS ALBUQUERQUE PUBLIC SCHOOLS

SEAL
EUGENIO E. VALDEZ
NEW MEXICO
18404
PROFESSIONAL ENGINEER
1/15/15

PROJECT NAME
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DRAWN BY:	JEM
CHECKED BY:	MJI
DATE:	APRIL 2014

SHEET TITLE
EXISTING CONDITIONS BASIN MAP

SHEET NO:
FIGURE 8
PAGE 14

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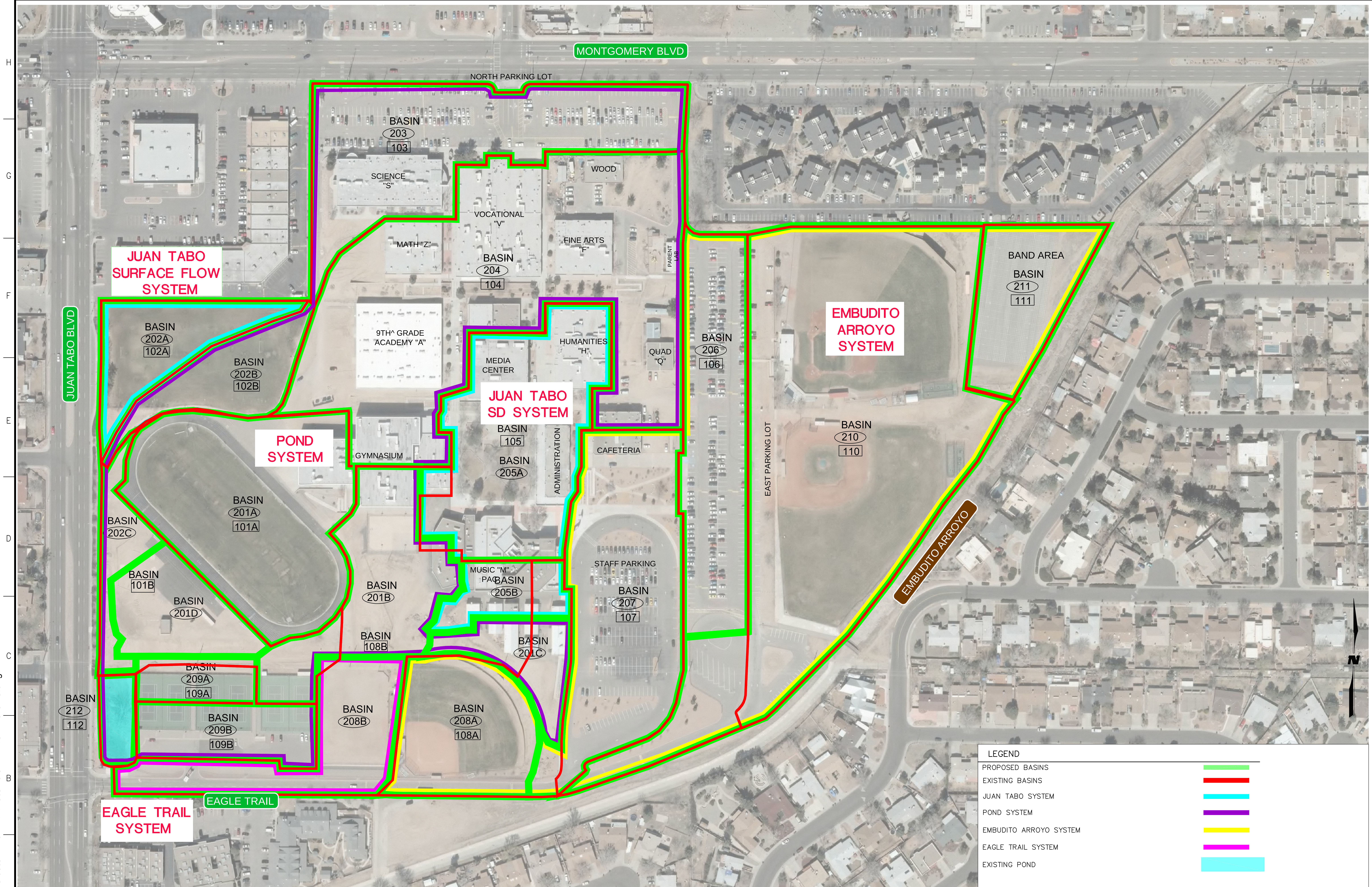

A1 GEOGRAPHIC REGIONS MAP

1" = 100'

0 50' 100'

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SEAL

EUGENIO E. VALDEZ NEW MEXICO 18404 PROFESSIONAL ENGINEER
1/15/15

PROJECT NAME

ELDORADO HIGH SCHOOL DRAINAGE MASTER PLAN

REV.	DATE	DESCRIPTION	BY

PROJECT NO:	1260002500
DESIGNED BY:	CPD
DRAWN BY:	JEM
CHECKED BY:	MJI
DATE:	APRIL 2014

SHEET TITLE

GEOGRAPHIC REGIONS MAP

SHEET NO:

FIGURE 9
PAGE 15

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4.3 Water Quality Treatment

At the time of this report, the city of Albuquerque is in the process of adopting new standards for water quality treatment for new and redevelopment projects. Based on discussions with city development services, the new standard includes extended detention times for storage ponds, as well as sediment control.

The proposed drainage improvements and the improvements to the parking areas included in the Master Site Priority Plan take these new standards into consideration.

The water quality pond proposed for the new parking area to the west of the 9th Grade Academy incorporates an interceptor pond that is designed to allow both sedimentation and evaporation of parking lot runoff. Various improvements throughout the system incorporate both slope stabilization and optimization of existing hydraulic systems to minimize sediment transport both to the pond and the city storm drains and inlets.

A proposed water quality manhole will be included for Basin 206 and discharge into the Embudito Arroyo. A 24-inch ADA pipe and inlet are proposed.

4.4 Proposed Site Description

The proposed site improvements in this Drainage Master Plan are limited to the boundaries of the existing campus. The Master Site Priority Plan proposed several improvements to key areas including pavement replacement and repair. These improvements, particularly the paving, contribute to additional surface runoff by increasing impermeable surface areas, minimizing the sedimentation, and better directing flow into the existing storm drain system. The primary improvements proposed in this Drainage Plan include repair and replacement of existing structures and slope stabilization. Proposed improvements are separated into those improvements to be completed in 2013-2015, and Master Plan improvements to be completed in the future.

4.5 Proposed Drainage Improvements

Proposed drainage improvements and drainage patterns are shown in Figures 7 and 8. The primary components of the proposed plan are listed below:

Improvements to be completed in 2013-2015

- Restore grading on north student parking lot and west service road and repave to prevent ponding
- Repair concrete channel and replace approximately 300 feet of channel with 30-inch RCP
- Construct new service road with curb and gutter
- Construct new inlet
- Clean inlets in courtyard area and upsize existing drainage storm drain pipes
- Construct a new water quality pond and new underground 24” RCP
- Dredge pond to original dimensions and clean outlet structure
- Stabilize slopes around cafeteria and parent lab

- Reseal staff parking lot and east student parking lot
- Replacement of existing concrete sidewalks with new concrete
- Construct a new inlet and water quality manhole

Master Plan Improvements to be completed in the future

- Add staff parking lot at cafeteria
- Pave parking lot on east side
- Soil stabilization near south baseball field
- Building additions and potential artificial turf athletic field
- Pave parking lot west of the 9th Grade Academy
- Restore grading in band area to allow runoff to Embudito Arroyo and stabilize channel with riprap to prevent erosion

4.6 Proposed Drainage Improvements and Analysis Details

The following sections provide detailed discussion of the proposed drainage patterns and drainage improvements for Eldorado High School. Figure 11 shows the analysis basins, design points, and flow rates for the proposed conditions. Figure 12 illustrates the location of various improvements throughout the campus. Peak flow rates, volumes, and basin areas are provided in Table 4.

4.6.1 Pond System

The basins flowing into the pond system include the north parking lot (Basin 203), academic buildings (Basin 204), half the soccer field (Basin 202B), track and field and surrounding areas (Basin 201A, 201C), tennis courts (Basin 209A), and the parking lot near tennis courts (Basin 209B), and the primary detention pond (Basin 212) and the overflow from track and field (Basin 201B and 201D). It also includes the proposed water quality pond downstream of Basin 203.

Improvements to be completed in 2013-2015

In Basin 203, the repaving and regrading of the north parking lot will prevent ponding and subsequent damage to the asphalt. No additional drainage improvements are recommended for that area.

The primary pond (Basin 212) cross-section, as determined by the field survey, is irregular and shows evidence of accumulated sediment. The outlet structure has accumulated debris. It is recommended that the pond be dredged and cleaned of sediment and accumulated debris. The outlet structure should also be cleaned of accumulated debris and repaired as needed.

The existing concrete channel, one of the primary storm water conveyance to the existing detention pond, requires repair and reconstruction in sections. In order to protect the track from erosion and deposition of sediment, and allow access to the soccer field, it is recommended that the portion of the channel on the south side of the soccer field be converted to 30-inch culvert pipe. For maintenance reasons, approximately 350 linear feet of concrete pipe should be installed before a manhole to allow cleaning by a vactor truck or water jet when required.

The proposed water quality detention pond will collect roof runoff from the 9th Grade Academy as well as a portion of the runoff from Basins 203 and 204. The water quality detention pond will accept drainage runoff on the west side of Basin 203 through a curb and gutter section and asphalt paved service road including a concrete channel.

Master Plan Improvements to be completed in the future

The area west of the 9th Grade Academy within Basin 204 is currently a dirt lot with steep slopes that allows sediment into the channel and onto the track. Paving this lot will reduce sediment transport and optimize the capacity of the existing hydraulic structures.

4.6.2 Juan Tabo city storm drain system

Basins 205A and 205B (courtyard), Basins 201B and 201D (areas surrounding track) and Basin 201C (northeast of baseball field) all contribute flows into the city storm drain system in Juan Tabo.

Improvements to be completed in 2013-2015

The courtyard (Basin 205A) concrete paving is not level and is cracked in multiple areas. While the expanding tree roots may be a primary contributing factor to the concrete damage, ponding water also may contribute to the cracking and damage to the concrete. Draining the water away from the central structure will help preserve the integrity of the concrete surface. This area is not ADA-compliant because the uneven surface poses a trip hazard. Therefore, the existing concrete surface area should be reconstructed. In addition, it is recommended to use tree wells to absorb excess runoff. The 12-inch storm drain from the courtyard connecting to the Juan Tabo storm drain will be upsized to a 30-inch pipe to accommodate all courtyard flows and the additional runoff from Basin 205 B, 201B and 201C.

The area encompassed by Basin 201C is identified in proposed Master Site Priority Plan and includes a walkway for ADA access to the PAC from Eagle Trail and access to the south baseball field. The upstream side of this walkway, with appropriate curb and gutter, would serve to prevent erosion from the slope that bisects Basin 208A. Flows will discharge west toward a proposed asphalt drainage swale. The proposed asphalt swale will be the main conveyance structure for flows discharging from Basins 201C, 201B and 201D.

In Basin 201B, the slope from the gymnasium to the tennis courts requires stabilization. An asphalt swale will be constructed to reduce sediment transport and direct runoff from north to south to the main drainage swale running east west.

Basin 201D will include an asphalt rundown to provide the basin an outlet to the main conveyance structure and will prevent erosion along the downstream side slopes.

The 12-inch storm drain along the south end of the basins will be upsized to a 30-inch pipe and will run under the asphalt swale. At the termination of the swale an area inlet will be constructed. All flows will converge at this location. The inlet will also act as a junction box which includes the existing 12-inch storm drain to the west and a proposed 30-inch culvert to the south. The existing 12-inch storm drain will reduce the total flow discharging to the Juan Tabo system to the existing allowable flow rate. As the hydraulic head increases the water surface will rise and flow will then discharge into the proposed 30-inch culvert and flow south into the detention pond in Basin 212.

Master Plan Improvements to be completed in the future

In Basin 201B, the slope upstream of the track, on the east side, requires sediment control. A geotextile used in conjunction with some desert landscaping will reduce the sediment transport from the area south of the basketball courts. Terracing would also retain sediment and soil and reduce the velocity of the surface runoff. The inlets at the track are limited in capacity and should be cleaned to maximize the storm water conveyance.

4.6.3 Embudito Arroyo system

The basins flowing into the Embudito Arroyo system include the student parking lot (Basin 206), the staff parking lot (Basin 207), the southern softball field (Basin 208A), the east baseball fields (Basin 210) and the band area (Basin 211).

Improvements to be completed in 2013-2015

An SO-19 (Special order 19) is proposed to convey runoff from basin 206 into the Embudito Arroyo. Currently, runoff from basin 206 is conveyed to basin 207 by way of a low lying sidewalk ramp that provides pedestrian access between the east student parking lot and the staff/visitor parking lot. This leads to localized ponding and hinders pedestrian sidewalk access during storm events. Basin 207 currently discharges into the south parking lot access road. The access road conveys runoff to Eagle Trail road and concrete channel rundown connected to the Embudito Arroyo. Proposed improvements to convey runoff from basin 206 will include a double ‘D’ inlet constructed in a sump condition. Approximately 330 LF of 24” dia. RCP (Reinforced Concrete Pipe) will connect the inlet to the Embudito Arroyo south of the inlet location. Pipe penetration into the Embudito Arroyo will provide a suitable outfall for the storm drain pipe. A water quality manhole structure will be provided between the inlet and the outfall location to maximize pollutant removal from entering into the Embuditio Arroyo. Proposed improvements will discharge runoff from basin 206 into the Embudito Arroyo approximately 740 ft. upstream from the current discharge point. Existing features such as asphalt, curb and gutter, landscape gravel, and fencing will be removed, salvaged when possible, and reinstalled to replicate existing conditions. This configuration provides a low impact economical solution to mitigate ponding and flooding between the pedestrian sidewalk and parking lots.

Master Plan Improvements to be completed in the future

Basin 210, the east baseball fields, would require substantial re-grading and restoration to improve drainage. Since this a largely a pervious area, this is not considered a priority for repair or rehabilitation.

There is a large, unpaved area that is bordered on the west by Basin 206 and on the east by Basin 210. Master Plan improvements include paving this area which would maximize conveyance capacity from Basin 210 and reduce sediment transport to Eagle Trail.

Basin 211, the band practice area, is proposed for repaving. Drainage improvements in the future should prevent upland drainage runoff into the baseball fields.

4.6.4 Eagle Trail city storm drain system

Basin 208B flows into Eagle Trail and into the city storm drain system.

Improvements to be completed in 2013-2015

There are no improvements to be completed in 2013-2015.

Master Plan Improvements to be completed in the future

The softball practice area may be developed to include an artificial turf athletic field.

4.6.5 Proposed Conditions Hydrologic Analysis Summaries

Table 4 summarizes the assumptions for land use, watershed areas, peak flow rates, and runoff volumes associated with the 16 analyzed sub-basins. Table 5 summarizes the contributing peak flow rates and runoff volumes at 13 design points.

Table 4: Proposed Sub-Basin Peak Discharge and Volumes

Sub-Basin	Area (Acres)	Land Treatment		$Q_{100,6}$ (cfs)	$V_{100,24}$ (ac-ft)
		C	D		
201A	4.2	64.7%	35.3%	15.30	0.596
201B	3.2	70.8%	29.2%	11.52	0.431
201C	0.9	25.0%	75.0%	3.76	0.179
201D	1.2	74.4%	25.6%	4.33	0.157
202A	1.3	100.0%	0.0%	4.34	0.125
202B	1.2	100.0%	0.0%	3.93	0.113
202C	0.7	92.0%	8.0%	2.14	0.067
203	4.0	1.0%	99.0%	18.12	0.943
204	8.3	13.3%	86.7%	35.79	1.801
205A	3.6	13.4%	86.6%	15.81	0.789
205B	0.8	10.0%	90.0%	3.38	0.170
206	2.8	0.0%	100.0%	12.40	0.648
207	3.9	14.1%	85.9%	16.89	0.841
208A	1.9	89.6%	10.4%	5.69	0.183
208B	1.9	62.1%	37.9%	6.90	0.273

Sub-Basin	Area (Acres)	Land Treatment		$Q_{100,6}$ (cfs)	$V_{100,24}$ (ac-ft)
		C	D		
209A	0.6	33.4%	66.7%	2.36	0.108
209B	1.1	0.0%	100.0%	4.91	0.256
210	10.4	85.1%	14.9%	36.60	1.192
211	1.6	33.3%	66.7%	6.54	0.301
212	0.3	25.0%	75.0%	1.15	0.041

Table 5: Proposed Design Point Peak Discharge and Volumes

Analysis Point	$Q_{100,6}$ (cfs)	$V_{100,24}$ (ac-ft)
AP-1	87.57	4.802
AP-2	53.97	2.745
AP-3	57.10	2.858
AP-4	73.86	3.521
AP-5	5.48	0.860
AP-6	52.49	2.033
AP-7	58.19	2.215
AP-8	114.16	4.792
AP-9	6.54	0.301
AP-10	6.90	0.273
AP-11	4.34	0.125
AP-12	33.27	0.860
AP-13	12.40	0.648

Table 6 summarizes the proposed conditions pond.

Table 6: Proposed Conditions Pond Data

$V_{\text{required } 100,24}$ (ac-ft) =	0.773
V_{provided} (ac-ft) =	1.274
$Q_{\text{in } 100,6}$ (cfs) =	114.16
$Q_{\text{out } 100,6}$ (cfs) =	87.57
$WSEl_{100}$ (ft) =	5697.5
Top Elevation(ft) =	5700
Bottom Elevation(ft) =	5692
Emergency Spillway Elevation (ft) =	5699.5
Outfall Box Top Elevation (ft) =	5697.05
Outfall Box Bottom Elevation/ 36" RCP Outfall Pipe Invert (ft) =	5688.58

Basin runoff has been increased slightly from the existing conditions due to an increase in Land Treatment D in Basins 201B, 203, 204, 205B, 206, 208B, and 210.

Table 7: Comparison of Analysis Point Peak Discharges

Analysis Point	Existing $Q_{100,6}$ (cfs)	Proposed $Q_{100,6}$ (cfs)	$\Delta Q_{100,6}$ (cfs)
AP-1	70.3	87.57	+17.3
AP-2	53.3	54.0	+0.7
AP-3	56.9	57.1	+0.2
AP-4	69.6	73.9	+4.30
AP-5	13.6	5.5	-8.1
AP-6	63.5	52.5	-11.0
AP-7	73.5	58.2	-15.3
AP-8	77.4	114.2	+36.8
AP-9	6.4	6.5	+0.1
AP-10	17.3	6.9	-10.4
AP-11	4.3	4.3	+0.0
AP-12	n/a	33.3	
AP-13	n/a	12.4	

Table 7 shows the comparison of the analysis points from the existing and proposed peak discharge. The proposed conditions have generally increased by 0 to 36.8 cfs. There is a significant increase in runoff at AP-8, flow into the pond, which increased the outlet from the pond at AP-1. The increase in runoff for proposed conditions is due to the fact that additional areas were routed to the pond instead of directly to the Eagle Trail Road.

Proposed improvements are designed to optimize the existing storm drain system, and reduce sediment transport onto campus and adjacent roadways.

5 Summary and Conclusions

The overall existing drainage conditions at the Eldorado High School campus are satisfactory, with the exception of the pond outlet structure which needs to be cleaned to function properly. In order for the outlet structure to function properly, the weep holes in the structure need to be cleaned of gravel. The pond sediment will be removed from all sides of the structure and 6-inch diameter gravel will be enclosed around the structure as designed by Bohannan Huston in the July 1997 Eldorado High School Master Drainage Plan. The current system has adequate capacity to accommodate the 100-Year storm event if properly maintained. Table 8 shows the comparison of the July 1997 Eldorado High School Master Drainage Plan prepared by Bohannan Huston allowable discharges and the proposed discharge calculated by this drainage report. The overall peak discharge flowrate is reduced in all systems and is below the allowable discharge rates set forth in the July 1997 Eldorado High School Master Drainage Plan.

