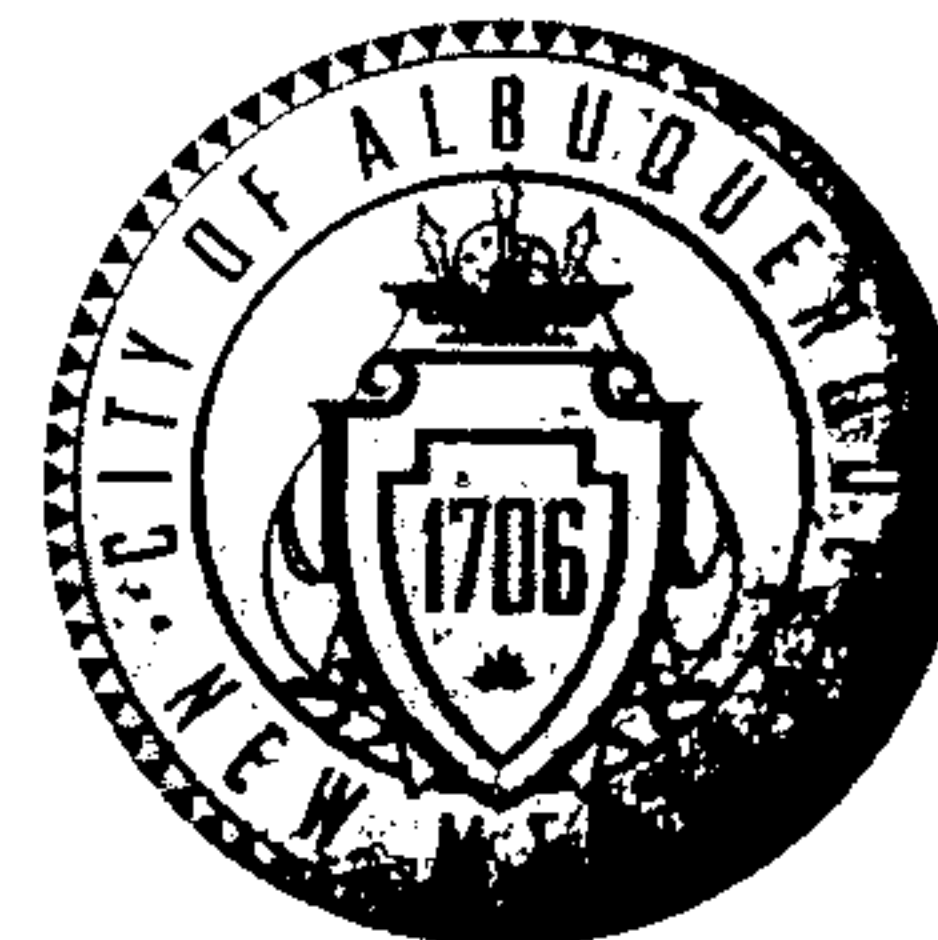


# CITY OF ALBUQUERQUE



January 7, 2011

Christopher A. Perea, P.E.  
**Wilson & Company, Inc.**  
4900 Lang Ave. NW  
Albuquerque, NM 87109

**Re: Eisenhower Middle School – Gym Set, 11001 Camero Ave. NE,  
Request for Permanent C.O. - Approved  
Engineer's Stamp dated: 06-05-09 (E-21/D007)  
Certification dated: 01-06-11**

Dear Mr. Perea,

Based upon the information provided in the Certification received 01-006-10, the above referenced Certification is approved for a release of a Permanent Certificate of Occupancy by Hydrology.

PO Box 1293

If you have any questions, you can contact me at 924-3982.

Albuquerque

Sincerely,

Timothy E. Sims,  
Plan Checker—Hydrology Section  
Development and Building Services

NM 87103

[www.cabq.gov](http://www.cabq.gov)

C: CO Clerk—Katrina Sigala  
File

# DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 12/05 - AP)

PROJECT TITLE: Eisenhower MS – Gym Set ZONE MAP/DRG. FILE#: E-21-~~7D~~7

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_

LEGAL DESCRIPTION: SEE ATTACHED PLANS

CITY ADDRESS: 11001 Camero Ave, NE

ENGINEERING FIRM: Wilson & Company CONTACT: Christopher Perea, PE

ADDRESS: 4900 Lang Ave. NE PHONE: 505-348-4000

CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: APS CONTACT: Richard Miller