Table 8: Allowable flow Comparison

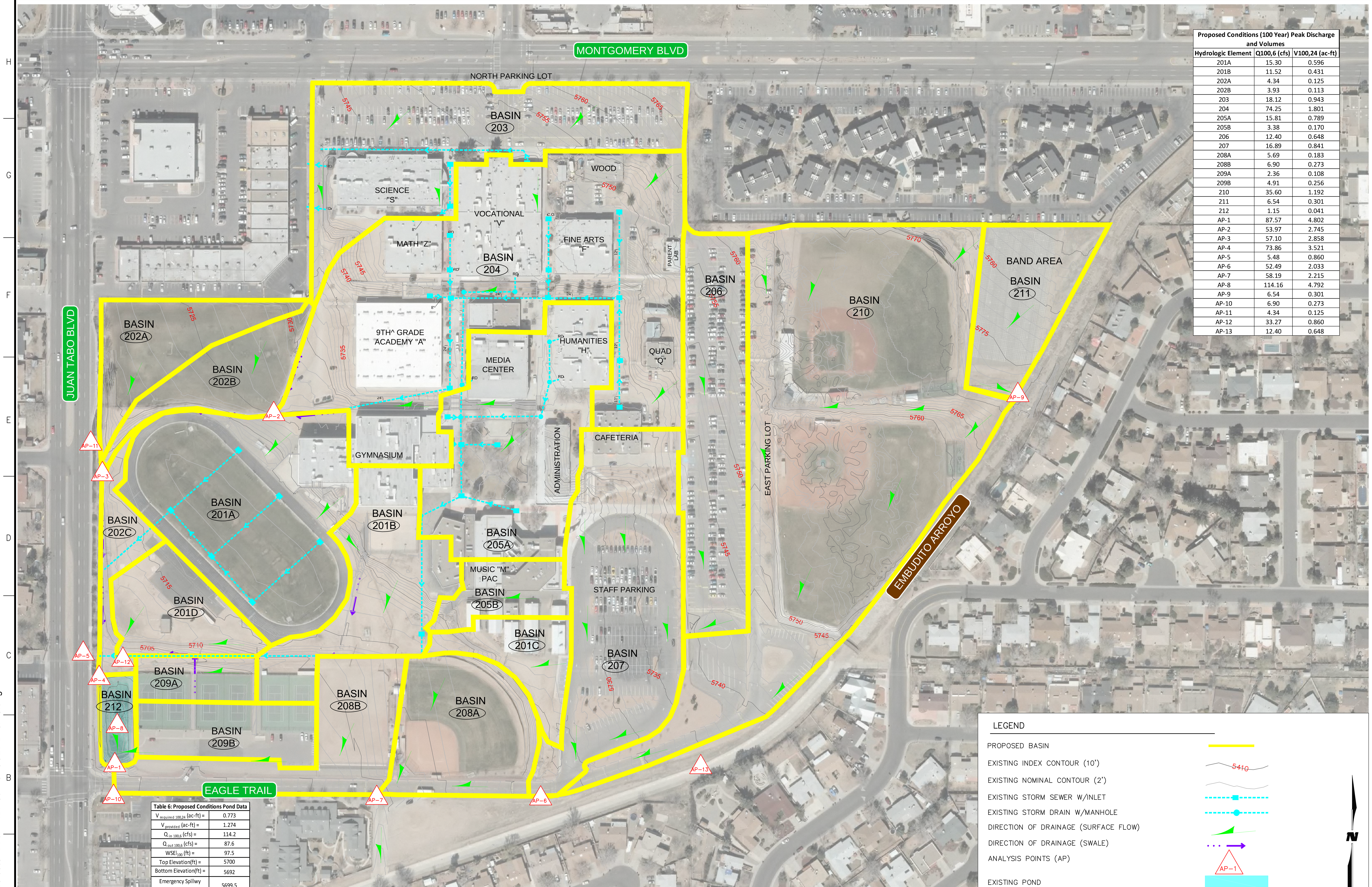
Discharge Point	1997 Eldorado Master Drainage Plan $Q_{100,6}$ (cfs)	Proposed $Q_{100,6}$ (cfs)	$\Delta Q_{100,6}$ (cfs)
Detention Pond	92.1	87.6	-4.5
Embudito Arroyo	78.9	70.6	-8.3
Juan Tabo	8	9.9	+1.9
Eagle Trail Road	71.8	6.9	-64.9

Construction of the improvements proposed in this plan will mitigate drainage issues currently present on the site. Deferred maintenance and sediment accumulation have created these drainage issues. Slope stabilization and repair of the existing structures will optimize the capacity of the existing system by removing or reducing the sediment that clogs the storm drain inlets and piping, and will maximize the capacity of the storm drain.

The primary components of the Drainage Master Plan include:

- Modification of the Outlet Structure; excavate around the structure and install 6”-12” wire enclosed riprap to allow water to drain to the outlet
- Repair and replacement of sections of the primary conveyance channel
- Removal of sediment from the detention pond and storm drain system
- Stabilization of slopes to minimize sediment transport and erosion
- Installation of inlets in the courtyard and lower areas to intercept surface flow
- Repaving and re-grading areas to conform to existing drainage patterns

These improvements are an investment that will extend the life of the storm water system and protect valuable capital assets for the Albuquerque Public Schools.



Proposed Conditions (100 Year) Peak Discharge and Volumes		
Hydrologic Element	Q100,6 (cfs)	V100,24 (ac-ft)
201A	15.30	0.596
201B	11.52	0.431
202A	4.34	0.125
202B	3.93	0.113
203	18.12	0.943
204	74.25	1.801
205A	15.81	0.789
205B	3.38	0.170
206	12.40	0.648
207	16.89	0.841
208A	5.69	0.183
208B	6.90	0.273
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209B	4.91	0.256
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AP-4	73.86	3.521
AP-5	5.48	0.860
AP-6	52.49	2.033
AP-7	58.19	2.215
AP-8	114.16	4.792
AP-9	6.54	0.301
AP-10	6.90	0.273
AP-11	4.34	0.125
AP-12	33.27	0.860
AP-13	12.40	0.648

Table 6: Proposed Conditions Pond Data	
$V_{required\ 100,24}$ (ac-ft) =	0.773
$V_{provided}$ (ac-ft) =	1.274
$Q_{in\ 100,6}$ (cfs) =	114.2
$Q_{out\ 100,6}$ (cfs) =	87.6
$WSEl_{100}$ (ft) =	97.5
Top Elevation(ft) =	5700
Bottom Elevation(ft) =	5692
Emergency Spillwy Elevation (ft) =	5699.5

A1 PROPOSED CONDITIONS BASIN MAP

1" = 100'

0 50' 100'

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SEAL: EUGENIO E. VALDEZ, NEW MEXICO, 18404, PROFESSIONAL ENGINEER — 1/15/15

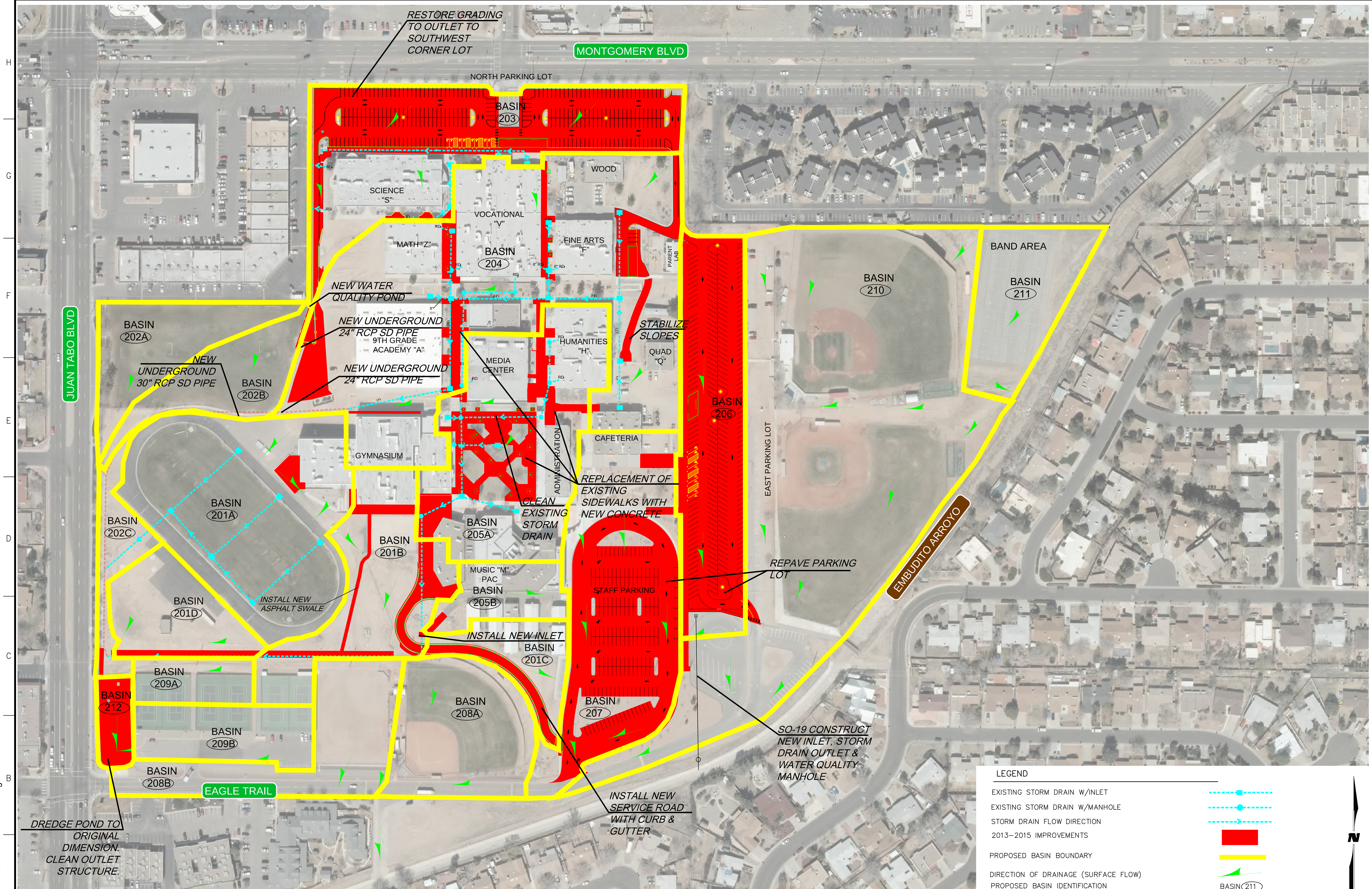
PROJECT NAME: ELDORADO HIGH SCHOOL DRAINAGE MASTER PLAN

REV.	DATE	DESCRIPTION	BY

PROJECT NO:	1260002500
DESIGNED BY:	CPD
DRAWN BY:	JEM
CHECKED BY:	MJI
DATE:	APRIL 2014

SHEET TITLE: PROPOSED CONDITIONS BASIN MAP

SHEET NO: FIGURE 10



A1 2013–2015 IMPROVEMENTS MAP

1" = 100'

0 50' 100'

M:\IFS\12-600-025-00\CADD\EXHIBITS\Figure 3.DWG

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PROJECT NAME

ELDORADO HIGH SCHOOL DRAINAGE MASTER PLAN

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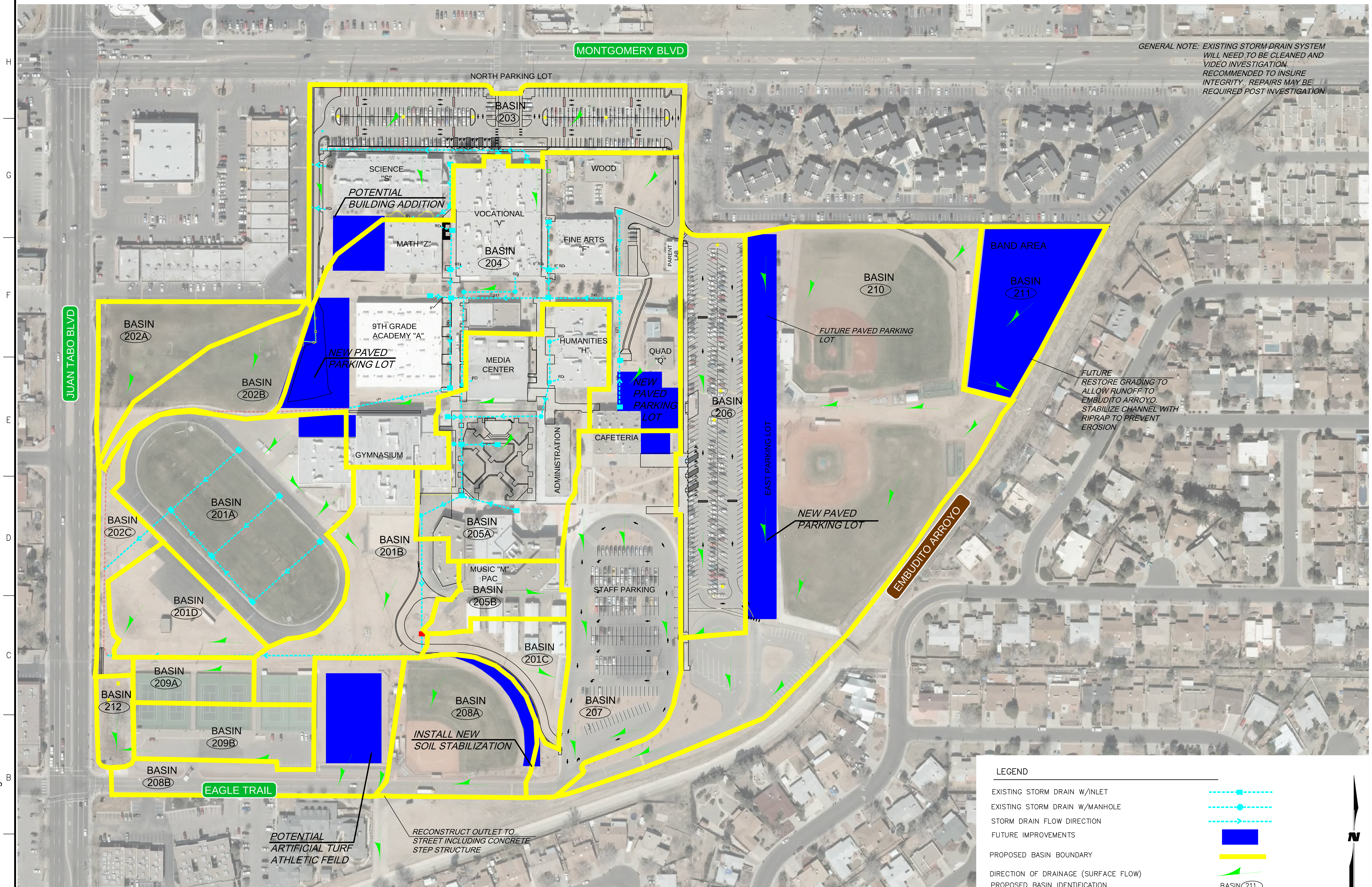
SHEET TITLE

2013-2015 IMPROVEMENTS MAP

SHEET NO: FIGURE 11



A1 FUTURE IMPROVEMENTS MAP
1" = 100'

M:\FS\12-600-025-00\CADD\EXHIBITS\Figure 3.DWG

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CONSULTANTS
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NEW MEXICO
18404
PROFESSIONAL ENGINEER
1/16/15

PROJECT NAME
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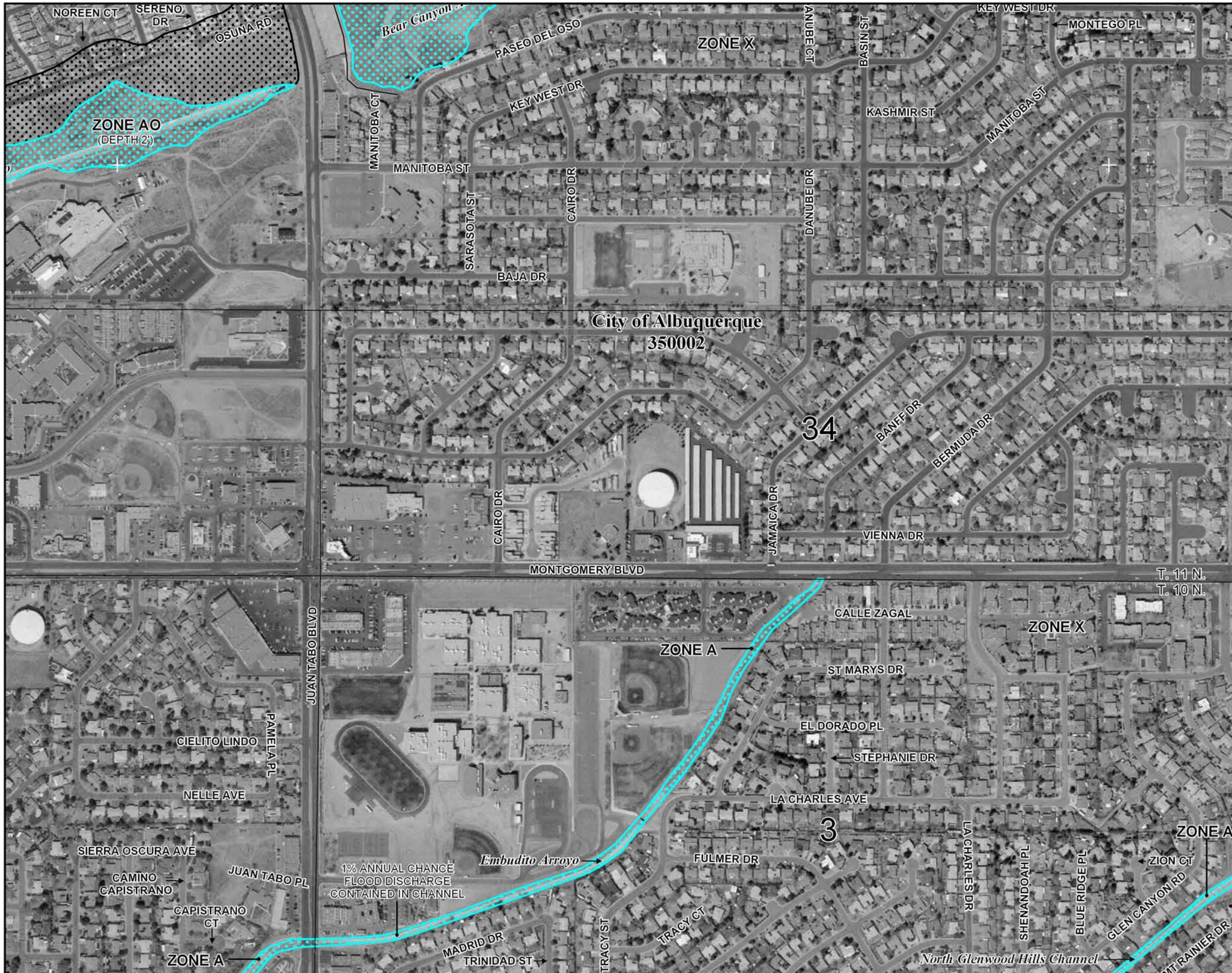
SHEET TITLE
FUTURE IMPROVEMENTS MAP