ADDRESS: 915 Oak Street PHONE: 505-848-8835

CITY, STATE: Albuquerque New Mexico ZIP CODE: 87106

ARCHITECT: Wilson & Company CONTACT: See Engineer Above

ADDRESS: 4900 Lang Ave. NE PHONE: 505-235-7250

CITY, STATE: Albuquerque, NM ZIP CODE: \_\_\_\_\_

SURVEYING FIRM: Wilson & Company LICENSED SURVEYOR: Wayjohn Surveying,

ADDRESS: 4900 Lang Ave. NE PHONE: 505-255-2052

CITY, STATE: Albuquerque, NM ZIP CODE: 87108

CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

CITY, STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_

## CHECK TYPE OF SUBMITTAL:

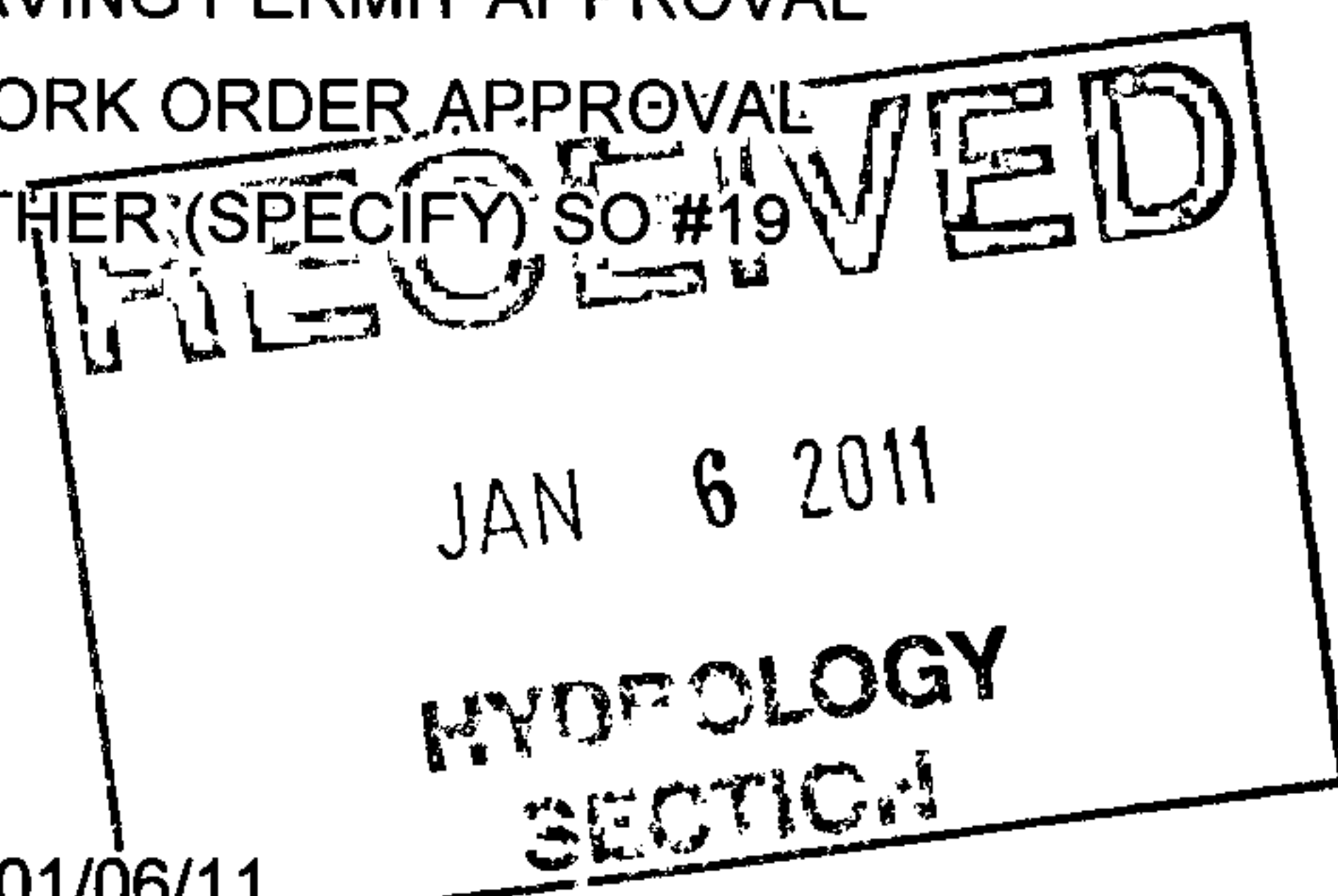
- ☐ DRAINAGE REPORT - RESUBMITTAL
- ☐ DRAINAGE PLAN 1<sup>st</sup> SUBMITTAL
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☒ ENGINEER'S CERT (HYDROLOGY)
- ☐ CLOMR\LOMR
- ☐ TRAFFIC CIRCULTAION LAYOUT
- ☐ ENGINEER/ARCHITECT CERT (TCL)
- ☐ ENGINEER/ARCHITECT CERT (DRB S. P.)
- ☐ ENGINEER/ARCHITECT CERT (AA)
- ☐ OTHER (SPECIFY)

## WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

## CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☒ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP)
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY) SO #19

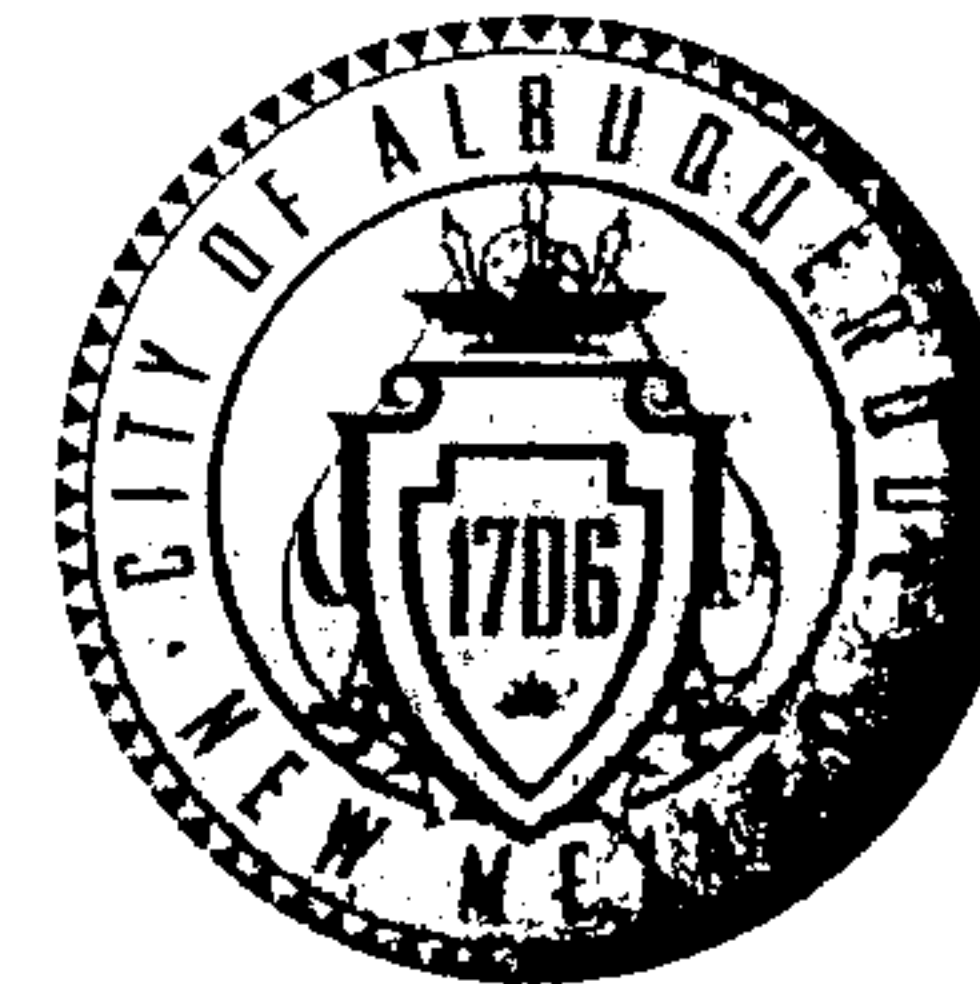


Submitted By: Christopher Perea DATE: 01/06/11

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

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

# CITY OF ALBUQUERQUE



June 1, 2010

Jason Woodruff, P.E.  
Wilson & Company  
4900 Lang Ave. NE  
Albuquerque, NM 87109

Re: Eisenhower Middle School Parking Lot Improvements, 11001 Camero Road NE,  
Traffic Circulation Layout  
Engineer's Stamp dated 04-07-10 (E21-D007)