SHEET NO:
FIGURE 12
PAGE 26

APPENDIX A



JOINS PANEL 0357

35
106° 30' 0

MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0144G

FIRM
FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO
AND INCORPORATED AREAS

PANEL 144 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0144	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
35001C0144G

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

APPENDIX B

Project: Eldorado HS
Project No: 1260002500

Existing Conditions Outlet Structure Orfice Outflow

$$Q = C_d A \sqrt{2gh}$$

Top of Structure **5697.05** ft
Cd **0.67**
g 32.2 ft/sec^2

Bottom Orifices			**Row 1 Orifices**			**Row 2 Orifices**			**Row 3 Orifices**			**Row 4 Orifices**			**Total Flow from Low Flow Riser Orifices**
Inlet Dia.	**3**	in.	Inlet Dia.	**3**	in.	Inlet Dia.	**3**	in.	Inlet Dia.	**3**	in.	Inlet Dia.	**3**	in.	
Inlet Area	**0.1963**	sq ft	Inlet Area	**0.1963**	sq ft	Inlet Area	**0.1963**	sq ft	Inlet Area	**0.1963**	sq ft	Inlet Area	**0.1963**	sq ft	
Invert Elev	**5689.3833**	ft.	Invert Elev	**5690.88**	ft.	Invert Elev	**5692.38**	ft.	Invert Elev	**5693.88**	ft.	Invert Elev	**5695.4**	ft.	
# of Inlets	**0**		# of Inlets	**0**		# of Inlets	**0**		# of Inlets	**0**		# of Inlets	**2**		
WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	
5688.58	0.0	0.0	5688.58	0.0	0.0	5688.58	0.0	0.0	5688.58	0.0	0.0	5688.58	0.0	0.0	**0.0**
5689	0.0	0.0	5689	0.0	0.0	5689	0.0	0.0	5689	0.0	0.0	5689	0.0	0.0	**0.0**
5690	0.7	0.0	5690	0.0	0.0	5690	0.0	0.0	5690	0.0	0.0	5690	0.0	0.0	**0.0**
5691	1.3	0.0	5691	0.0	0.0	5691	0.0	0.0	5691	0.0	0.0	5691	0.0	0.0	**0.0**
5692	1.7	0.0	5692	1.0	0.0	5692	0.0	0.0	5692	0.0	0.0	5692	0.0	0.0	**0.0**
5693	2.0	0.0	5693	1.5	0.0	5693	0.7	0.0	5693	0.0	0.0	5693	0.0	0.0	**0.0**
5694	2.2	0.0	5694	1.8	0.0	5694	1.3	0.0	5694	0.0	0.0	5694	0.0	0.0	**0.0**
5695	2.5	0.0	5695	2.1	0.0	5695	1.7	0.0	5695	1.0	0.0	5695	0.0	0.0	**0.0**
5696	2.7	0.0	5696	2.3	0.0	5696	2.0	0.0	5696	1.5	0.0	5696	0.7	1.5	**1.5**
5697	2.9	0.0	5697	2.6	0.0	5697	2.2	0.0	5697	1.8	0.0	5697	1.3	2.6	**2.6**
5698	3.1	0.0	5698	2.8	0.0	5698	2.5	0.0	5698	2.1	0.0	5698	1.7	3.3	**3.3**
5699	3.2	0.0	5699	3.0	0.0	5699	2.7	0.0	5699	2.3	0.0	5699	2.0	3.9	**3.9**
5699.5	3.3	0.0	5699.5	3.1	0.0	5699.5	2.8	0.0	5699.5	2.5	0.0	5699.5	2.1	4.2	**4.2**
5700	3.4	0.0	5700	3.1	0.0	5700	2.9	0.0	5700	2.6	0.0	5700	2.2	4.5	**4.5**

Project: Eldorado HS
Project No: 1260002500

Proposed Conditions Outlet Structure Orfice Outflow

$$Q = C_d A \sqrt{2gh}$$

Top of Structure **5697.05** ft
Cd **0.67**
g 32.2 ft/sec^2

Bottom Orifices			Row 1 Orifices			Row 2 Orifices			Row 3 Orifices			Row 4 Orifices			Total Flow from Low Flow Riser Orifices
Inlet Dia.	**3** in.		Inlet Dia.	**3** in.		Inlet Dia.	**3** in.		Inlet Dia.	**3** in.		Inlet Dia.	**3** in.		
Inlet Area	**0.1963** sq ft		Inlet Area	**0.1963** sq ft		Inlet Area	**0.1963** sq ft		Inlet Area	**0.1963** sq ft		Inlet Area	**0.1963** sq ft		
Invert Elev	**5689.3833** ft.		Invert Elev	**5690.88** ft.		Invert Elev	**5692.38** ft.		Invert Elev	**5693.88** ft.		Invert Elev	**5695.4** ft.		
# of Inlets	**6**		# of Inlets	**6**		# of Inlets	**6**		# of Inlets	**6**		# of Inlets	**8**		
WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	WSEL (ft)	Q (cfs)	Q row (cfs)	
5688.58	0.0	0.0	5688.58	0.0	0.0	5688.58	0.0	0.0	5688.58	0.0	0.0	5688.58	0.0	0.0	**0.0**
5689	0.0	0.0	5689	0.0	0.0	5689	0.0	0.0	5689	0.0	0.0	5689	0.0	0.0	**0.0**
5690	0.7	4.4	5690	0.0	0.0	5690	0.0	0.0	5690	0.0	0.0	5690	0.0	0.0	**4.4**
5691	1.3	7.7	5691	0.0	0.0	5691	0.0	0.0	5691	0.0	0.0	5691	0.0	0.0	**7.7**
5692	1.7	9.9	5692	1.0	6.3	5692	0.0	0.0	5692	0.0	0.0	5692	0.0	0.0	**16.2**
5693	2.0	11.8	5693	1.5	8.9	5693	0.7	4.4	5693	0.0	0.0	5693	0.0	0.0	**25.1**
5694	2.2	13.4	5694	1.8	10.9	5694	1.3	7.7	5694	0.0	0.0	5694	0.0	0.0	**32.0**
5695	2.5	14.8	5695	2.1	12.6	5695	1.7	9.9	5695	1.0	6.3	5695	0.0	0.0	**43.6**
5696	2.7	16.1	5696	2.3	14.1	5696	2.0	11.8	5696	1.5	8.9	5696	0.7	5.9	**56.7**
5697	2.9	17.3	5697	2.6	15.4	5697	2.2	13.4	5697	1.8	10.9	5697	1.3	10.3	**67.2**
5698	3.1	18.4	5698	2.8	16.7	5698	2.5	14.8	5698	2.1	12.6	5698	1.7	13.3	**75.7**
5699	3.2	19.4	5699	3.0	17.8	5699	2.7	16.1	5699	2.3	14.1	5699	2.0	15.7	**83.1**
5699.5	3.3	19.9	5699.5	3.1	18.4	5699.5	2.8	16.7	5699.5	2.5	14.8	5699.5	2.1	16.8	**86.5**
5700	3.4	20.4	5700	3.1	18.9	5700	2.9	17.3	5700	2.6	15.4	5700	2.2	17.8	**89.8**

Project: Eldorado HS
Project No: 1260002500

Existing Conditions Outlet Structure Total Outflow

$$Q = C_w \cdot L \cdot h^{1.5}$$

$$Q = C_d A \sqrt{2gh}$$

Top of Riser Elev (ft) = 5697.05
Riser Width 4
Riser Length 4
Riser Area 16
Cw 2.9
Cd 0.60
g (ft/sec^2) = 32.2

Invert (ft) = 5688.58
Diameter (in) = 36
Area (sq ft) = 7.07

L= 12' for weir equation

WSEL (ft)	Weir Flow (Top of structure) Q (cfs)	Orifice Flow (36" RCP Outflow Pipe) Q (cfs)	Flow Used Q (cfs)	Total Flow Riser Orfices Q (cfs)	Total Flow Q (cfs)
5692	0.0	0.0	0.0	0.0	0.0
5693	0.0	0.0	0.0	0.0	0.0
5694	0.0	0.0	0.0	0.0	0.0
5695	0.0	0.0	0.0	0.0	0.0
5696	0.0	0.0	0.0	1.5	1.5
5697	0.0	0.0	0.0	2.6	2.6
5698	32.2	95.8	32.2	3.3	35.5
5699	94.8	101.7	94.8	3.9	98.7
5699.5	133.5	104.5	104.5	4.2	108.7
5700	176.3	107.2	107.2	4.5	111.6

Project: Eldorado HS
Project No: 1260002500

Proposed Conditions Outlet Structure Total Outflow

$$Q = C_w \cdot L \cdot h^{1.5}$$

$$Q = C_d A \sqrt{2gh}$$

Top of Riser Elev (ft) = 5697.05
Riser Width 4
Riser Length 4
Riser Area 16
Cw 2.9
Cd 0.60
g (ft/sec^2) = 32.2

Invert (ft) = 5688.58
Diameter (in) = 36
Area (sq ft) = 7.07

WSEL (ft)	Weir Flow (Top of structure) Q (cfs)	Orifice Flow (36" RCP Outflow Pipe) Q (cfs)	Flow Used Q (cfs)	Total Flow Riser Orfices Q (cfs)	Total Flow Q (cfs)
5688.58	0.0	0.0	0.0	0.00	0.0
5689	0.0	0.0	0.0	0.00	0.0
5690	0.0	0.0	0.0	4.42	4.4
5691	0.0	0.0	0.0	7.70	7.7
5692	0.0	0.0	0.0	16.23	16.2
5693	0.0	0.0	0.0	25.09	25.1
5694	0.0	0.0	0.0	31.96	32.0
5695	0.0	0.0	0.0	43.59	43.6
5696	0.0	0.0	0.0	56.71	56.7
5697	0.0	0.0	0.0	67.20	67.2
5698	32.2	95.8	32.2	75.66	107.9
5699	94.8	101.7	94.8	83.08	177.8
5699.5	133.5	104.5	104.5	86.52	191.0
5700	176.3	107.2	107.2	89.80	197.0

Project: Eldorado HS
Project No: 1260002500

Emergency Spillway Peak Discharge

Flow Across Trapezoidal Weir
NRCS, TR-39

$$H_{ec} = \frac{(3b + 5zd_{c,q})d_{c,q}}{2b + 4zd_{c,q}}$$

Equation 6

$$\frac{Q_{c,d}^2}{g} = \frac{[(b + zd_{c,q})d_{c,q}]^3}{b + 2zd_{c,q}}$$

Equation 4

Crest Elevation	5699.5	ft
Side Slope, z	0.10326	ft/ft
Crest Width, b	47.16	ft
Energy Head, H_{ec}	0.5	
	5700	
Gravitational Constant, g	32.2	

Determine Quadratic Equation from Equation 6
Determine critical depth from Quadratic Equation

A	0.5163
B	141.48
C	-47.16
Critical Depth, $d_{c,q}$	0.333

Determine peak discharge through spillway

Q	51

```
*S      ALBUQUERQUE PUBLIC SCHOOLS
*S      ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
*S      USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
*S      FILE: 1006E_010715.txt
*S      EXISTING CONDITIONS
*S      DATE: JAN 2015
*S ********************************************************************************
*S
*S      100 YEAR 6 HOUR STORM - EXISTING RUNOFF ANALYSIS
*S      RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 4
*S
*S ********************************************************************************

START               TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION            ALBUQUERQUE

***********************************************************************************
*
RAINFALL            TYPE=-1
                    QUARTER=1.12    ONE= 1.87 IN
                    SIX= 2.51 IN   DAY= 3.08 IN   DT = 0.05 HR
*S
***********************************************************************************
*S            **** SUB-BASIN 101A **** (AREA=4.20 ACRES)
***********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.040   K=0.7
                    LENGTH=250 FT   SLOPE=0.040   K=2.0
                    LENGTH=150 FT   SLOPE=0.040   K=3.0
                    KN=0.021  CENTROID DIST=250 FT
COMPUTE NM HYD      ID=1  HYD NO=101A  DA= 0.0065594 SQ MI
                    PER A=0  PER B=0  PER C=65.78  PER D=34.22
                    TP=0.133333  MASSRAIN=-1
PRINT HYD           ID=1  CODE=1
*
*
*S ROUTE 101A IN 10-INCH STORM DRAIN
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.03
                      DIA=0.83 FT  N=0.025
ROUTE MCUNGE        ID=2  HYD NO=101A.R  INFLOW ID=1
                    DT=0.0  L=700 FT  NS=0  SLOPE=0.03
PRINT HYD           ID=2  CODE=1
*
***********************************************************************************
*S            **** SUB-BASIN 101B **** (AREA=2.51 ACRES)
***********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.040   K=0.7
                    LENGTH=750 FT   SLOPE=0.040   K=2.0
                    LENGTH=150 FT   SLOPE=0.040   K=3.0
                    KN=0.021  CENTROID DIST=500 FT
COMPUTE NM HYD      ID=3  HYD NO=101B  DA= 0.0039166 SQ MI
                    PER A=0  PER B=0  PER C=80.18  PER D=19.82
                    TP=0.133333  MASSRAIN=-1
PRINT HYD           ID=3  CODE=1
*
***********************************************************************************
*S            **** SUB-BASIN 102A **** (AREA=1.35 ACRES)
***********************************************************************************
*
*S            **** AP-11
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.015   K=0.7
                    LENGTH=400 FT   SLOPE=0.015   K=2.0
                    LENGTH=100 FT   SLOPE=0.015   K=3.0
                    KN=0.025  CENTROID DIST=300 FT
COMPUTE NM HYD      ID=7   HYD NO=102A   DA= 0.0021153 SQ MI
                    PER A=0  PER B=0  PER C=100  PER D=0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=7   CODE=1
*
***********************************************************************************
*S            **** SUB-BASIN 102B **** (AREA=1.16 ACRES)
***********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.015   K=0.7
                    LENGTH=400 FT   SLOPE=0.015   K=2.0
```

```
                    LENGTH=100 FT   SLOPE=0.015   K=3.0
                    KN=0.025  CENTROID DIST=300 FT
COMPUTE NM HYD      ID=39   HYD NO=102B   DA= 0.0018130 SQ MI
                    PER A=0  PER B=0  PER C=100  PER D=0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=39   CODE=1
*
*******************************************************************************
*S              **** SUB-BASIN 103 **** (AREA=4.05 ACRES)
*******************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.055   K=1.0
                    LENGTH=875 FT   SLOPE=0.055   K=2.0
                    LENGTH=300 FT   SLOPE=0.055   K=3.0
                    KN=0.021  CENTROID DIST=638 FT
COMPUTE NM HYD      ID=8  HYD NO=103    DA= 0.0063226 SQ MI
                    PER A=0  PER B=0  PER C=4.96  PER D=95.04
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=8  CODE=1
*
*******************************************************************************
*S              **** SUB-BASIN 104 **** (AREA=8.36 ACRES)
*******************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.034   K=1.0
                    LENGTH=850 FT   SLOPE=0.034   K=2.0
                    LENGTH=2550 FT  SLOPE=0.034   K=3.0
                    KN=0.021  CENTROID DIST=1750 FT
COMPUTE NM HYD      ID=10   HYD NO=104   DA= 0.0130650 SQ MI
                    PER A=0  PER B=0  PER C=13.30  PER D=86.70
                    TP=0.0   MASSRAIN=-1
PRINT HYD           ID=10   CODE=1
*
*
*S              **** AP-2(ADD BASINS 103 AND 104)
ADD HYD         ID=14   HYD NO=AP-2     ID I=8  ID II=10
PRINT HYD               ID=14   CODE=5
*
*
*S ROUTE BASINS 103 AND 104 IN CHANNEL
COMPUTE RATING CURVE  CID=1  VS No=1  CODE=-1  SLP=0.03
                      DIA=2.0 FT  N=0.025
ROUTE MCUNGE        ID=9  HYD NO=103.R  INFLOW ID=14
                    DT=0.0  L=178 FT  NS=0  SLOPE=0.03
PRINT HYD           ID=9  CODE=1
*
*
*S              **** AP-3(ADD BASINS 103 AND 104 AND 102B)
ADD HYD         ID=16   HYD NO=AP-3     ID I=9  ID II=39
PRINT HYD               ID=16   CODE=5
*
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=7.09
                      DIST  ELEV   DIST ELEV
                      0.0   1.83   2.46 0.0
                      4.63  0.0    7.09 1.83
ROUTE MCUNGE          ID=17  HYD NO=AP-3.R  INFLOW ID=16
                      DT=0.0  L=450 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=17  CODE=1
*
*
*S              **** (ADD BASINS 103 AND 104 AND 102B AND 101A)
ADD HYD         ID=18   HYD NO=18       ID I=17  ID II=2
PRINT HYD               ID=18   CODE=5
*
*
*S              **** AP-4(ADD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL)
ADD HYD         ID=19   HYD NO=AP-4     ID I=18  ID II=3
PRINT HYD               ID=19   CODE=5
*
*******************************************************************************
*S              **** SUB-BASIN 105 **** (AREA=3.58 ACRES)
*******************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.032   K=1.0
```

```
                    LENGTH=850 FT   SLOPE=0.032   K=2.0
                    LENGTH=750 FT   SLOPE=0.032   K=3.0
                    KN=0.021  CENTROID DIST=850 FT
COMPUTE NM HYD      ID=21   HYD NO=105   DA= 0.0055891 SQ MI
                    PER A=0  PER B=0  PER C=13.52  PER D=86.48
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=21   CODE=1
*
*
*ROUTE SUB-BASINS 105 TO JUAN TABO THROUGH 12-INCH STORM DRAIN
*S              **** AP-5
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.017
                      DIA=1.0 FT  N=0.011
ROUTE MCUNGE          ID=22  HYD NO=AP-5  INFLOW ID=21
                      DT=0.0  L=895 FT  NS=0  SLOPE=0.017
PRINT HYD             ID=22  CODE=1
*
***********************************************************************************
*S              **** SUB-BASIN 106 **** (AREA=3.82 ACRES)
***********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.036   K=1.0
                    LENGTH=500 FT   SLOPE=0.036   K=2.0
                    LENGTH=850 FT   SLOPE=0.036   K=3.0
                    KN=0.021  CENTROID DIST=1450 FT
COMPUTE NM HYD      ID=24   HYD NO=106   DA= 0.0059657 SQ MI
                    PER A=0  PER B=0  PER C=8.94  PER D=91.06
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=24   CODE=1
*
***********************************************************************************
*S              **** SUB-BASIN 107 **** (AREA=3.78 ACRES)
***********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.040   K=1.0
                    LENGTH=360 FT   SLOPE=0.040   K=2.0
                    LENGTH=360 FT   SLOPE=0.040   K=3.0
                    KN=0.021  CENTROID DIST=820 FT
COMPUTE NM HYD      ID=25   HYD NO=107   DA= 0.0059095 SQ MI
                    PER A=0  PER B=0  PER C=14.75  PER D=85.25
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=25   CODE=1
*
***********************************************************************************
*S              **** SUB-BASIN 108A **** (AREA=2.77 ACRES)
***********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.05    K=0.7
                    LENGTH=550 FT   SLOPE=0.05    K=2.0
                    LENGTH=350 FT    SLOPE=0.05    K=3.0
                    KN=0.025  CENTROID DIST=500 FT
COMPUTE NM HYD      ID=26   HYD NO=108A   DA= 0.0043302 SQ MI
                    PER A=0  PER B=0  PER C=65.43  PER D=34.57
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=26   CODE=1
*
***********************************************************************************
*S              **** SUB-BASIN 108B **** (AREA=4.66 ACRES)
***********************************************************************************
*
*S              **** AP-10
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.035   K=0.7
                    LENGTH=450 FT   SLOPE=0.035   K=2.0
                    LENGTH=350 FT   SLOPE=0.035   K=3.0
                    KN=0.021  CENTROID DIST=450 FT
COMPUTE NM HYD      ID=27   HYD NO=108B   DA= 0.0072807 SQ MI
                    PER A=0  PER B=0  PER C=58.81  PER D=41.19
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=27   CODE=1
*
***********************************************************************************
*S              **** SUB-BASIN 109A **** (AREA=0.47 ACRES)
***********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
```

```
                    LENGTH=100 FT   SLOPE=0.014   K=1.0
                    LENGTH=275 FT   SLOPE=0.014   K=2.0
                    LENGTH=225 FT   SLOPE=0.014   K=3.0
                    KN=0.021  CENTROID DIST=300 FT
COMPUTE NM HYD      ID=28   HYD NO=109A   DA= 0.0007330 SQ MI
                    PER A=0  PER B=0  PER C=15.22  PER D=84.78
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=28   CODE=1
*
*
*S               **** ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
*S               **** 109A AND 101B.SWALE)
ADD HYD         ID=30   HYD NO=30       ID I=19  ID II=28
PRINT HYD               ID=30   CODE=5
*
**********************************************************************************
*S               **** SUB-BASIN 109B **** (AREA=1.11 ACRES)
**********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.024   K=1.0
                    LENGTH=225 FT   SLOPE=0.024   K=2.0
                    LENGTH=175 FT   SLOPE=0.024   K=3.0
                    KN=0.021  CENTROID DIST=250 FT
COMPUTE NM HYD      ID=31   HYD NO=109B   DA= 0.0017420 SQ MI
                    PER A=0  PER B=0  PER C=0  PER D=100
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=31   CODE=1
*
*
*
*S               **** ADD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL AND
*S               **** 109A AND 101B.SWALE AND 109B)
ADD HYD         ID=32   HYD NO=32       ID I=30  ID II=31
PRINT HYD               ID=32   CODE=5
*
**********************************************************************************
*S               **** SUB-BASIN 110 **** (AREA=9.41 ACRES)
**********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.040   K=0.7
                    LENGTH=650 FT   SLOPE=0.040   K=2.0
                    LENGTH=1275 FT   SLOPE=0.040   K=3.0
                    KN=0.025  CENTROID DIST=1012 FT
COMPUTE NM HYD      ID=34   HYD NO=110   DA= 0.0147070 SQ MI
                    PER A=0  PER B=0  PER C=93.60  PER D=6.40
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=34   CODE=1
*S
**********************************************************************************
*S               **** SUB-BASIN 111 **** (AREA=1.57 ACRES)
**********************************************************************************
*
*S               **** AP-9
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.030   K=1.0
                    LENGTH=400 FT   SLOPE=0.030   K=2.0
                    LENGTH=100 FT   SLOPE=0.030   K=3.0
                    KN=0.021  CENTROID DIST=300 FT
COMPUTE NM HYD      ID=35   HYD NO=111   DA= 0.0024568 SQ MI
                    PER A=0  PER B=0  PER C=33.26  PER D=66.74
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=35   CODE=1
*
*
*S               **** (ADD 110 AND 106)
ADD HYD         ID=36   HYD NO=36       ID I=34  ID II=24
PRINT HYD               ID=36   CODE=5
*
*
*S               **** AP-6
ADD HYD         ID=37   HYD NO=AP-6     ID I=36  ID II=25
PRINT HYD               ID=37   CODE=5
*
*
*S               **** AP-7
ADD HYD         ID=38   HYD NO=AP-7     ID I=37  ID II=26
PRINT HYD               ID=38   CODE=5
*
**********************************************************************************
```

```
*S              **** SUB-BASIN 112 **** (AREA=0.34 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=40   HYD NO=112   DA= 0.0005390 SQ MI
                    PER A=0  PER B=0  PER C=85.1  PER D=14.9
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=40   CODE=1
*
*
*S              **** AP-8
*S              **** ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
*S                    109A AND 101B.SWALE AND 109B AND 112
ADD HYD         ID=41   HYD NO=AP-8     ID I=32  ID II=40
PRINT HYD               ID=41   CODE=5
*
*
*************************************************************************************
*S              **** POND ****
*************************************************************************************
*
*S              **** AP-1/POND
ROUTE RESERVOIR       ID=33  HYD NO=AP-1/POND  INFLOW=41  CODE=1
                      OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                      0.0            0.0000           5692
                      1.5            0.4501           5696
                      2.6            0.6518           5697
                      35.5           0.8809           5698
                      98.7           1.1384           5699
                      108.7          1.2744           5699.5
                     PRINT HYD             ID=33  CODE=1
*
FINISH
```

```
    AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                       - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR)
=01/13/2015
    INPUT FILE = 025-00\AE_DATA\CALCS\Hydrology\AHYMO\Resubmittal Calcs_1214\1006E_010715.txt USER NO.=
WilsonCoANMSiteA96476897

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

    *S                  ALBUQUERQUE PUBLIC SCHOOLS
    *S                  ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
    *S                  USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
    *S                  FILE: 1006E_010715.txt
    *S                  EXISTING CONDITIONS
    *S                  DATE: JAN 2015
    *S ****************************************************************************
    *S
    *S                  100 YEAR 6 HOUR STORM - EXISTING RUNOFF ANALYSIS
    *S                  RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 4
    *S
    *S ****************************************************************************
    START                                                                                         TIME=
0.00
    LOCATION                    ALBUQUERQUE
    RAINFALL  TYPE= 1 NOAA 14                                                                     RAIN6=
2.510
    *S
    *S                        **** SUB-BASIN 101A **** (AREA=4.20 ACRES)
    COMPUTE NM HYD          101A   -     1      0.00656        15.18       0.527     1.50649    1.500    3.616 PER IMP=
34.22
    *S ROUTE 101A IN 10-INCH STORM DRAIN
    ROUTE MCUNGE          101A.R    1    2      0.00656        12.89       0.524     1.49686    1.700    3.071 CCODE =
0.2
    *S                        **** SUB-BASIN 101B **** (AREA=2.51 ACRES)
    COMPUTE NM HYD          101B   -     3      0.00392         8.59       0.280     1.34255    1.500    3.428 PER IMP=
19.82
    *S                        **** SUB-BASIN 102A **** (AREA=1.35 ACRES)
    *S                        **** AP-11
    COMPUTE NM HYD          102A   -     7      0.00212         4.29       0.126     1.11690    1.500    3.167 PER IMP=
0.00
    *S                        **** SUB-BASIN 102B **** (AREA=1.16 ACRES)
    COMPUTE NM HYD          102B   -    39      0.00181         3.68       0.108     1.11690    1.500    3.168 PER IMP=
0.00
    *S                        **** SUB-BASIN 103 **** (AREA=4.05 ACRES)
    COMPUTE NM HYD        103.00   -     8      0.00632        17.88       0.741     2.19893    1.500    4.418 PER IMP=
95.04
    *S                        **** SUB-BASIN 104 **** (AREA=8.36 ACRES)
    COMPUTE NM HYD        104.00   -    10      0.01307        35.38       1.466     2.10398    1.500    4.231 PER IMP=
86.70
    *S                        **** AP-2(ADD BASINS 103 AND 104)
    ADD HYD                 AP-2  8&10  14      0.01939        53.25       2.208     2.13491    1.500    4.292
    *S ROUTE BASINS 103 AND 104 IN CHANNEL
    ROUTE MCUNGE           103.R   14    9      0.01939        53.25       2.208     2.13491    1.500    4.292 CCODE =
0.0
    *S                        **** AP-3(ADD BASINS 103 AND 104 AND 102B)
    ADD HYD                 AP-3  9&39  16      0.02120        56.93       2.316     2.04785    1.500    4.196
    ROUTE MCUNGE          AP-3.R   16   17      0.02120        56.55       2.316     2.04799    1.500    4.168 CCODE =
0.2
    *S                        **** (ADD BASINS 103 AND 104 AND 102B AND 101A)
    ADD HYD                18.00 17& 2  18      0.02776        61.25       2.839     1.91771    1.550    3.447
    *S                  4(ADD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL)
    ADD HYD                 AP-4 18& 3  19      0.03168        69.56       3.120     1.84659    1.550    3.431
    *S                        **** SUB-BASIN 105 **** (AREA=3.58 ACRES)
    COMPUTE NM HYD        105.00   -    21      0.00559        15.40       0.626     2.10147    1.500    4.306 PER IMP=
```

```
86.48
    *S                          **** AP-5
    ROUTE MCUNGE           AP-5   21   22       0.00559       13.60       0.619      2.07822    1.650    3.803 CCODE =
0.2
    *S                          **** SUB-BASIN 106 **** (AREA=3.82 ACRES)
    COMPUTE NM HYD        106.00   -    24       0.00597       16.67       0.685      2.15362    1.500    4.366 PER IMP=
91.06
    *S                          **** SUB-BASIN 107 **** (AREA=3.78 ACRES)
 ♀
                                  FROM  TO                    PEAK        RUNOFF                 TIME TO    CFS      PAGE =   2
                       HYDROGRAPH  ID    ID        AREA      DISCHARGE    VOLUME      RUNOFF     PEAK      PER
    COMMAND        IDENTIFICATION  NO.   NO.      (SQ MI)      (CFS)      (AC-FT)    (INCHES)   (HOURS)    ACRE     NOTATION

    COMPUTE NM HYD        107.00   -    25       0.00591       16.22       0.658      2.08747    1.500    4.289 PER IMP=
85.25
    *S                          **** SUB-BASIN 108A **** (AREA=2.77 ACRES)
    COMPUTE NM HYD          108A   -    26       0.00433       10.04       0.349      1.51048    1.500    3.622 PER IMP=
34.57
    *S                          **** SUB-BASIN 108B **** (AREA=4.66 ACRES)
    *S                          **** AP-10
    COMPUTE NM HYD          108B   -    27       0.00728       17.27       0.616      1.58585    1.500    3.707 PER IMP=
41.19
    *S                          **** SUB-BASIN 109A **** (AREA=0.47 ACRES)
    COMPUTE NM HYD          109A   -    28       0.00073        2.02       0.081      2.08212    1.500    4.312 PER IMP=
84.78
    *S                  ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
    *S              **** 109A AND 101B.SWALE)
    ADD HYD                30.00 19&28  30       0.03241       71.49       3.201      1.85191    1.550    3.446
    *S                          **** SUB-BASIN 109B **** (AREA=1.11 ACRES)
    COMPUTE NM HYD          109B   -    31       0.00174        5.00       0.210      2.25540    1.500    4.487 PER IMP=
100.00
    *S                  DD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL AND
    *S              **** 109A AND 101B.SWALE AND 109B)
    ADD HYD                32.00 30&31  32       0.03415       76.23       3.411      1.87248    1.550    3.488
    *S                          **** SUB-BASIN 110 **** (AREA=9.41 ACRES)
    COMPUTE NM HYD        110.00   -    34       0.01471       30.56       0.933      1.18976    1.500    3.247 PER IMP=
6.40
    *S
    *S                          **** SUB-BASIN 111 **** (AREA=1.57 ACRES)
    *S                          **** AP-9
    COMPUTE NM HYD        111.00   -    35       0.00246        6.37       0.246      1.87674    1.500    4.051 PER IMP=
66.74
    *S                          **** (ADD 110 AND 106)
    ADD HYD                36.00 34&24  36       0.02067       47.23       1.618      1.46789    1.500    3.570
    *S                          **** AP-6
    ADD HYD                 AP-6 36&25  37       0.02658       63.45       2.276      1.60562    1.500    3.730
    *S                          **** AP-7
    ADD HYD                 AP-7 37&26  38       0.03091       73.49       2.625      1.59228    1.500    3.715
    *S                          **** SUB-BASIN 112 **** (AREA=0.34 ACRES)
    COMPUTE NM HYD        112.00   -    40       0.00054        1.17       0.037      1.28654    1.500    3.402 PER IMP=
14.90
    *S                          **** AP-8
    *S                  ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
    *S                    109A AND 101B.SWALE AND 109B AND 112
    ADD HYD                 AP-8 32&40  41       0.03469       77.37       3.448      1.86337    1.550    3.485
    *S                          **** POND ****
    *S                          **** AP-1/POND
    ROUTE RESERVOIR     AP-1/POND   41   33       0.03469       70.28       3.448      1.86337    1.600    3.166 AC-FT=
1.023
    FINISH
```

```
*S      ALBUQUERQUE PUBLIC SCHOOLS
*S      ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
*S      USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
*S      FILE: 10024E_010715.txt
*S      EXISTING CONDITIONS
*S      DATE: JAN 2015
*S *******************************************************************************
*S
*S      100 YEAR 24 HOUR STORM - EXISTING RUNOFF ANALYSIS
*S      RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 4
*S
*S *******************************************************************************

START                TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION             ALBUQUERQUE

**********************************************************************************
*
RAINFALL             TYPE=-2
                     QUARTER=1.12    ONE= 1.87 IN
                     SIX= 2.51 IN   DAY= 3.08 IN   DT = 0.05 HR
*S
**********************************************************************************
*S              **** SUB-BASIN 101A **** (AREA=4.20 ACRES)
**********************************************************************************
*
COMPUTE LT TP        LCODE=1  UPLAND/LAG TIME METHOD
                     NK=3  ISLOPE=0
                     LENGTH=100 FT   SLOPE=0.040   K=0.7
                     LENGTH=250 FT   SLOPE=0.040   K=2.0
                     LENGTH=150 FT   SLOPE=0.040   K=3.0
                     KN=0.021  CENTROID DIST=250 FT
COMPUTE NM HYD       ID=1  HYD NO=101A  DA= 0.0065594 SQ MI
                     PER A=0  PER B=0  PER C=65.78  PER D=34.22
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=1  CODE=1
*
*
*S ROUTE 101A IN 10-INCH STORM DRAIN
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.03
                       DIA=0.83 FT  N=0.025
ROUTE MCUNGE         ID=2  HYD NO=101A.R  INFLOW ID=1
                     DT=0.0  L=700 FT  NS=0  SLOPE=0.03
PRINT HYD            ID=2  CODE=1
*
**********************************************************************************
*S              **** SUB-BASIN 101B **** (AREA=2.51 ACRES)
**********************************************************************************
*
COMPUTE LT TP        LCODE=1  UPLAND/LAG TIME METHOD
                     NK=3  ISLOPE=0
                     LENGTH=100 FT   SLOPE=0.040   K=0.7
                     LENGTH=750 FT   SLOPE=0.040   K=2.0
                     LENGTH=150 FT   SLOPE=0.040   K=3.0
                     KN=0.021  CENTROID DIST=500 FT
COMPUTE NM HYD       ID=3  HYD NO=101B  DA= 0.0039166 SQ MI
                     PER A=0  PER B=0  PER C=80.18  PER D=19.82
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=3  CODE=1
*
**********************************************************************************
*S              **** SUB-BASIN 102A **** (AREA=1.35 ACRES)
**********************************************************************************
*
*S              **** AP-11
COMPUTE LT TP        LCODE=1  UPLAND/LAG TIME METHOD
                     NK=3  ISLOPE=0
                     LENGTH=100 FT   SLOPE=0.015   K=0.7
                     LENGTH=400 FT   SLOPE=0.015   K=2.0
                     LENGTH=100 FT   SLOPE=0.015   K=3.0
                     KN=0.025  CENTROID DIST=300 FT
COMPUTE NM HYD       ID=7   HYD NO=102A   DA= 0.0021153 SQ MI
                     PER A=0  PER B=0  PER C=100  PER D=0
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=7   CODE=1
*
**********************************************************************************
*S              **** SUB-BASIN 102B **** (AREA=1.16 ACRES)
**********************************************************************************
*
COMPUTE LT TP        LCODE=1  UPLAND/LAG TIME METHOD
                     NK=3  ISLOPE=0
                     LENGTH=100 FT   SLOPE=0.015   K=0.7
                     LENGTH=400 FT   SLOPE=0.015   K=2.0
```

```
                    LENGTH=100 FT   SLOPE=0.015   K=3.0
                    KN=0.025  CENTROID DIST=300 FT
COMPUTE NM HYD      ID=39   HYD NO=102B   DA= 0.0018130 SQ MI
                    PER A=0  PER B=0  PER C=100  PER D=0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=39   CODE=1
*
***************************************************************************************
*S              **** SUB-BASIN 103 **** (AREA=4.05 ACRES)
***************************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.055   K=1.0
                    LENGTH=875 FT   SLOPE=0.055   K=2.0
                    LENGTH=300 FT   SLOPE=0.055   K=3.0
                    KN=0.021  CENTROID DIST=638 FT
COMPUTE NM HYD      ID=8  HYD NO=103    DA= 0.0063226 SQ MI
                    PER A=0  PER B=0  PER C=4.96  PER D=95.04
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=8  CODE=1
*
***************************************************************************************
*S              **** SUB-BASIN 104 **** (AREA=8.36 ACRES)
***************************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.034   K=1.0
                    LENGTH=850 FT   SLOPE=0.034   K=2.0
                    LENGTH=2550 FT  SLOPE=0.034   K=3.0
                    KN=0.021  CENTROID DIST=1750 FT
COMPUTE NM HYD      ID=10   HYD NO=104   DA= 0.0130650 SQ MI
                    PER A=0  PER B=0  PER C=13.30  PER D=86.70
                    TP=0.0   MASSRAIN=-1
PRINT HYD           ID=10   CODE=1
*
*
*S              **** AP-2(ADD BASINS 103 AND 104)
ADD HYD         ID=14   HYD NO=AP-2     ID I=8  ID II=10
PRINT HYD               ID=14   CODE=5
*
*
*S ROUTE BASINS 103 AND 104 IN CHANNEL
COMPUTE RATING CURVE  CID=1  VS No=1  CODE=-1  SLP=0.03
                      DIA=2.0 FT  N=0.025
ROUTE MCUNGE        ID=9  HYD NO=103.R  INFLOW ID=14
                    DT=0.0  L=178 FT  NS=0  SLOPE=0.03
PRINT HYD           ID=9  CODE=1
*
*
*S              **** AP-3(ADD BASINS 103 AND 104 AND 102B)
ADD HYD         ID=16   HYD NO=AP-3     ID I=9  ID II=39
PRINT HYD               ID=16   CODE=5
*
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=7.09
                      DIST  ELEV   DIST ELEV
                      0.0   1.83   2.46 0.0
                      4.63  0.0    7.09 1.83
ROUTE MCUNGE          ID=17  HYD NO=AP-3.R  INFLOW ID=16
                      DT=0.0  L=450 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=17  CODE=1
*
*
*S              **** (ADD BASINS 103 AND 104 AND 102B AND 101A)
ADD HYD         ID=18   HYD NO=18       ID I=17  ID II=2
PRINT HYD               ID=18   CODE=5
*
*
*S              **** AP-4(ADD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL)
ADD HYD         ID=19   HYD NO=AP-4     ID I=18  ID II=3
PRINT HYD               ID=19   CODE=5
*
***************************************************************************************
*S              **** SUB-BASIN 105 **** (AREA=3.58 ACRES)
***************************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.032   K=1.0
```

```
                    LENGTH=850 FT   SLOPE=0.032   K=2.0
                    LENGTH=750 FT   SLOPE=0.032   K=3.0
                    KN=0.021  CENTROID DIST=850 FT
COMPUTE NM HYD      ID=21   HYD NO=105   DA= 0.0055891 SQ MI
                    PER A=0  PER B=0  PER C=13.52  PER D=86.48
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=21   CODE=1
*
*
*ROUTE SUB-BASINS 105 TO JUAN TABO THROUGH 12-INCH STORM DRAIN
*S              **** AP-5
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.017
                      DIA=1.0 FT  N=0.011
ROUTE MCUNGE          ID=22  HYD NO=AP-5  INFLOW ID=21
                      DT=0.0  L=895 FT  NS=0  SLOPE=0.017
PRINT HYD             ID=22  CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 106 **** (AREA=3.82 ACRES)
*************************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.036   K=1.0
                    LENGTH=500 FT   SLOPE=0.036   K=2.0
                    LENGTH=850 FT   SLOPE=0.036   K=3.0
                    KN=0.021  CENTROID DIST=1450 FT
COMPUTE NM HYD      ID=24   HYD NO=106   DA= 0.0059657 SQ MI
                    PER A=0  PER B=0  PER C=8.94  PER D=91.06
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=24   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 107 **** (AREA=3.78 ACRES)
*************************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.040   K=1.0
                    LENGTH=360 FT   SLOPE=0.040   K=2.0
                    LENGTH=360 FT   SLOPE=0.040   K=3.0
                    KN=0.021  CENTROID DIST=820 FT
COMPUTE NM HYD      ID=25   HYD NO=107   DA= 0.0059095 SQ MI
                    PER A=0  PER B=0  PER C=14.75  PER D=85.25
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=25   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 108A **** (AREA=2.77 ACRES)
*************************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.05    K=0.7
                    LENGTH=550 FT   SLOPE=0.05    K=2.0
                    LENGTH=350 FT    SLOPE=0.05    K=3.0
                    KN=0.025  CENTROID DIST=500 FT
COMPUTE NM HYD      ID=26   HYD NO=108A   DA= 0.0043302 SQ MI
                    PER A=0  PER B=0  PER C=65.43  PER D=34.57
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=26   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 108B **** (AREA=4.66 ACRES)
*************************************************************************************
*
*S              **** AP-10
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.035   K=0.7
                    LENGTH=450 FT   SLOPE=0.035   K=2.0
                    LENGTH=350 FT   SLOPE=0.035   K=3.0
                    KN=0.021  CENTROID DIST=450 FT
COMPUTE NM HYD      ID=27   HYD NO=108B   DA= 0.0072807 SQ MI
                    PER A=0  PER B=0  PER C=58.81  PER D=41.19
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=27   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 109A **** (AREA=0.47 ACRES)
*************************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
```

```
                    LENGTH=100 FT   SLOPE=0.014   K=1.0
                    LENGTH=275 FT   SLOPE=0.014   K=2.0
                    LENGTH=225 FT   SLOPE=0.014   K=3.0
                    KN=0.021  CENTROID DIST=300 FT
COMPUTE NM HYD      ID=28   HYD NO=109A   DA= 0.0007330 SQ MI
                    PER A=0  PER B=0  PER C=15.22  PER D=84.78
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=28   CODE=1
*
*
*S              **** ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
*S              **** 109A AND 101B.SWALE)
ADD HYD         ID=30   HYD NO=30       ID I=19  ID II=28
PRINT HYD               ID=30   CODE=5
*
*********************************************************************************
*S              **** SUB-BASIN 109B **** (AREA=1.11 ACRES)
*********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.024   K=1.0
                    LENGTH=225 FT   SLOPE=0.024   K=2.0
                    LENGTH=175 FT   SLOPE=0.024   K=3.0
                    KN=0.021  CENTROID DIST=250 FT
COMPUTE NM HYD      ID=31   HYD NO=109B   DA= 0.0017420 SQ MI
                    PER A=0  PER B=0  PER C=0  PER D=100
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=31   CODE=1
*
*
*
*S              **** ADD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL AND
*S              **** 109A AND 101B.SWALE AND 109B)
ADD HYD         ID=32   HYD NO=32       ID I=30  ID II=31
PRINT HYD               ID=32   CODE=5
*
*********************************************************************************
*S              **** SUB-BASIN 110 **** (AREA=9.41 ACRES)
*********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.040   K=0.7
                    LENGTH=650 FT   SLOPE=0.040   K=2.0
                    LENGTH=1275 FT   SLOPE=0.040   K=3.0
                    KN=0.025  CENTROID DIST=1012 FT
COMPUTE NM HYD      ID=34   HYD NO=110   DA= 0.0147070 SQ MI
                    PER A=0  PER B=0  PER C=93.60  PER D=6.40
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=34   CODE=1
*S
*********************************************************************************
*S              **** SUB-BASIN 111 **** (AREA=1.57 ACRES)
*********************************************************************************
*
*S              **** AP-9
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.030   K=1.0
                    LENGTH=400 FT   SLOPE=0.030   K=2.0
                    LENGTH=100 FT   SLOPE=0.030   K=3.0
                    KN=0.021  CENTROID DIST=300 FT
COMPUTE NM HYD      ID=35   HYD NO=111   DA= 0.0024568 SQ MI
                    PER A=0  PER B=0  PER C=33.26  PER D=66.74
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=35   CODE=1
*
*
*S              **** (ADD 110 AND 106)
ADD HYD         ID=36   HYD NO=36       ID I=34  ID II=24
PRINT HYD               ID=36   CODE=5
*
*
*S              **** AP-6
ADD HYD         ID=37   HYD NO=AP-6     ID I=36  ID II=25
PRINT HYD               ID=37   CODE=5
*
*
*S              **** AP-7
ADD HYD         ID=38   HYD NO=AP-7     ID I=37  ID II=26
PRINT HYD               ID=38   CODE=5
*
*********************************************************************************
```

```
*S              **** SUB-BASIN 112 **** (AREA=0.34 ACRES)
***********************************************************************************
*
COMPUTE NM HYD      ID=40   HYD NO=112   DA= 0.0005390 SQ MI
                    PER A=0  PER B=0  PER C=85.1  PER D=14.9
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=40   CODE=1
*
*
*S              **** AP-8
*S              **** ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
*S                   109A AND 101B.SWALE AND 109B AND 112
ADD HYD         ID=41   HYD NO=AP-8     ID I=32  ID II=40
PRINT HYD               ID=41   CODE=5
*
*
***********************************************************************************
*S              **** POND ****
***********************************************************************************
*
*S              **** AP-1/POND
ROUTE RESERVOIR       ID=33  HYD NO=AP-1/POND  INFLOW=41  CODE=1
                      OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                      0.0            0.0000           5692
                      1.5            0.4501           5696
                      2.6            0.6518           5697
                      35.5           0.8809           5698
                      98.7           1.1384           5699
                      108.7          1.2744           5699.5
                     PRINT HYD             ID=33  CODE=1
*
FINISH
```

```
    AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                    - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR)
=01/13/2015
    INPUT FILE = 25-00\AE_DATA\CALCS\Hydrology\AHYMO\Resubmittal Calcs_1214\10024E_010715.txt USER NO.=
WilsonCoANMSiteA96476897

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

    *S                  ALBUQUERQUE PUBLIC SCHOOLS
    *S                  ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
    *S                  USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
    *S                  FILE: 10024E_010715.txt
    *S                  EXISTING CONDITIONS
    *S                  DATE: JAN 2015
    *S ****************************************************************************
    *S
    *S                  100 YEAR 24 HOUR STORM - EXISTING RUNOFF ANALYSIS
    *S                  RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 4
    *S
    *S ****************************************************************************
    START                                                                                                   TIME=
0.00
    LOCATION                       ALBUQUERQUE
    RAINFALL  TYPE= 2 NOAA 14                                                                               RAIN24=
3.080
    *S
    *S                        **** SUB-BASIN 101A **** (AREA=4.20 ACRES)
    COMPUTE NM HYD         101A   -     1       0.00656        15.18        0.595      1.70143    1.500     3.616 PER IMP=
34.22
    *S ROUTE 101A IN 10-INCH STORM DRAIN
    ROUTE MCUNGE         101A.R    1    2       0.00656        12.89        0.592      1.69180    1.700     3.071 CCODE =
0.2
    *S                        **** SUB-BASIN 101B **** (AREA=2.51 ACRES)
    COMPUTE NM HYD         101B   -     3       0.00392         8.59        0.304      1.45545    1.500     3.428 PER IMP=
19.82
    *S                        **** SUB-BASIN 102A **** (AREA=1.35 ACRES)
    *S                        **** AP-11
    COMPUTE NM HYD         102A   -     7       0.00212         4.29        0.126      1.11690    1.500     3.167 PER IMP=
0.00
    *S                        **** SUB-BASIN 102B **** (AREA=1.16 ACRES)
    COMPUTE NM HYD         102B   -    39       0.00181         3.68        0.108      1.11690    1.500     3.168 PER IMP=
0.00
    *S                        **** SUB-BASIN 103 **** (AREA=4.05 ACRES)
    COMPUTE NM HYD       103.00   -     8       0.00632        17.88        0.924      2.74032    1.500     4.418 PER IMP=
95.04
    *S                        **** SUB-BASIN 104 **** (AREA=8.36 ACRES)
    COMPUTE NM HYD       104.00   -    10       0.01307        35.38        1.810      2.59786    1.500     4.231 PER IMP=
86.70
    *S                        **** AP-2(ADD BASINS 103 AND 104)
    ADD HYD                AP-2  8&10  14       0.01939        53.25        2.734      2.64428    1.500     4.292
    *S ROUTE BASINS 103 AND 104 IN CHANNEL
    ROUTE MCUNGE          103.R   14    9       0.01939        53.25        2.734      2.64428    1.500     4.292 CCODE =
0.0
    *S                        **** AP-3(ADD BASINS 103 AND 104 AND 102B)
    ADD HYD                AP-3  9&39  16       0.02120        56.93        2.842      2.51366    1.500     4.196
    ROUTE MCUNGE         AP-3.R   16   17       0.02120        56.55        2.842      2.51380    1.500     4.168 CCODE =
0.2
    *S                        **** (ADD BASINS 103 AND 104 AND 102B AND 101A)
    ADD HYD               18.00 17& 2  18       0.02776        61.25        3.434      2.31951    1.550     3.447
    *S                  4(ADD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL)
    ADD HYD                AP-4 18& 3  19       0.03168        69.56        3.738      2.21267    1.550     3.431
    *S                        **** SUB-BASIN 105 **** (AREA=3.58 ACRES)
    COMPUTE NM HYD       105.00   -    21       0.00559        15.40        0.773      2.59410    1.500     4.306 PER IMP=
```

```
86.48
    *S                          **** AP-5
    ROUTE MCUNGE            AP-5   21   22       0.00559        13.60       0.766       2.57083    1.650    3.803 CCODE =
0.2
    *S                          **** SUB-BASIN 106 **** (AREA=3.82 ACRES)
    COMPUTE NM HYD        106.00    -    24       0.00597        16.67       0.850       2.67233    1.500    4.366 PER IMP=
91.06
    *S                          **** SUB-BASIN 107 **** (AREA=3.78 ACRES)
 ♀
                                  FROM  TO                   PEAK       RUNOFF                  TIME TO    CFS      PAGE =   2
                     HYDROGRAPH    ID   ID       AREA      DISCHARGE    VOLUME      RUNOFF      PEAK      PER
    COMMAND       IDENTIFICATION   NO.  NO.     (SQ MI)      (CFS)      (AC-FT)    (INCHES)   (HOURS)    ACRE     NOTATION

    COMPUTE NM HYD        107.00    -    25       0.00591        16.22       0.811       2.57309    1.500    4.289 PER IMP=
85.25
    *S                          **** SUB-BASIN 108A **** (AREA=2.77 ACRES)
    COMPUTE NM HYD          108A    -    26       0.00433        10.04       0.394       1.70740    1.500    3.622 PER IMP=
34.57
    *S                          **** SUB-BASIN 108B **** (AREA=4.66 ACRES)
    *S                          **** AP-10
    COMPUTE NM HYD          108B    -    27       0.00728        17.27       0.707       1.82048    1.500    3.707 PER IMP=
41.19
    *S                          **** SUB-BASIN 109A **** (AREA=0.47 ACRES)
    COMPUTE NM HYD          109A    -    28       0.00073         2.02       0.100       2.56506    1.500    4.312 PER IMP=
84.78
    *S                  ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
    *S              **** 109A AND 101B.SWALE)
    ADD HYD                30.00 19&28  30       0.03241        71.49       3.838       2.22063    1.550    3.446
    *S                          **** SUB-BASIN 109B **** (AREA=1.11 ACRES)
    COMPUTE NM HYD          109B    -    31       0.00174         5.00       0.262       2.82504    1.500    4.487 PER IMP=
100.00
    *S                  DD BASINS 103 AND 104 AND 102B AND 101A AND 101B.CHANNEL AND
    *S              **** 109A AND 101B.SWALE AND 109B)
    ADD HYD                32.00 30&31  32       0.03415        76.23       4.101       2.25145    1.550    3.488
    *S                          **** SUB-BASIN 110 **** (AREA=9.41 ACRES)
    COMPUTE NM HYD        110.00    -    34       0.01471        30.56       0.962       1.22622    1.500    3.247 PER IMP=
6.40
    *S
    *S                          **** SUB-BASIN 111 **** (AREA=1.57 ACRES)
    *S                          **** AP-9
    COMPUTE NM HYD        111.00    -    35       0.00246         6.37       0.296       2.25691    1.500    4.051 PER IMP=
66.74
    *S                          **** (ADD 110 AND 106)
    ADD HYD                36.00 34&24  36       0.02067        47.23       1.812       1.64351    1.500    3.570
    *S                          **** AP-6
    ADD HYD                 AP-6 36&25  37       0.02658        63.45       2.623       1.85015    1.500    3.730
    *S                          **** AP-7
    ADD HYD                 AP-7 37&26  38       0.03091        73.49       3.017       1.83015    1.500    3.715
    *S                          **** SUB-BASIN 112 **** (AREA=0.34 ACRES)
    COMPUTE NM HYD        112.00    -    40       0.00054         1.17       0.039       1.37141    1.500    3.402 PER IMP=
14.90
    *S                          **** AP-8
    *S                  ADD BASINS 103 AND 104 AND 102 AND 101A AND 101B.CHANNEL AND
    *S                    109A AND 101B.SWALE AND 109B AND 112
    ADD HYD                 AP-8 32&40  41       0.03469        77.37       4.140       2.23767    1.550    3.485
    *S                          **** POND ****
    *S                          **** AP-1/POND
    ROUTE RESERVOIR    AP-1/POND   41   33       0.03469        70.28       4.140       2.23767    1.600    3.166 AC-FT=
1.023
    FINISH
```

```
*S      ALBUQUERQUE PUBLIC SCHOOLS
*S      ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
*S      USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
*S      FILE: 1006P.txt
*S      PROPOSED CONDITIONS
*S      DATE: JAN. 2015
*S ******************************************************************************
*S
*S      100 YEAR 6 HOUR STORM - PROPOSED RUNOFF ANALYSIS
*S      RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 5, WEB
*S
*S ******************************************************************************

START                TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION             ALBUQUERQUE

*********************************************************************************
*
RAINFALL             TYPE=-1
                     QUARTER=1.12    ONE= 1.87 IN
                     SIX= 2.51 IN   DAY= 3.08 IN   DT = 0.0333 HR
*S
*********************************************************************************
*S              **** SUB-BASIN 201A **** (AREA=4.2 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=1  HYD NO=201A  DA= 0.0065 SQ MI
                     PER A=0  PER B=0  PER C=64.7  PER D=35.3
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=1  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 201B **** (AREA=3.2 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=2  HYD NO=201B  DA= 0.0050 SQ MI
                     PER A=0  PER B=0  PER C=70.8  PER D=29.20
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=2  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 201C **** (AREA=0.9 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=3  HYD NO=201C  DA= 0.0014 SQ MI
                     PER A=0  PER B=0  PER C=25  PER D=75
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=3  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 201D **** (AREA=1.2 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=4  HYD NO=201D  DA= 0.0019 SQ MI
                     PER A=0  PER B=0  PER C=74.4  PER D=25.6
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=4  CODE=1
*
*ROUTE SUB-BASIN 201C THROUGH SWALE
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=11
                      DIST  ELEV   DIST ELEV
                       0.0   0.5     0.5 0.0
                      10.5   0.0    11.0 0.5
ROUTE MCUNGE          ID=5  HYD NO=201C.SWALE  INFLOW ID=3
                      DT=0.0  L=300 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=5  CODE=1
*
*S              **** (ADD 201C.SWALE AND 201B)