Dear Mr. Woodruff,

The TCL submittal received 05-19-10 is approved for Building Permit. The plan is stamped and signed as approved. A copy of this plan will be needed for each of the building permit plans. Please keep the original to be used for certification of the site for final C.O. for Transportation. **Public infrastructure or work done within City Right-of-Way shown on these plans is for information only and is not part of approval. A separate DRC and/or other appropriate permits are required to construct these items.**

PO Box 1293

Albuquerque

If a temporary CO is needed, a copy of the original TCL that was stamped as approved by the City will be needed. This plan must include a statement that identifies the outstanding items that need to be constructed or the items that have not been built in "substantial compliance," as well as the signed and dated stamp of a NM registered architect or engineer. Submit this TCL with a completed Drainage and Transportation Information Sheet to Hydrology at the Development Services Center of Plaza Del Sol Building.

NM 87103

www.cabq.gov

When the site is completed and a final C.O. is requested, use the original City stamped approved TCL for certification. A NM registered architect or engineer must stamp, sign, and date the certification TCL along with indicating that the development was built in "substantial compliance" with the TCL. Submit this certification TCL with a completed Drainage and Transportation Information Sheet to Hydrology at the Development Services Center of Plaza Del Sol Building.

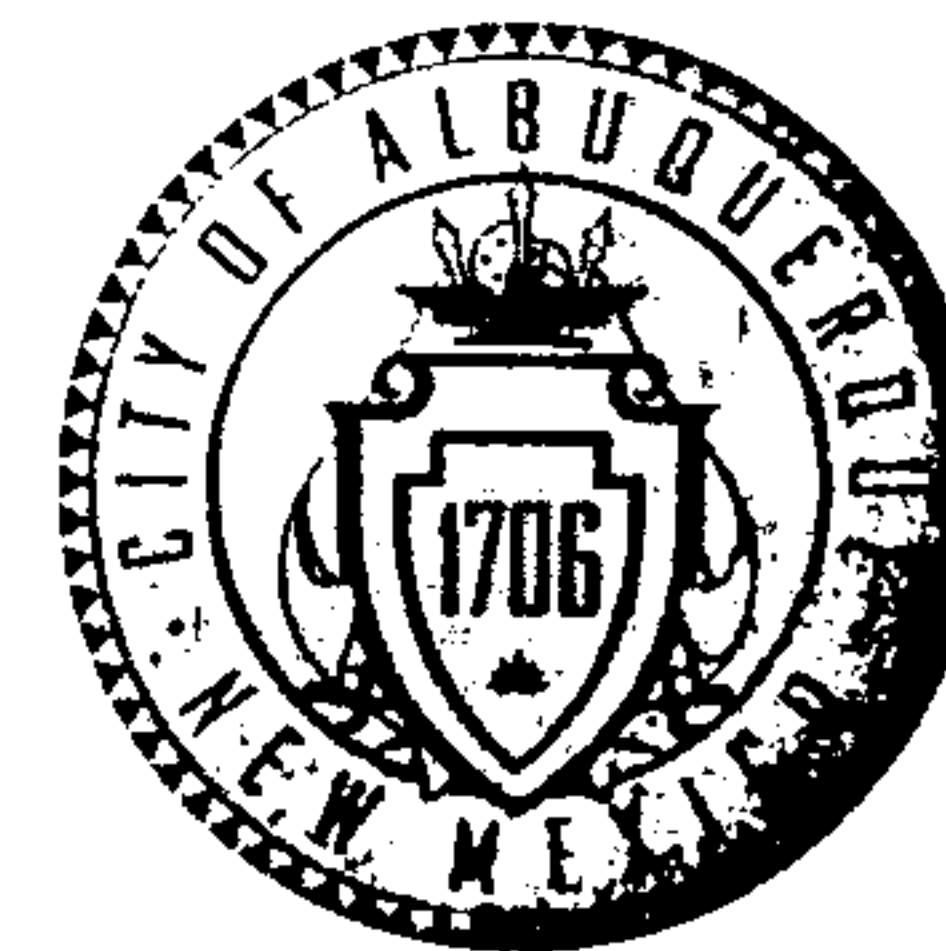
Once verification of certification is completed and approved, notification will be made to Building Safety to issue Final C.O. To confirm that a final C.O. has been issued, call Building Safety at 924-3306.