ADD HYD         ID=6    HYD NO=201B.1   ID I=5  ID II=2
PRINT HYD               ID=6    CODE=5
*
*ROUTE  201B.1 THROUGH SWALE
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.030  FP SLOPE=0.030
                      N=0.017         DIST=11
                      DIST  ELEV   DIST ELEV
                       0.0   0.5     0.5 0.0
                      10.5   0.0    11.0 0.5
ROUTE MCUNGE          ID=7  HYD NO=201B.SWALE  INFLOW ID=6
                      DT=0.0  L=300 FT  NS=0  SLOPE=0.030
```

```
PRINT HYD              ID=7  CODE=1
*
*S              **** (ADD 201B.SWALE AND 201D)
ADD HYD         ID=8    HYD NO=201D.1   ID I=7  ID II=4
PRINT HYD                ID=8    CODE=5
*
*
************************************************************************************
*S              **** SUB-BASIN 205A **** (AREA=3.6 ACRES)
************************************************************************************
*
COMPUTE NM HYD      ID=9   HYD NO=205A   DA= 0.0057 SQ MI
                    PER A=0  PER B=0  PER C=13.4  PER D=86.6
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=9   CODE=1
*
************************************************************************************
*S              **** SUB-BASIN 205B **** (AREA=0.8 ACRES)
************************************************************************************
*
COMPUTE NM HYD      ID=3   HYD NO=205B   DA= 0.0012 SQ MI
                    PER A=0  PER B=0  PER C=10  PER D=90
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=3   CODE=1
*
*
*S              **** (ADD BASINS 205A AND 205B)
ADD HYD         ID=6    HYD NO=205.1    ID I=9  ID II=3
*
*ROUTE SUB-BASINS 205A AND 205B TOWARD JUAN TABO THROUGH 30-INCH STORM DRAIN
*S              ****
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.017
                      DIA=2.5 FT  N=0.011
ROUTE MCUNGE          ID=9  HYD NO=205.1R  INFLOW ID=6
                      DT=0.0  L=660 FT  NS=0  SLOPE=0.017
PRINT HYD             ID=9  CODE=1
*
*S              **** (ADD 201D.1 AND 205.1R)
ADD HYD         ID=3    HYD NO=201D.2   ID I=8  ID II=9
*
PRINT HYD                ID=3 CODE=1
*
*S DIVIDE 201D.2 BY A RATING CURVE (TYPE D INLET 12" ORIFICE TO JT AND 30" OVERFLOW TO POND)
DIVIDE HYD          ID=3  CODE=999  ID I=6  HYD NO=AP-5
                                    ID II=8 HYD NO=AP-12:DPOND.1
                    TOTAL FLOW      DIVIDED FLOW
                        3.56            3.56
                       37.44            5.40
                       45.71            5.90
                       52.59            6.30
*
*               **** (AP-5 JUAN TABO)
PRINT HYD           ID=6  CODE=5
*
*               **** (AP-12:DPOND.1)
PRINT HYD           ID=8 CODE=5
*
************************************************************************************
*S              **** SUB-BASIN 202A **** (AREA=1.3 ACRES)
************************************************************************************
*
*S              **** AP-11
*
COMPUTE NM HYD      ID=9   HYD NO=AP-11   DA= 0.0021 SQ MI
                    PER A=0  PER B=0  PER C=100  PER D=0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=9   CODE=1
*
************************************************************************************
*S              **** SUB-BASIN 202B **** (AREA=1.2 ACRES)
************************************************************************************
*
COMPUTE NM HYD      ID=3   HYD NO=202B   DA= 0.0019 SQ MI
                    PER A=0  PER B=0  PER C=100  PER D=0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=3   CODE=1
*
************************************************************************************
*S              **** SUB-BASIN 202C **** (AREA=0.7 ACRES)
************************************************************************************
*
COMPUTE NM HYD      ID=10   HYD NO=202C   DA= 0.0010 SQ MI
                    PER A=0  PER B=0  PER C=92  PER D=8
                    TP=0.133333   MASSRAIN=-1
```

```
PRINT HYD           ID=10   CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 203 **** (AREA=4.0 ACRES)
*********************************************************************************
*
COMPUTE NM HYD      ID=11  HYD NO=203    DA= 0.0063 SQ MI
                    PER A=0  PER B=0  PER C=1  PER D=99
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=11  CODE=1
*
*
*
*ROUTE THE TOTAL FLOW THROUGH THE WATER QUALITY POND
ROUTE RESERVOIR       ID=12  HYD NO=WQ.POND  INFLOW=11  CODE=1
                      OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                      0.00           0.0000           5728
                      7.030          0.0097           5729
                      24.12          0.0296           5730

PRINT HYD             ID=12  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 204 **** (AREA=8.3 ACRES)
*********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.034   K=1.0
                    LENGTH=850 FT   SLOPE=0.034   K=2.0
                    LENGTH=2550 FT  SLOPE=0.034   K=3.0
                    KN=0.021  CENTROID DIST=1750 FT
COMPUTE NM HYD      ID=11   HYD NO=204   DA= 0.0130 SQ MI
                    PER A=0  PER B=0  PER C=13.3  PER D=86.7
                    TP=0.0   MASSRAIN=-1
PRINT HYD           ID=11   CODE=1
*
*********************************************************************************
*S              **** (AP-2: ADD WQ.POND AND BASIN 204)
ADD HYD         ID=13   HYD NO=AP-2     ID I=11  ID II=12
PRINT HYD               ID=13   CODE=5
*
*S              **** ROUTE AP-2
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=7.09
                      DIST  ELEV   DIST ELEV
                      0.0   1.83   2.46 0.0
                      4.63  0.0    7.09 1.83
ROUTE MCUNGE          ID=11  HYD NO=AP-2.R  INFLOW ID=13
                      DT=0.0  L=400 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=11  CODE=1
*
*
*S              **** (AP-3: ADD AP-2.R AND BASIN 202B)
ADD HYD         ID=12   HYD NO=AP-3     ID I=11  ID II=3
PRINT HYD               ID=12   CODE=5
*
*
*S              **** (ADD AP-3 AND BASIN 201A)
ADD HYD         ID=2    HYD NO=201A.1   ID I=12  ID II=1
PRINT HYD               ID=2    CODE=5
*
*
*S              **** (ROUTE 201A.1)
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=7.09
                      DIST  ELEV   DIST ELEV
                      0.0   1.83   2.46 0.0
                      4.63  0.0    7.09 1.83
ROUTE MCUNGE          ID=1  HYD NO=201A.1.R  INFLOW ID=2
                      DT=0.0  L=450 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=1  CODE=1
*
*S              **** (AP-4: ADD 201A.1.R AND BASIN 202C)
ADD HYD         ID=2    HYD NO=AP-4:DPOND.2     ID I=1  ID II=10
PRINT HYD               ID=2    CODE=5
*
*********************************************************************************
*S              **** SUB-BASIN 206 **** (AREA=2.8 ACRES)
*********************************************************************************
```

```
*S              **** AP-13
*
COMPUTE NM HYD       ID=1   HYD NO=AP-13  DA= 0.0043 SQ MI
                     PER A=0  PER B=0  PER C=0.0  PER D=100.0
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=1   CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 207 **** (AREA=3.9 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=3   HYD NO=207   DA= 0.0061 SQ MI
                     PER A=0  PER B=0  PER C=14.1  PER D=85.9
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=3   CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 208A **** (AREA=1.9 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=4   HYD NO=208A   DA= 0.0026448 SQ MI
                     PER A=0  PER B=0  PER C=89.69  PER D=10.4
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=4   CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 210 **** (AREA=10.4 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=5   HYD NO=210   DA= 0.0163 SQ MI
                     PER A=0  PER B=0  PER C=85.1  PER D=14.9
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=5   CODE=1
*S
*********************************************************************************
*S              **** SUB-BASIN 211 **** (AREA=1.6 ACRES)
*********************************************************************************
*S              **** AP-9
*
COMPUTE NM HYD       ID=7   HYD NO=AP-9   DA= 0.0025SQ MI
                     PER A=0  PER B=0  PER C=33.3  PER D=66.7
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=7   CODE=1
*
*
*S              **** (AP-6: ADD 210 AND 207)
ADD HYD         ID=10   HYD NO=AP-6     ID I=5  ID II=3
PRINT HYD               ID=10   CODE=5
*
*
*
*S              **** (AP-7: ADD AP-6 AND BASIN 208A)
ADD HYD         ID=3    HYD NO=AP-7     ID I=10  ID II=4
PRINT HYD               ID=3    CODE=5
*
*
*********************************************************************************
*S              **** SUB-BASIN 208B **** (AREA=1.1 ACRES)
*********************************************************************************
*S              **** AP-10
COMPUTE NM HYD       ID=13   HYD NO=AP-10   DA= 0.0029 SQ MI
                     PER A=0  PER B=0  PER C=62.1  PER D=37.9
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=13   CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 209A **** (AREA=1.1 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=4   HYD NO=209A   DA= 0.0009 SQ MI
                     PER A=0  PER B=0  PER C=33.3  PER D=66.7
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=4   CODE=1
*
*
*********************************************************************************
*S              **** SUB-BASIN 209B **** (AREA=1.1 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=10   HYD NO=209B   DA= 0.0017 SQ MI
                     PER A=0  PER B=0  PER C=0  PER D=100
                     TP=0.133333   MASSRAIN=-1
PRINT HYD            ID=10   CODE=1
*
```

```
*
*************************************************************************************
*S              **** SUB-BASIN 212 **** (AREA=0.3 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=11   HYD NO=212   DA= 0.0005 SQ MI
                    PER A=0  PER B=0  PER C=75 PER D=25
                    TP=0.13333   MASSRAIN=-1
PRINT HYD           ID=11   CODE=1
*
*
*
*S              **** (ADD BASINS 209A AND 209B)
ADD HYD         ID=12   HYD NO=DPOND.3  ID I=4  ID II=10
PRINT HYD               ID=12   CODE=5
*
*S              **** (ADD BASIN 212 AND DPOND.3)
ADD HYD         ID=4    HYD NO=DPOND.3.0       ID I=11  ID II=12
PRINT HYD               ID=4    CODE=5
*
*S              **** (ADD AP-12 AND AP-4)
ADD HYD         ID=10   HYD NO=DPOND.N  ID I=8  ID II=2
PRINT HYD               ID=10   CODE=5
*
*S              **** (AP-8: ADD DPOND.3.0 AND DPOND.N)
ADD HYD         ID=2    HYD NO=AP-8     ID I=4  ID II=10
PRINT HYD               ID=2    CODE=5
*

*
*************************************************************************************
*S              **** POND ****
*************************************************************************************
*
*S              **** AP-1:POND OUTLET
ROUTE RESERVOIR       ID=4  HYD NO=AP-1:POND OUTLET  INFLOW=2  CODE=1
                    OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                      0.0           0.0000           56988.58
                      4.4           0.0001           5690
                      7.7           0.0001           5691
                      16.2          0.0001           5692
                      25.1          0.041            5693
                      32.0          0.136            5694
                      43.6          0.275            5695
                      56.7          0.450            5696
                      67.2          0.651            5697
                      107.9         0.880            5698
                      177.8         1.138            5699
                      191.0         1.274            5699.5
PRINT HYD             ID=4  CODE=1
*
FINISH
```

```
    AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                        - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR)
=01/13/2015
    INPUT FILE = C:\Users\EEValdez\Desktop\AHYMO\Resubmittal Calcs_1214\1006P.txt            USER NO.=
AHYMO_Temp_User:20122010

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

    *S                  ALBUQUERQUE PUBLIC SCHOOLS
    *S                  ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
    *S                  USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
    *S                  FILE: 1006P.txt
    *S                  PROPOSED CONDITIONS
    *S                  DATE: JAN. 2015
    *S ****************************************************************************
    *S
    *S                  100 YEAR 6 HOUR STORM - PROPOSED RUNOFF ANALYSIS
    *S                  RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 5, WEB
    *S
    *S ****************************************************************************
    START                                                                                              TIME=
0.00
    LOCATION                    ALBUQUERQUE
    RAINFALL  TYPE= 1 NOAA 14                                                                          RAIN6=
2.510
    *S
    *S                        **** SUB-BASIN 201A **** (AREA=4.2 ACRES)
    COMPUTE NM HYD         201A   -     1      0.00650        15.30       0.526      1.51797    1.532    3.677 PER IMP=
35.30
    *S                        **** SUB-BASIN 201B **** (AREA=3.2 ACRES)
    COMPUTE NM HYD         201B   -     2      0.00500        11.52       0.386      1.44865    1.532    3.600 PER IMP=
29.20
    *S                        **** SUB-BASIN 201C **** (AREA=0.9 ACRES)
    COMPUTE NM HYD         201C   -     3      0.00140         3.76       0.147      1.96914    1.532    4.202 PER IMP=
75.00
    *S                        **** SUB-BASIN 201D **** (AREA=1.2 ACRES)
    COMPUTE NM HYD         201D   -     4      0.00190         4.33       0.143      1.40774    1.532    3.563 PER IMP=
25.60
    ROUTE MCUNGE      201C.SWALE    3    5      0.00140         3.76       0.147      1.96909    1.565    4.197 CCODE =
0.1
    *S                        **** (ADD 201C.SWALE AND 201B)
    ADD HYD              201B.1  5& 2   6      0.00640        15.27       0.533      1.56238    1.532    3.728
    ROUTE MCUNGE      201B.SWALE    6    7      0.00640        15.26       0.533      1.56251    1.532    3.726 CCODE =
0.2
    *S                        **** (ADD 201B.SWALE AND 201D)
    ADD HYD              201D.1  7& 4   8      0.00830        19.59       0.676      1.52699    1.532    3.688
    *S                        **** SUB-BASIN 205A **** (AREA=3.6 ACRES)
    COMPUTE NM HYD         205A   -     9      0.00570        15.81       0.639      2.10097    1.532    4.335 PER IMP=
86.60
    *S                        **** SUB-BASIN 205B **** (AREA=0.8 ACRES)
    COMPUTE NM HYD         205B   -     3      0.00120         3.38       0.137      2.13961    1.532    4.398 PER IMP=
90.00
    *S                        **** (ADD BASINS 205A AND 205B)
    ADD HYD              205.10  9& 3   6      0.00690        19.19       0.776      2.10762    1.532    4.346
    *S                        ****
    ROUTE MCUNGE         205.1R    6    9      0.00690        19.15       0.775      2.10661    1.532    4.337 CCODE =
0.1
    *S                        **** (ADD 201D.1 AND 205.1R)
    ADD HYD              201D.2  8& 9   3      0.01520        38.75       1.451      1.79008    1.532    3.983
    *S DIVIDE 201D.2 BY A RATING CURVE (TYPE D INLET 12" ORIFICE TO JT AND 30" OVERF
    DIVIDE HYD             AP-5    3    6      0.00613         5.48       0.585      1.79008    1.532    1.397
                 AP-12:DPOND.  and    8      0.00907        33.27       0.866      1.79008    1.532    5.731
    *S                        **** SUB-BASIN 202A **** (AREA=1.3 ACRES)
```

```
    *S                        **** AP-11
    COMPUTE NM HYD         AP-11   -     9       0.00210         4.34       0.125      1.11681    1.532    3.227 PER IMP=
0.00
    *S                        **** SUB-BASIN 202B **** (AREA=1.2 ACRES)
    COMPUTE NM HYD          202B   -     3       0.00190         3.93       0.113      1.11681    1.532    3.228 PER IMP=
0.00
    *S                        **** SUB-BASIN 202C **** (AREA=0.7 ACRES)
♀
                                 FROM  TO                      PEAK         RUNOFF                TIME TO    CFS       PAGE =   2
                    HYDROGRAPH    ID   ID          AREA      DISCHARGE      VOLUME      RUNOFF     PEAK      PER
    COMMAND       IDENTIFICATION  NO.  NO.       (SQ MI)       (CFS)        (AC-FT)    (INCHES)   (HOURS)    ACRE     NOTATION

    COMPUTE NM HYD          202C   -     10      0.00100         2.14       0.064      1.20772    1.532    3.350 PER IMP=
8.00
    *S                        **** SUB-BASIN 203 **** (AREA=4.0 ACRES)
    COMPUTE NM HYD        203.00   -     11      0.00630        18.12       0.753      2.24189    1.499    4.493 PER IMP=
99.00
    ROUTE RESERVOIR      WQ.POND   11    12      0.00630        18.18       0.753      2.24184    1.532    4.510 AC-FT=
0.023
    *S                        **** SUB-BASIN 204 **** (AREA=8.3 ACRES)
    COMPUTE NM HYD        204.00   -     11      0.01300        35.79       1.457      2.10210    1.532    4.301 PER IMP=
86.70
    *S                        **** (AP-2: ADD WQ.POND AND BASIN 204)
    ADD HYD                 AP-2 11&12  13       0.01930        53.97       2.211      2.14770    1.532    4.369
    *S                        **** ROUTE AP-2
    ROUTE MCUNGE          AP-2.R   13    11      0.01930        53.41       2.209      2.14627    1.565    4.324 CCODE =
0.1
    *S                        **** (AP-3: ADD AP-2.R AND BASIN 202B)
    ADD HYD                 AP-3 11& 3  12       0.02120        57.10       2.322      2.05398    1.565    4.209
    *S                        **** (ADD AP-3 AND BASIN 201A)
    ADD HYD              201A.1 12& 1    2       0.02770        71.94       2.849      1.92819    1.532    4.058
    *S                        **** (ROUTE 201A.1)
    ROUTE MCUNGE        201A.1.R    2    1       0.02770        71.84       2.847      1.92697    1.565    4.052 CCODE =
0.1
    *S                        **** (AP-4: ADD 201A.1.R AND BASIN 202C)
    ADD HYD         AP-4:DPOND.2  1&10   2       0.02870        73.86       2.911      1.90188    1.565    4.021
    *S                        **** SUB-BASIN 206 **** (AREA=2.8 ACRES)
    *S                        **** AP-13
    COMPUTE NM HYD         AP-13   -     1       0.00430        12.40       0.517      2.25325    1.499    4.506 PER IMP=
100.00
    *S                        **** SUB-BASIN 207 **** (AREA=3.9 ACRES)
    COMPUTE NM HYD        207.00   -     3       0.00610        16.89       0.681      2.09301    1.532    4.325 PER IMP=
85.90
    *S                        **** SUB-BASIN 208A **** (AREA=1.9 ACRES)
    COMPUTE NM HYD          208A   -     4       0.00264         5.69       0.174      1.23489    1.532    3.364 PER IMP=
10.39
    *S                        **** SUB-BASIN 210 **** (AREA=10.4 ACRES)
    COMPUTE NM HYD        210.00   -     5       0.01630        35.60       1.118      1.28614    1.532    3.413 PER IMP=
14.90
    *S
    *S                        **** SUB-BASIN 211 **** (AREA=1.6 ACRES)
    *S                        **** AP-9
    COMPUTE NM HYD          AP-9   -     7       0.00250         6.54       0.250      1.87482    1.532    4.086 PER IMP=
66.70
    *S                        **** (AP-6: ADD 210 AND 207)
    ADD HYD                 AP-6  5& 3  10       0.02240        52.49       1.799      1.50584    1.532    3.661
    *S                        **** (AP-7: ADD AP-6 AND BASIN 208A)
    ADD HYD                 AP-7 10& 4   3       0.02504        58.19       1.973      1.47722    1.532    3.630
    *S                        **** SUB-BASIN 208B **** (AREA=1.1 ACRES)
    *S                        **** AP-10
    COMPUTE NM HYD         AP-10   -     13      0.00290         6.90       0.239      1.54752    1.532    3.715 PER IMP=
37.90
    *S                        **** SUB-BASIN 209A **** (AREA=1.1 ACRES)
    COMPUTE NM HYD          209A   -     4       0.00090         2.36       0.090      1.87482    1.532    4.105 PER IMP=
```

```
66.70
   *S                           **** SUB-BASIN 209B **** (AREA=1.1 ACRES)
   COMPUTE NM HYD          209B   -    10      0.00170        4.91      0.204     2.25325    1.499    4.511 PER IMP=
100.00
   *S                           **** SUB-BASIN 212 **** (AREA=0.3 ACRES)
   COMPUTE NM HYD        212.00   -    11      0.00050        1.15      0.037     1.40092    1.532    3.597 PER IMP=
25.00
   *S                           **** (ADD BASINS 209A AND 209B)
   ADD HYD             DPOND.3  4&10  12      0.00260        7.27      0.294     2.12206    1.532    4.369
   *S                           **** (ADD BASIN 212 AND DPOND.3)
   ADD HYD           DPOND.3.0 11&12   4      0.00310        8.42      0.332     2.00569    1.532    4.245
   *S                           **** (ADD AP-12 AND AP-4)
   ADD HYD             DPOND.N  8& 2  10      0.03777      106.36      3.777     1.87503    1.565    4.400
   *S                           **** (AP-8: ADD DPOND.3.0 AND DPOND.N)
   ADD HYD                AP-8  4&10   2      0.04087      114.16      4.109     1.88494    1.565    4.364
   *S                           **** POND ****
♀
                                 FROM  TO                     PEAK        RUNOFF               TIME TO    CFS      PAGE =   3
                     HYDROGRAPH   ID   ID         AREA      DISCHARGE     VOLUME      RUNOFF    PEAK      PER
   COMMAND       IDENTIFICATION   NO.  NO.      (SQ MI)       (CFS)       (AC-FT)    (INCHES)  (HOURS)    ACRE     NOTATION

   *S                           **** AP-1:POND OUTLET
   ROUTE RESERVOIR    AP-1:POND    2    4      0.04087       87.57      4.109     1.88495    1.665    3.348 AC-FT=
0.766
   FINISH
```

```
*S      ALBUQUERQUE PUBLIC SCHOOLS
*S      ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
*S      USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
*S      FILE: 10024P.txt
*S      PROPOSED CONDITIONS
*S      DATE: JAN. 2015
*S ******************************************************************************
*S
*S      100 YEAR 24 HOUR STORM - PROPOSED RUNOFF ANALYSIS
*S      RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 5, WEB
*S
*S ******************************************************************************

START                TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION             ALBUQUERQUE

*********************************************************************************
*
RAINFALL             TYPE=-2
                     QUARTER=1.12    ONE= 1.87 IN
                     SIX= 2.51 IN   DAY= 3.08 IN   DT = 0.05 HR
*S
*********************************************************************************
*S              **** SUB-BASIN 201A **** (AREA=4.2 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=1  HYD NO=201A  DA= 0.0065 SQ MI
                     PER A=0  PER B=0  PER C=64.7  PER D=35.3
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=1  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 201B **** (AREA=3.2 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=2  HYD NO=201B  DA= 0.0050 SQ MI
                     PER A=0  PER B=0  PER C=70.8  PER D=29.20
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=2  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 201C **** (AREA=0.9 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=3  HYD NO=201C  DA= 0.0014 SQ MI
                     PER A=0  PER B=0  PER C=25  PER D=75
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=3  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 201D **** (AREA=1.2 ACRES)
*********************************************************************************
*
COMPUTE NM HYD       ID=4  HYD NO=201D  DA= 0.0019 SQ MI
                     PER A=0  PER B=0  PER C=74.4  PER D=25.6
                     TP=0.133333  MASSRAIN=-1
PRINT HYD            ID=4  CODE=1
*
*ROUTE SUB-BASIN 201C THROUGH SWALE
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=11
                      DIST  ELEV   DIST ELEV
                       0.0   0.5     0.5 0.0
                      10.5   0.0    11.0 0.5
ROUTE MCUNGE          ID=5  HYD NO=201C.SWALE  INFLOW ID=3
                      DT=0.0  L=300 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=5  CODE=1
*
*S              **** (ADD 201C.SWALE AND 201B)
ADD HYD         ID=6    HYD NO=201B.1   ID I=5  ID II=2
PRINT HYD               ID=6    CODE=5
*
*ROUTE  201B.1 THROUGH SWALE
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.030  FP SLOPE=0.030
                      N=0.017         DIST=11
                      DIST  ELEV   DIST ELEV
                       0.0   0.5     0.5 0.0
                      10.5   0.0    11.0 0.5
ROUTE MCUNGE          ID=7  HYD NO=201B.SWALE  INFLOW ID=6
                      DT=0.0  L=300 FT  NS=0  SLOPE=0.030
```

```
PRINT HYD             ID=7  CODE=1
*
*S              **** (ADD 201B.SWALE AND 201D)
ADD HYD         ID=8    HYD NO=201D.1   ID I=7  ID II=4
PRINT HYD               ID=8    CODE=5
*
*
*************************************************************************************
*S              **** SUB-BASIN 205A **** (AREA=3.6 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=9   HYD NO=205A   DA= 0.0057 SQ MI
                    PER A=0  PER B=0  PER C=13.4  PER D=86.6
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=9   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 205B **** (AREA=0.8 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=3   HYD NO=205B   DA= 0.0012 SQ MI
                    PER A=0  PER B=0  PER C=10  PER D=90
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=3   CODE=1
*
*
*S              **** (ADD BASINS 205A AND 205B)
ADD HYD         ID=6    HYD NO=205.1    ID I=9  ID II=3
*
*ROUTE SUB-BASINS 205A AND 205B TOWARD JUAN TABO THROUGH 30-INCH STORM DRAIN
*S              ****
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.017
                      DIA=2.5 FT  N=0.011
ROUTE MCUNGE          ID=9  HYD NO=205.1R  INFLOW ID=6
                      DT=0.0  L=660 FT  NS=0  SLOPE=0.017
PRINT HYD             ID=9  CODE=1
*
*S              **** (ADD 201D.1 AND 205.1R)
ADD HYD         ID=3    HYD NO=201D.2   ID I=8  ID II=9
*
PRINT HYD               ID=3 CODE=1
*
*S DIVIDE 201D.2 BY A RATING CURVE (TYPE D INLET 12" ORIFICE TO JT AND 30" OVERFLOW TO POND)
DIVIDE HYD          ID=3  CODE=999  ID I=6  HYD NO=AP-5
                                    ID II=8 HYD NO=AP-12:DPOND.1
                    TOTAL FLOW      DIVIDED FLOW
                        3.56            3.56
                       37.44            5.40
                       45.71            5.90
                       52.59            6.30
*
*               **** (AP-5 JUAN TABO)
PRINT HYD           ID=6  CODE=5
*
*               **** (AP-12:DPOND.1)
PRINT HYD           ID=8 CODE=5
*
*************************************************************************************
*S              **** SUB-BASIN 202A **** (AREA=1.3 ACRES)
*************************************************************************************
*
*S              **** AP-11
*
COMPUTE NM HYD      ID=9   HYD NO=AP-11   DA= 0.0021 SQ MI
                    PER A=0  PER B=0  PER C=100  PER D=0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=9   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 202B **** (AREA=1.2 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=3   HYD NO=202B   DA= 0.0019 SQ MI
                    PER A=0  PER B=0  PER C=100  PER D=0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=3   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 202C **** (AREA=0.7 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=10   HYD NO=202C   DA= 0.0010 SQ MI
                    PER A=0  PER B=0  PER C=92  PER D=8
                    TP=0.133333   MASSRAIN=-1
```

```
PRINT HYD           ID=10   CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 203 **** (AREA=4.0 ACRES)
*********************************************************************************
*
COMPUTE NM HYD      ID=11  HYD NO=203    DA= 0.0063 SQ MI
                    PER A=0  PER B=0  PER C=1  PER D=99
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=11  CODE=1
*
*
*
*ROUTE THE TOTAL FLOW THROUGH THE WATER QUALITY POND
ROUTE RESERVOIR       ID=12  HYD NO=WQ.POND  INFLOW=11  CODE=1
                      OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                      0.00           0.0000           5728
                      7.030          0.0097           5729
                      24.12          0.0296           5730

PRINT HYD             ID=12  CODE=1
*
*********************************************************************************
*S              **** SUB-BASIN 204 **** (AREA=8.3 ACRES)
*********************************************************************************
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME METHOD
                    NK=3  ISLOPE=0
                    LENGTH=100 FT   SLOPE=0.034   K=1.0
                    LENGTH=850 FT   SLOPE=0.034   K=2.0
                    LENGTH=2550 FT  SLOPE=0.034   K=3.0
                    KN=0.021  CENTROID DIST=1750 FT
COMPUTE NM HYD      ID=11   HYD NO=204   DA= 0.0130 SQ MI
                    PER A=0  PER B=0  PER C=13.3  PER D=86.7
                    TP=0.0   MASSRAIN=-1
PRINT HYD           ID=11   CODE=1
*
*********************************************************************************
*S              **** (AP-2: ADD WQ.POND AND BASIN 204)
ADD HYD         ID=13   HYD NO=AP-2     ID I=11  ID II=12
PRINT HYD               ID=13   CODE=5
*
*S              **** ROUTE AP-2
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=7.09
                      DIST  ELEV   DIST ELEV
                      0.0   1.83   2.46 0.0
                      4.63  0.0    7.09 1.83
ROUTE MCUNGE          ID=11  HYD NO=AP-2.R  INFLOW ID=13
                      DT=0.0  L=400 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=11  CODE=1
*
*
*S              **** (AP-3: ADD AP-2.R AND BASIN 202B)
ADD HYD         ID=12   HYD NO=AP-3     ID I=11  ID II=3
PRINT HYD               ID=12   CODE=5
*
*
*S              **** (ADD AP-3 AND BASIN 201A)
ADD HYD         ID=2    HYD NO=201A.1   ID I=12  ID II=1
PRINT HYD               ID=2    CODE=5
*
*
*S              **** (ROUTE 201A.1)
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=1.3
                      CH SLOPE=0.027  FP SLOPE=0.027
                      N=0.017         DIST=7.09
                      DIST  ELEV   DIST ELEV
                      0.0   1.83   2.46 0.0
                      4.63  0.0    7.09 1.83
ROUTE MCUNGE          ID=1  HYD NO=201A.1.R  INFLOW ID=2
                      DT=0.0  L=450 FT  NS=0  SLOPE=0.027
PRINT HYD             ID=1  CODE=1
*
*S              **** (AP-4: ADD 201A.1.R AND BASIN 202C)
ADD HYD         ID=2    HYD NO=AP-4:DPOND.2     ID I=1  ID II=10
PRINT HYD               ID=2    CODE=5
*
*********************************************************************************
*S              **** SUB-BASIN 206 **** (AREA=2.8 ACRES)
*********************************************************************************
```

```
*S              **** AP-13
*
COMPUTE NM HYD      ID=1   HYD NO=AP-13  DA= 0.0043 SQ MI
                    PER A=0  PER B=0  PER C=0.0  PER D=100.0
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=1   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 207 **** (AREA=3.9 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=3   HYD NO=207   DA= 0.0061 SQ MI
                    PER A=0  PER B=0  PER C=14.1  PER D=85.9
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=3   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 208A **** (AREA=1.9 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=4   HYD NO=208A   DA= 0.0026448 SQ MI
                    PER A=0  PER B=0  PER C=89.69  PER D=10.4
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=4   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 210 **** (AREA=10.4 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=5   HYD NO=210   DA= 0.0163 SQ MI
                    PER A=0  PER B=0  PER C=85.1  PER D=14.9
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=5   CODE=1
*S
*************************************************************************************
*S              **** SUB-BASIN 211 **** (AREA=1.6 ACRES)
*************************************************************************************
*S              **** AP-9
*
COMPUTE NM HYD      ID=7   HYD NO=AP-9   DA= 0.0025SQ MI
                    PER A=0  PER B=0  PER C=33.3  PER D=66.7
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=7   CODE=1
*
*
*S              **** (AP-6: ADD 210 AND 207)
ADD HYD         ID=10   HYD NO=AP-6     ID I=5  ID II=3
PRINT HYD               ID=10   CODE=5
*
*
*
*S              **** (AP-7: ADD AP-6 AND BASIN 208A)
ADD HYD         ID=3    HYD NO=AP-7     ID I=10  ID II=4
PRINT HYD               ID=3    CODE=5
*
*
*************************************************************************************
*S              **** SUB-BASIN 208B **** (AREA=1.1 ACRES)
*************************************************************************************
*S              **** AP-10
COMPUTE NM HYD      ID=13   HYD NO=AP-10   DA= 0.0029 SQ MI
                    PER A=0  PER B=0  PER C=62.1  PER D=37.9
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=13   CODE=1
*
*************************************************************************************
*S              **** SUB-BASIN 209A **** (AREA=1.1 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=4   HYD NO=209A   DA= 0.0009 SQ MI
                    PER A=0  PER B=0  PER C=33.3  PER D=66.7
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=4   CODE=1
*
*
*************************************************************************************
*S              **** SUB-BASIN 209B **** (AREA=1.1 ACRES)
*************************************************************************************
*
COMPUTE NM HYD      ID=10   HYD NO=209B   DA= 0.0017 SQ MI
                    PER A=0  PER B=0  PER C=0  PER D=100
                    TP=0.133333   MASSRAIN=-1
PRINT HYD           ID=10   CODE=1
*
```

```
*
*********************************************************************************
*S              **** SUB-BASIN 212 **** (AREA=0.3 ACRES)
*********************************************************************************
*
COMPUTE NM HYD      ID=11   HYD NO=212   DA= 0.0005 SQ MI
                    PER A=0  PER B=0  PER C=75 PER D=25
                    TP=0.13333   MASSRAIN=-1
PRINT HYD           ID=11   CODE=1
*
*
*
*S              **** (ADD BASINS 209A AND 209B)
ADD HYD         ID=12   HYD NO=DPOND.3  ID I=4  ID II=10
PRINT HYD               ID=12   CODE=5
*
*S              **** (ADD BASIN 212 AND DPOND.3)
ADD HYD         ID=4    HYD NO=DPOND.3.0        ID I=11  ID II=12
PRINT HYD               ID=4    CODE=5
*
*S              **** (ADD AP-12 AND AP-4)
ADD HYD         ID=10   HYD NO=DPOND.N  ID I=8  ID II=2
PRINT HYD               ID=10   CODE=5
*
*S              **** (AP-8: ADD DPOND.3.0 AND DPOND.N)
ADD HYD         ID=2    HYD NO=AP-8     ID I=4  ID II=10
PRINT HYD               ID=2    CODE=5
*

*
*********************************************************************************
*S              **** POND ****
*********************************************************************************
*
*S              **** AP-1:POND OUTLET
ROUTE RESERVOIR       ID=4  HYD NO=AP-1:POND OUTLET  INFLOW=2  CODE=1
                    OUTFLOW (CFS)  STORAGE (AC-FT)  ELEV (FT)
                      0.0            0.0000           56988.58
                      4.4            0.0001           5690
                      7.7            0.0001           5691
                      16.2           0.0001           5692
                      25.1           0.041            5693
                      32.0           0.136            5694
                      43.6           0.275            5695
                      56.7           0.450            5696
                      67.2           0.651            5697
                      107.9          0.880            5698
                      177.8          1.138            5699
                      191.0          1.274            5699.5
PRINT HYD             ID=4  CODE=1
*
FINISH
```

```
    AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                      - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR)
=01/13/2015
    INPUT FILE = 2-600-025-00\AE_DATA\CALCS\Hydrology\AHYMO\Resubmittal Calcs_1214\10024P.txt USER NO.=
WilsonCoANMSiteA96476897

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

    *S                  ALBUQUERQUE PUBLIC SCHOOLS
    *S                  ELDORADO HIGH SCHOOL DRAINAGE ANALYSIS
    *S                  USE THE IA/INF METHOD TO COMPUTE THE RUNOFF
    *S                  FILE: 10024P.txt
    *S                  PROPOSED CONDITIONS
    *S                  DATE: JAN. 2015
    *S *****************************************************************************
    *S
    *S                  100 YEAR 24 HOUR STORM - PROPOSED RUNOFF ANALYSIS
    *S                  RAINFALL FROM NOAA ATLAS 14, VOLUME 1, VERSION 5, WEB
    *S
    *S *****************************************************************************
    START                                                                                                 TIME=
0.00
    LOCATION                      ALBUQUERQUE
    RAINFALL  TYPE= 2 NOAA 14                                                                             RAIN24=
3.080
    *S
    *S                         **** SUB-BASIN 201A **** (AREA=4.2 ACRES)
    COMPUTE NM HYD          201A   -     1       0.00650        15.10         0.596      1.71987     1.500     3.630 PER IMP=
35.30
    *S                         **** SUB-BASIN 201B **** (AREA=3.2 ACRES)
    COMPUTE NM HYD          201B   -     2       0.00500        11.36         0.431      1.61568     1.500     3.551 PER IMP=
29.20
    *S                         **** SUB-BASIN 201C **** (AREA=0.9 ACRES)
    COMPUTE NM HYD          201C   -     3       0.00140         3.73         0.179      2.39801     1.500     4.168 PER IMP=
75.00
    *S                         **** SUB-BASIN 201D **** (AREA=1.2 ACRES)
    COMPUTE NM HYD          201D   -     4       0.00190         4.27         0.157      1.55418     1.500     3.511 PER IMP=
25.60
    ROUTE MCUNGE       201C.SWALE    3    5       0.00140         3.68         0.179      2.39854     1.550     4.104 CCODE =
0.2
    *S                         **** (ADD 201C.SWALE AND 201B)
    ADD HYD               201B.1  5& 2   6       0.00640        15.03         0.610      1.78677     1.500     3.670
    ROUTE MCUNGE       201B.SWALE    6    7       0.00640        14.92         0.610      1.78712     1.550     3.642 CCODE =
0.2
    *S                         **** (ADD 201B.SWALE AND 201D)
    ADD HYD               201D.1  7& 4   8       0.00830        19.07         0.767      1.73368     1.500     3.589
    *S                         **** SUB-BASIN 205A **** (AREA=3.6 ACRES)
    COMPUTE NM HYD          205A   -     9       0.00570        15.71         0.789      2.59615     1.500     4.307 PER IMP=
86.60
    *S                         **** SUB-BASIN 205B **** (AREA=0.8 ACRES)
    COMPUTE NM HYD          205B   -     3       0.00120         3.36         0.170      2.65423     1.500     4.370 PER IMP=
90.00
    *S                         **** (ADD BASINS 205A AND 205B)
    ADD HYD               205.10  9& 3   6       0.00690        19.07         0.959      2.60616     1.500     4.318
    *S                         ****
    ROUTE MCUNGE          205.1R    6    9       0.00690        18.86         0.959      2.60640     1.500     4.270 CCODE =
0.2
    *S                         **** (ADD 201D.1 AND 205.1R)
    ADD HYD               201D.2  8& 9   3       0.01520        37.92         1.727      2.12980     1.500     3.898
    *S DIVIDE 201D.2 BY A RATING CURVE (TYPE D INLET 12" ORIFICE TO JT AND 30" OVERF
    DIVIDE HYD              AP-5    3    6       0.00758         5.43         0.860      2.12980     1.500     1.120
                   AP-12:DPOND.  and    8       0.00762        32.49         0.866      2.12980     1.500     6.659
    *S                         **** SUB-BASIN 202A **** (AREA=1.3 ACRES)
```

```
    *S                         **** AP-11
    COMPUTE NM HYD          AP-11   -      9       0.00210         4.26       0.125       1.11690    1.500     3.167 PER IMP=
0.00
    *S                         **** SUB-BASIN 202B **** (AREA=1.2 ACRES)
    COMPUTE NM HYD           202B   -      3       0.00190         3.85       0.113       1.11690    1.500     3.168 PER IMP=
0.00
    *S                         **** SUB-BASIN 202C **** (AREA=0.7 ACRES)
♀
                                 FROM  TO                      PEAK        RUNOFF                 TIME TO    CFS      PAGE =   2
                   HYDROGRAPH     ID   ID          AREA      DISCHARGE     VOLUME      RUNOFF      PEAK      PER
    COMMAND      IDENTIFICATION   NO.  NO.        (SQ MI)      (CFS)       (AC-FT)    (INCHES)   (HOURS)    ACRE      NOTATION

    COMPUTE NM HYD           202C   -      10      0.00100         2.11       0.067       1.25355    1.500     3.291 PER IMP=
8.00
    *S                         **** SUB-BASIN 203 **** (AREA=4.0 ACRES)
    COMPUTE NM HYD         203.00   -      11      0.00630        18.02       0.943       2.80796    1.500     4.470 PER IMP=
99.00
    ROUTE RESERVOIR       WQ.POND   11     12      0.00630        17.58       0.943       2.80791    1.550     4.361 AC-FT=
0.022
    *S                         **** SUB-BASIN 204 **** (AREA=8.3 ACRES)
    COMPUTE NM HYD         204.00   -      11      0.01300        35.20       1.801       2.59786    1.500     4.231 PER IMP=
86.70
    *S                         **** (AP-2: ADD WQ.POND AND BASIN 204)
    ADD HYD                  AP-2 11&12    13      0.01930        52.66       2.745       2.66641    1.500     4.263
    *S                         **** ROUTE AP-2
    ROUTE MCUNGE           AP-2.R   13     11      0.01930        52.66       2.745       2.66641    1.500     4.263 CCODE =
0.0
    *S                         **** (AP-3: ADD AP-2.R AND BASIN 202B)
    ADD HYD                  AP-3 11& 3    12      0.02120        56.51       2.858       2.52753    1.500     4.165
    *S                         **** (ADD AP-3 AND BASIN 201A)
    ADD HYD               201A.1 12& 1     2       0.02770        71.62       3.454       2.33800    1.500     4.040
    *S                         **** (ROUTE 201A.1)
    ROUTE MCUNGE         201A.1.R    2      1      0.02770        71.62       3.454       2.33800    1.500     4.040 CCODE =
0.0
    *S                         **** (AP-4: ADD 201A.1.R AND BASIN 202C)
    ADD HYD           AP-4:DPOND.2  1&10    2      0.02870        73.72       3.521       2.30008    1.500     4.014
    *S                         **** SUB-BASIN 206 **** (AREA=2.8 ACRES)
    *S                         **** AP-13
    COMPUTE NM HYD          AP-13   -      1       0.00430        12.34       0.648       2.82504    1.500     4.482 PER IMP=
100.00
    *S                         **** SUB-BASIN 207 **** (AREA=3.9 ACRES)
    COMPUTE NM HYD         207.00   -      3       0.00610        16.78       0.841       2.58419    1.500     4.298 PER IMP=
85.90
    *S                         **** SUB-BASIN 208A **** (AREA=1.9 ACRES)
    COMPUTE NM HYD           208A   -      4       0.00264         5.60       0.183       1.29439    1.500     3.308 PER IMP=
10.39
    *S                         **** SUB-BASIN 210 **** (AREA=10.4 ACRES)
    COMPUTE NM HYD         210.00   -      5       0.01630        35.04       1.192       1.37141    1.500     3.359 PER IMP=
14.90
    *S
    *S                         **** SUB-BASIN 211 **** (AREA=1.6 ACRES)
    *S                         **** AP-9
    COMPUTE NM HYD           AP-9   -      7       0.00250         6.48       0.301       2.25623    1.500     4.050 PER IMP=
66.70
    *S                         **** (AP-6: ADD 210 AND 207)
    ADD HYD                  AP-6  5& 3    10      0.02240        51.82       2.033       1.70165    1.500     3.614
    *S                         **** (AP-7: ADD AP-6 AND BASIN 208A)
    ADD HYD                  AP-7 10& 4    3       0.02504        57.41       2.215       1.65864    1.500     3.582
    *S                         **** SUB-BASIN 208B **** (AREA=1.1 ACRES)
    *S                         **** AP-10
    COMPUTE NM HYD          AP-10   -      13      0.00290         6.81       0.273       1.76429    1.500     3.669 PER IMP=
37.90
    *S                         **** SUB-BASIN 209A **** (AREA=1.1 ACRES)
    COMPUTE NM HYD           209A   -      4       0.00090         2.34       0.108       2.25623    1.500     4.068 PER IMP=
```

```
66.70
    *S                          **** SUB-BASIN 209B **** (AREA=1.1 ACRES)
    COMPUTE NM HYD          209B   -    10       0.00170         4.88       0.256      2.82504    1.500    4.487 PER IMP=
100.00
    *S                          **** SUB-BASIN 212 **** (AREA=0.3 ACRES)
    COMPUTE NM HYD        212.00   -    11       0.00050         1.13       0.041      1.54393    1.500    3.537 PER IMP=
25.00
    *S                          **** (ADD BASINS 209A AND 209B)
    ADD HYD             DPOND.3  4&10  12        0.00260         7.22       0.364      2.62790    1.500    4.342
    *S                          **** (ADD BASIN 212 AND DPOND.3)
    ADD HYD           DPOND.3.0 11&12   4        0.00310         8.36       0.406      2.45301    1.500    4.212
    *S                          **** (ADD AP-12 AND AP-4)
    ADD HYD             DPOND.N  8& 2  10        0.03632       106.21       4.387      2.26434    1.500    4.569
    *S                          **** (AP-8: ADD DPOND.3.0 AND DPOND.N)
    ADD HYD                AP-8  4&10   2        0.03942       114.57       4.792      2.27918    1.500    4.541
    *S                          **** POND ****
 ♀
                                  FROM  TO                   PEAK        RUNOFF               TIME TO    CFS      PAGE =   3
                       HYDROGRAPH  ID   ID       AREA     DISCHARGE     VOLUME     RUNOFF     PEAK       PER
    COMMAND        IDENTIFICATION  NO.  NO.     (SQ MI)     (CFS)      (AC-FT)    (INCHES)   (HOURS)    ACRE      NOTATION

    *S                          **** AP-1:POND OUTLET
    ROUTE RESERVOIR    AP-1:POND    2    4       0.03942        88.93       4.802      2.28384    1.600    3.524 AC-FT=
0.773
    FINISH
```