Sincerely,

Kristal D. Metro, P.E.  
Traffic Engineer, Planning Dept.  
Development and Building Services

C: File

# CITY OF ALBUQUERQUE



June 10, 2010

Jason R. Woodruff, P.E.  
Wilson & Company, Inc.  
4900 Lang Ave. NE  
Albuquerque, NM 87109

**Re: Eisenhower Middle School-Student Pick-up/Drop-off Improvements-  
Grading and Drainage Plan**

**Engineer's Stamp date 6-2-10 (E21/D007)**

Dear Mr. Woodruff,

Based upon the information provided in your submittal received 6-2-10, the above referenced plan is approved for Grading Permit and Paving Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge.

This project requires a Topsoil Disturbance Permit since it is disturbing  $\frac{3}{4}$  of an acre or more.

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

Sincerely,

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

C: file  
Kathy Verhage, DMD



# CITY OF ALBUQUERQUE



April 19, 2010

Jason R. Woodruff, P.E.  
Wilson & Company, Inc.  
4900 Lang Ave. NE  
Albuquerque, NM 87109

**Re: Eisenhower Middle School Storm Drain Extension Grading and Drainage Plan**

**Engineer's Stamp dated 4-12-10 (E21/D007)**

Dear Mr. Woodruff,

Based upon the information provided in your submittal received 4-13-10, the above referenced plan is approved for Grading Permit and Paving Permit.

Upon completion of the project, please provide an Engineer Certification for our files.

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

Sincerely,

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

PO Box 1293

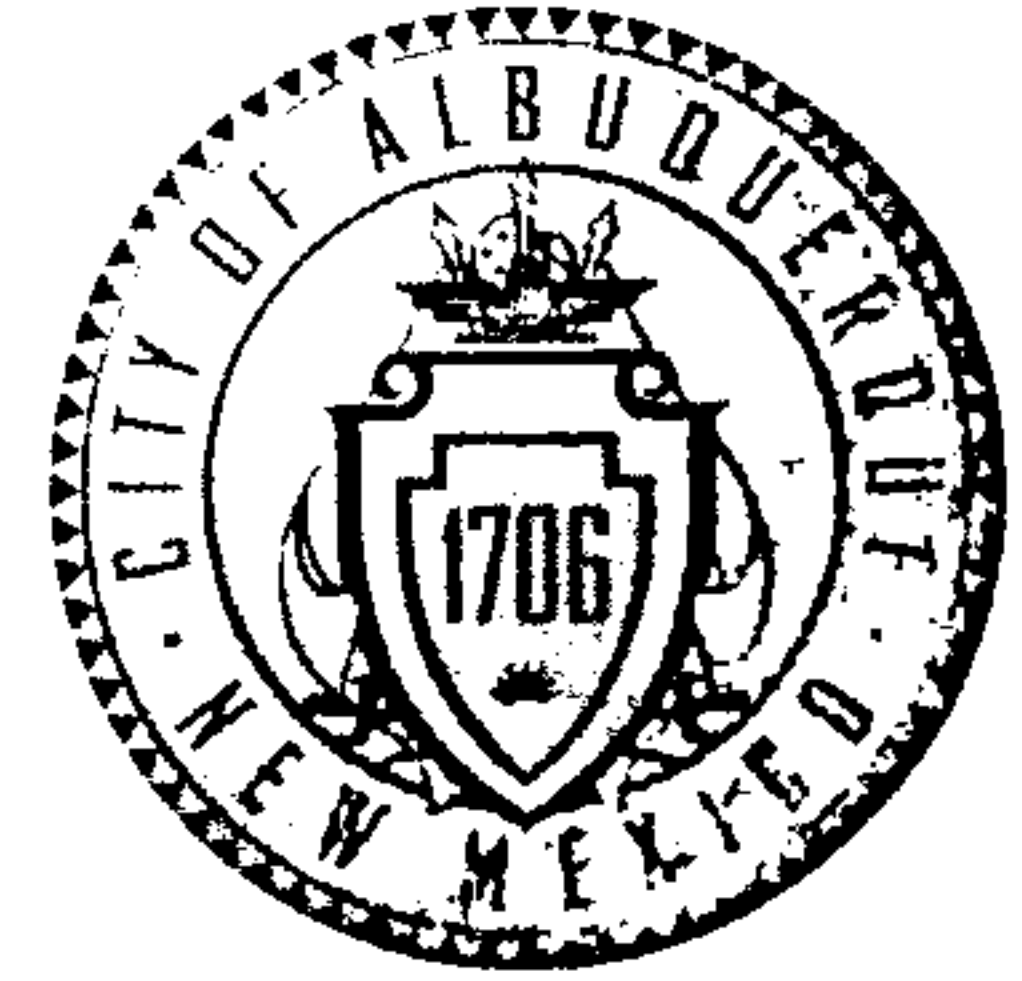
Albuquerque

NM 87103

[www.cabq.gov](http://www.cabq.gov)

C: file

# CITY OF ALBUQUERQUE



June 12, 2009

Jason R. Woodruff, P.E.  
Wilson & Company, Inc.  
4900 Lang Ave. NE  
Albuquerque, NM 87109

**Re: Eisenhower Middle School-Fire Lane/Portables Grading and Drainage Plan  
Engineer's Stamp dated 6-4-09 and 6-5-09 (Sht C-104) (E21/D007)**

Dear Mr. Woodruff,

Based upon the information provided in your submittal received 6-5-09, the above referenced plan is approved for Grading Permit, Paving Permit and for Work Order. The fire line alignment and location of the easement will most likely need to be changed due to the close proximity of the parallel storm drain and fire line north of the portables.

Prior to Certificate of Occupancy release of the proposed new Gymnasium on the "Gymnasium Facility Addition" plan, Engineer Certification of this plan per the DPM checklist will be required.

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

Sincerely,

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

C: file

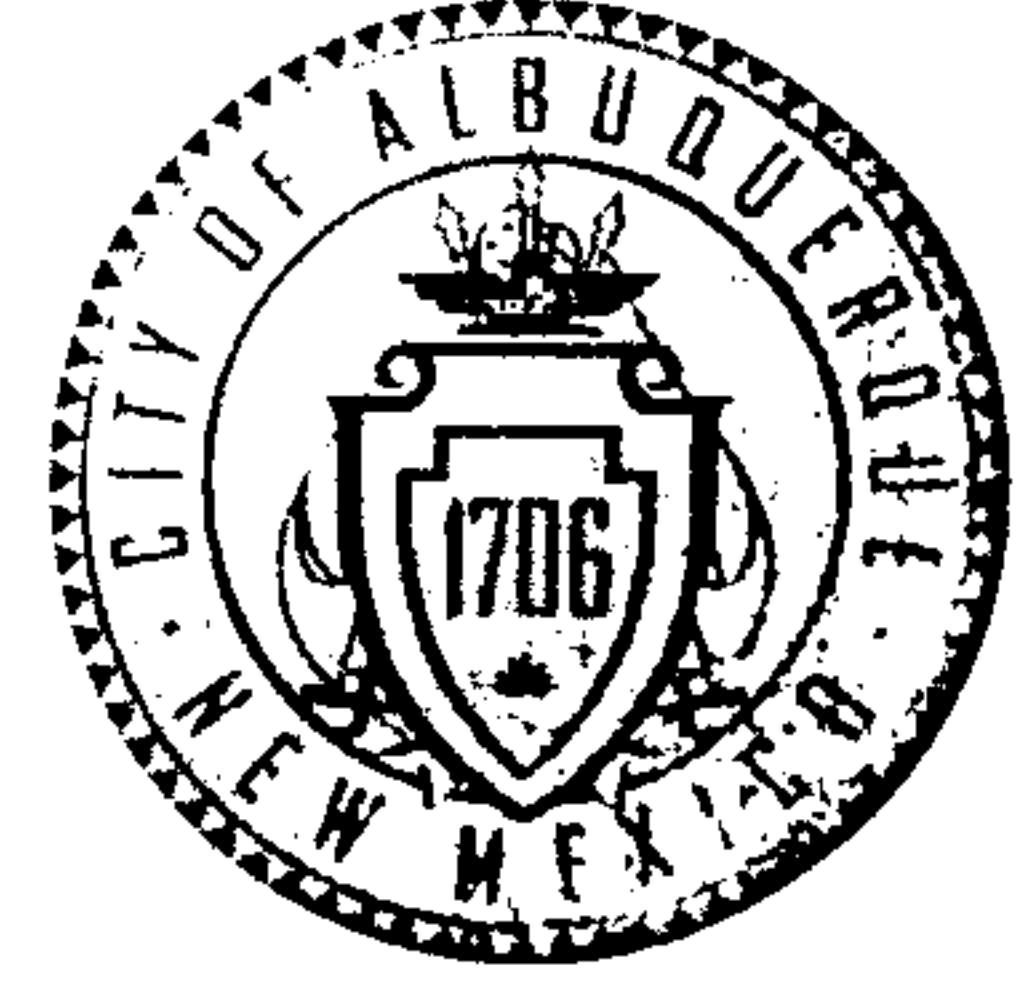
PO Box 1293

Albuquerque

NM 87103

[www.cabq.gov](http://www.cabq.gov)