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, US*
Latitude: 35.1286°, Longitude: -106.5108°
Elevation: 5751 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.181 (0.153-0.214)	0.234 (0.198-0.278)	0.314 (0.265-0.373)	0.376 (0.316-0.444)	0.460 (0.385-0.544)	0.526 (0.439-0.621)	0.595 (0.493-0.702)	0.667 (0.550-0.787)	0.766 (0.625-0.903)	0.844 (0.685-0.996)
10-min	0.276 (0.233-0.326)	0.357 (0.301-0.423)	0.479 (0.404-0.567)	0.572 (0.481-0.677)	0.700 (0.587-0.828)	0.800 (0.668-0.945)	0.906 (0.750-1.07)	1.02 (0.836-1.20)	1.17 (0.951-1.37)	1.29 (1.04-1.52)
15-min	0.342 (0.289-0.404)	0.442 (0.373-0.524)	0.593 (0.500-0.703)	0.709 (0.596-0.838)	0.868 (0.727-1.03)	0.992 (0.828-1.17)	1.12 (0.930-1.33)	1.26 (1.04-1.49)	1.45 (1.18-1.70)	1.59 (1.29-1.88)
30-min	0.461 (0.390-0.544)	0.596 (0.503-0.705)	0.799 (0.674-0.947)	0.955 (0.803-1.13)	1.17 (0.980-1.38)	1.34 (1.12-1.58)	1.51 (1.25-1.78)	1.70 (1.40-2.00)	1.95 (1.59-2.30)	2.15 (1.74-2.53)
60-min	0.570 (0.482-0.673)	0.737 (0.622-0.873)	0.989 (0.834-1.17)	1.18 (0.993-1.40)	1.45 (1.21-1.71)	1.65 (1.38-1.95)	1.87 (1.55-2.21)	2.10 (1.73-2.47)	2.41 (1.96-2.84)	2.66 (2.15-3.13)
2-hr	0.687 (0.568-0.848)	0.880 (0.728-1.09)	1.16 (0.960-1.44)	1.39 (1.14-1.71)	1.70 (1.39-2.09)	1.96 (1.59-2.39)	2.22 (1.79-2.71)	2.50 (2.00-3.04)	2.89 (2.29-3.52)	3.20 (2.52-3.91)
3-hr	0.734 (0.612-0.901)	0.933 (0.775-1.15)	1.22 (1.02-1.49)	1.45 (1.20-1.77)	1.77 (1.45-2.16)	2.02 (1.66-2.47)	2.30 (1.87-2.79)	2.58 (2.08-3.14)	2.98 (2.38-3.61)	3.31 (2.62-4.01)
6-hr	0.856 (0.720-1.05)	1.08 (0.909-1.32)	1.39 (1.17-1.69)	1.64 (1.37-1.99)	1.97 (1.64-2.39)	2.23 (1.85-2.70)	2.51 (2.07-3.04)	2.79 (2.29-3.37)	3.19 (2.59-3.84)	3.50 (2.83-4.23)
12-hr	0.969 (0.829-1.14)	1.22 (1.04-1.44)	1.55 (1.32-1.82)	1.81 (1.54-2.12)	2.15 (1.82-2.53)	2.42 (2.04-2.84)	2.71 (2.27-3.17)	2.99 (2.49-3.51)	3.38 (2.80-3.97)	3.70 (3.03-4.34)
24-hr	1.13 (0.984-1.31)	1.42 (1.23-1.64)	1.78 (1.55-2.06)	2.07 (1.80-2.40)	2.46 (2.12-2.85)	2.76 (2.38-3.20)	3.08 (2.64-3.56)	3.40 (2.90-3.93)	3.84 (3.25-4.43)	4.18 (3.52-4.84)
2-day	1.22 (1.06-1.40)	1.53 (1.34-1.76)	1.93 (1.69-2.22)	2.25 (1.96-2.58)	2.68 (2.33-3.07)	3.02 (2.61-3.45)	3.37 (2.90-3.86)	3.73 (3.19-4.27)	4.21 (3.58-4.84)	4.60 (3.88-5.29)
3-day	1.36 (1.21-1.52)	1.70 (1.52-1.90)	2.12 (1.89-2.37)	2.45 (2.19-2.74)	2.91 (2.58-3.25)	3.26 (2.89-3.64)	3.62 (3.19-4.04)	3.99 (3.50-4.46)	4.48 (3.91-5.02)	4.87 (4.23-5.47)
4-day	1.49 (1.36-1.63)	1.86 (1.70-2.04)	2.30 (2.10-2.52)	2.65 (2.42-2.90)	3.13 (2.84-3.42)	3.50 (3.17-3.82)	3.87 (3.49-4.23)	4.25 (3.82-4.64)	4.75 (4.25-5.21)	5.14 (4.57-5.64)
7-day	1.73 (1.59-1.89)	2.16 (1.98-2.36)	2.66 (2.43-2.90)	3.04 (2.78-3.32)	3.56 (3.25-3.88)	3.96 (3.60-4.31)	4.36 (3.95-4.75)	4.76 (4.30-5.19)	5.28 (4.75-5.77)	5.68 (5.08-6.22)
10-day	1.94 (1.79-2.11)	2.42 (2.23-2.64)	2.99 (2.75-3.25)	3.44 (3.16-3.74)	4.04 (3.70-4.39)	4.50 (4.10-4.89)	4.97 (4.51-5.40)	5.43 (4.92-5.91)	6.05 (5.45-6.60)	6.52 (5.85-7.12)
20-day	2.54 (2.33-2.76)	3.16 (2.90-3.45)	3.86 (3.55-4.21)	4.40 (4.03-4.79)	5.09 (4.65-5.54)	5.60 (5.11-6.09)	6.10 (5.55-6.63)	6.58 (5.97-7.16)	7.21 (6.51-7.86)	7.66 (6.90-8.37)
30-day	3.08 (2.83-3.34)	3.84 (3.52-4.17)	4.66 (4.27-5.05)	5.27 (4.82-5.72)	6.05 (5.53-6.56)	6.61 (6.03-7.17)	7.16 (6.52-7.77)	7.69 (6.98-8.34)	8.35 (7.55-9.07)	8.83 (7.96-9.61)
45-day	3.77 (3.47-4.08)	4.68 (4.32-5.07)	5.62 (5.17-6.09)	6.30 (5.79-6.83)	7.15 (6.56-7.76)	7.76 (7.10-8.42)	8.33 (7.61-9.04)	8.87 (8.09-9.64)	9.54 (8.66-10.4)	10.0 (9.06-10.9)
60-day	4.34 (4.00-4.70)	5.39 (4.97-5.85)	6.48 (5.97-7.02)	7.26 (6.69-7.87)	8.22 (7.56-8.92)	8.89 (8.17-9.65)	9.53 (8.74-10.4)	10.1 (9.27-11.0)	10.9 (9.91-11.8)	11.4 (10.4-12.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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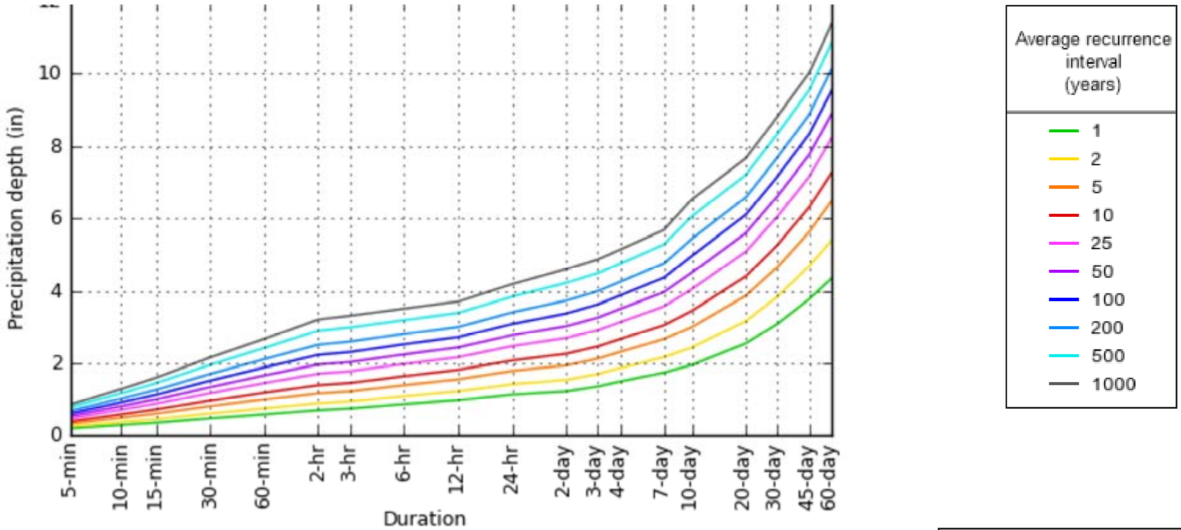
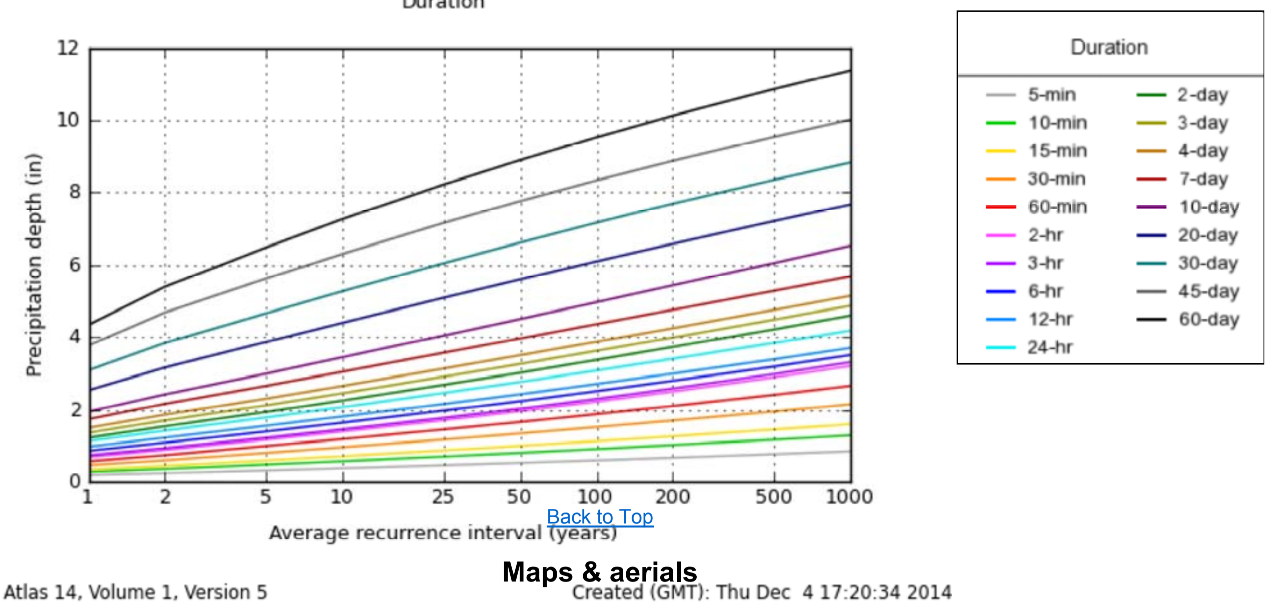
PF graphical