# CITY OF ALBUQUERQUE



May 11, 2009

Tyler J. Ashton, P.E.  
Wilson & Company, Inc.  
4900 Lang Ave. NW  
Albuquerque, NM 87109

**Re: Eisenhower Middle School Master Drainage Plan**  
**Engineer's Stamp dated 4-27-09 (E21/D007)**

Dear Mr. Ashton,

Based upon the information provided in your submittal received 4-28-09, the above referenced plan is approved for Drainage Master Plan with the following comment. The pond volumes on the Proposed Basin Map do not match the volumes in the report. The volumes in the report will be used and the ponds are to be graded to achieve: 1.32 ac- ft for the North Pond and 2.15 ac-ft for the South Pond. If this is incorrect, please resubmit.

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

Sincerely,

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

C: file

PO Box 1293

Albuquerque


NM 87103

[www.cabq.gov](http://www.cabq.gov)

# Eisenhower Middle School Drainage Master Plan

APRIL 2009

I, Tyler J. Ashton, P.E., do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Engineer under the laws of the State of New Mexico

  
\_\_\_\_\_  
Tyler J. Ashton, P.E.  
NMPE No. 16205  
  
4-27-09  
\_\_\_\_\_  
Date





## **I. LOCATION**

Eisenhower Middle School is located at 11001 Camero Avenue NE in Albuquerque New Mexico and is bounded to the west by Juan Tabo Blvd, Camero Ave to the south, and residential developments to the north and east. See Figure 1 for Vicinity map. The site has an approximate area of 19 acres. This purpose of this drainage report is to study the drainage issues, existing and proposed relating to the proposed development of the site. The Eisenhower Middle School is planning to add a new gymnasium, relocate a few of the modular buildings, pave the access road along the eastern edge of the site and add a proposed for the pick-up/drop-off parking area on the south of the campus.

## **II. DRAINAGE DESIGN CRITERIA**

The design criteria used in this report was in accordance with Section 22.2 of the City of Albuquerque Development Process Manual (DPM). The site is located in Zone 4 as designated in Figure A-1, page 22-7 of DPM. Rainfall depths using  $P(1 \text{ hr}) = 2.23''$ ,  $P(6 \text{ hr}) = 2.90''$  and  $P(24 \text{ hr}) = 3.65''$  were obtained from the Table A-2, page 22-8 of DPM. AHYMO was used to determine the 100-year, 24-hour storm event to determine the peak runoff and the total volumetric storage required for the detention pond. The onsite Land Treatment values varied depending on the basin. Copies of the original AHYMO input, output and summary files may be found in Appendix A at the end of this report. Hydraflow Storm sewer 2005 was used to model the storm drain pipelines. See Appendix B for hydraulic calculations.

## **III. EXISTING CONDITIONS**

### **SOILS AND FIRM**

The Soil Survey of Bernalillo County Area, New Mexico designates the underlying soil as Embudo-Tijeras Complex (EtC) and Tijeras gravelly fine sandy loam (TgB). Embudo-Tijeras Complex covers 85% of the site while Tijeras gravelly fine sandy loam covers the remainder of the site mostly the northern portion of the campus. Both soils types are classified as well drained. Soil survey map is included in the end of the section. The site is located in Zone Atlas E-21-Z. Eisenhower Middle School is located in FIRM panel number 35001C0144G, dated 09, 26, 2008, zone X (areas determined to be outside the 0.2% annual chance flood with average depths of less than 1% annual chance flood, map). The FIRM and Soils maps are located in appendix C.

## DRAINAGE

The existing topography slopes east to west with a wide range of slopes. Approximately half of the school property is fully develop. A small portion of the site drains directly onto Juan Tabo Blvd. right of way. The rest of the runoff generated on site primarily sheet flows into the two drainage ponds. However, there have been issues with the existing ponds not being sufficient to detain the generated flows.