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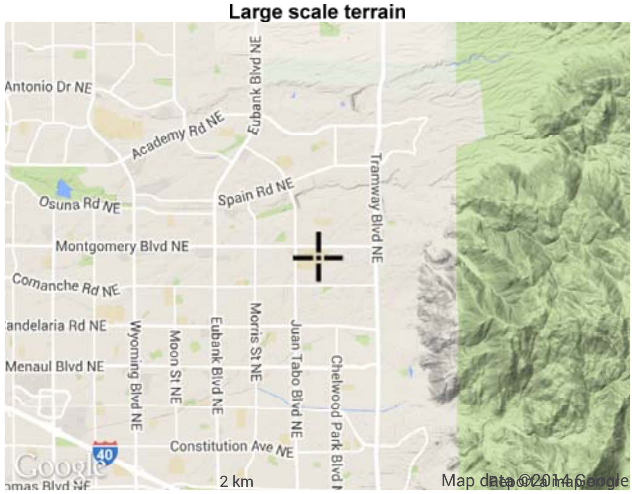
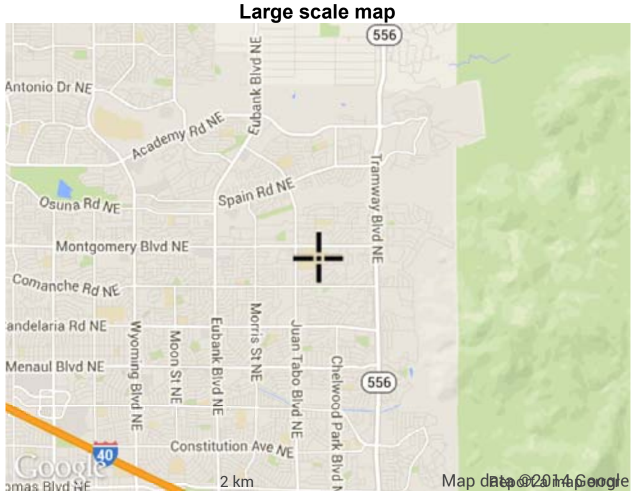
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Office of Hydrologic Development
1325 East West Highway
Silver Spring, MD 20910

Questions?: HDSC.Questions@noaa.gov

APPENDIX C

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico

Eldorado HS

January 15, 2013

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:6,410 if printed on A size (8.5" x 11") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 350, 700, 1,400, 2,100

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,410 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 13N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico
Survey Area Data: Version 9, Dec 9, 2008

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico (NM600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
EmB	Embudo gravelly fine sandy loam, 0 to 5 percent slopes	37.8	24.6%
EtC	Embudo-Tijeras complex, 0 to 9 percent slopes	70.4	45.7%
TgB	Tijeras gravelly fine sandy loam, 1 to 5 percent slopes	45.8	29.7%
Totals for Area of Interest		**154.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico

EmB—Embudo gravelly fine sandy loam, 0 to 5 percent slopes

Map Unit Setting

Landscape: Valleys
Elevation: 4,850 to 6,500 feet
Mean annual precipitation: 7 to 10 inches
Mean annual air temperature: 58 to 60 degrees F
Frost-free period: 170 to 195 days

Map Unit Composition

Embudo and similar soils: 85 percent

Description of Embudo

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Sandy (R042XA051NM)

Typical profile

0 to 4 inches: Gravelly fine sandy loam
4 to 20 inches: Gravelly sandy loam
20 to 60 inches: Stratified very gravelly loamy coarse sand to extremely gravelly loamy sand

EtC—Embudo-Tijeras complex, 0 to 9 percent slopes

Map Unit Setting

Landscape: Uplands, valleys
Elevation: 4,850 to 6,500 feet
Mean annual precipitation: 7 to 10 inches
Mean annual air temperature: 58 to 60 degrees F
Frost-free period: 170 to 195 days

Map Unit Composition

Embudo and similar soils: 50 percent
Tijeras and similar soils: 35 percent

Description of Embudo

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 7 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Sandy (R042XA051NM)

Typical profile

0 to 4 inches: Gravelly fine sandy loam
4 to 20 inches: Gravelly sandy loam
20 to 60 inches: Stratified gravelly loamy coarse sand to very gravelly loamy sand

Description of Tijeras

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Sandy (R042XA051NM)

Typical profile

0 to 4 inches: Gravelly fine sandy loam
4 to 14 inches: Sandy clay loam
14 to 19 inches: Gravelly sandy loam
19 to 60 inches: Stratified very gravelly sand to very gravelly sandy loam

TgB—Tijeras gravelly fine sandy loam, 1 to 5 percent slopes

Map Unit Setting

Landscape: Uplands
Elevation: 5,000 to 6,500 feet
Mean annual precipitation: 7 to 10 inches
Mean annual air temperature: 58 to 60 degrees F
Frost-free period: 170 to 195 days

Map Unit Composition

Tijeras and similar soils: 80 percent

Description of Tijeras

Setting

Landform: Fan remnants, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from igneous and sedimentary rock

Properties and qualities

Slope: 1 to 5 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Low (about 5.8 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Sandy (R042XA051NM)

Typical profile

0 to 6 inches: Gravelly fine sandy loam
6 to 19 inches: Sandy clay loam
19 to 60 inches: Gravelly sandy loam

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