### Basin 101

Basin 101 is mostly pervious and includes an asphalt driveway into Juan Tabo Blvd. An existing concrete swale along this driveway conveys any additional flows from the south detention pond to Juan Tabo Blvd. All the runoff generated by this basin about 3.78 cfs sheet flows directly into Juan Tabo Blvd. right of way.

### Basin 102

Basin 102 is about 5.21 acres and it is comprised of some modular buildings, the existing gym building, soccer field and the south detention ponds. Runoff from this basin sheet flows into the south detention pond. Runoff from this basin is about 16.55 cfs. The analysis point for this basin (AP2) is located at the inlet of the discharge pipe in the pond.

### Basin 103

Basin 103 is about 4.16 acres and it is comprised of a large and a small swimming pool, two paved basketball courts, asphalt parking lot and the rest is bare ground and some grass covered areas. Flows generated from this basin sheets flows west into two existing grate inlet and through a 12" PVC pipe is directed to the south detention pond. The analysis point for the basin is AP3 and is located at the existing grate inlet. The flows that do not enter the 12" pipe will overflow into a concrete rundown into Juan Tabo. Runoff from this basin is about 20.67 cfs.

### Basin 104

Basin 104 is about 8.64 acres and it includes the main building, unpaved access road along the eastern edge of the site, the north drainage pond, and several potable buildings. The runoff generated from this basin travels north to the drainage pond. Runoff from this basin is about 37.88 cfs. The analysis point for this basin AP4 is located at the outlet of the north pond. See Table 1 for a summary of existing basins calculation. Plate 1 in Appendix C delineates the existing basin boundaries. Establishment of the basin boundaries are based on a topographic survey and field verification. The site has a total area of ~19 acres. The existing peak discharges and volumes associated with the various basins are as follows:

Table 1- Existing Conditions for Eisenhower Middle School

Basin	Area	Peak Discharge	Runoff Volume
ID	(acres)	100yr-24hr (ft <sup>3</sup> /sec)	100yr-24hr (acre-ft)
101	0.94	3.78	.141
102	6.08	16.55	.556
103	4.16	20.67	1.102
104	5.08	37.88	1.711

The north detention pond collects flows from basins 104 and through 2-24" CMP culverts convey the flows to the south detention pond. The routed flows from pond and flows from basin 102 and 103 are detained in the south pond and it is ultimately released into the Juan Tabo Blvd right of way through an 18" culvert located in the west corner of the site. The allowable discharge rate calculated for the 18" CMP pipe is 9.5 CFS was based on the estimated carrying capacity of the 18" diameter CMP storm drain culvert. Due to the limited discharge allowed by the existing outfall, this pond has insufficient volume. The existing south pond is not large enough to safely handle the generated flows which have caused overflowing into the existing adjacent residential areas on the west side of the campus. Due to the size of the discharge from the north pond it does not detain runoff long enough before it reaches the south pond which adds to the overflow problem at the south pond.

There is no existing storm drain system in the Juan Tabo Blvd. until approximately 2900' downstream of the intersection of Juan Tabo Blvd. and Camero Ave. where an existing grate inlet is located. The existing pond calculations are as follows:

Table 2- Existing Pond Data

Pond	Volume Required (ac-ft)	Volume Provided (ac-ft)	Q in (cfs)	Q out Required (cfs)	Q out Provided (cfs)
North	0.353	0.374	37.88	26.41	26.41
South	2.439	1.196	58.17	13.71	9.5



## IV. PROPOSED CONDITIONS

The current drainage issues within the Eisenhower Middle School campus need to be addressed before any expansion. Drainage improvements will include a new gymnasium building, addition of a few modular buildings and paving the existing dirt access road.

### Basin 201

This basin will have the same drainage condition as the existing 101 basin and the runoff generated will be same as before.

### Basin 202

This basin will decrease in size from basin 102. A portion of the existing field will be removed from the basin and added to basin 104, this area is where the new gym will be constructed.

### Basin 203

This basin will have the same condition as the existing 103 basin and there will be no additional runoff generated from this basin due to the expansion.

### Basin 204

This basin is larger than Basin 104 due to the addition of the new gym and also includes the old and new gymnasium, cul-de-sac at the end of the access road. Underground storm drain pipes around the two gym buildings will convey flows from roof drains and perimeter of the buildings to the north pond. A curb inlet is designed at the lowest point of the cul-de-sac which ties to this underground storm drain system to convey the flows. This basin also includes addition of a few modular buildings and the access road paved. A second underground storm drain system will convey generated flows from basin 204 to the north pond. The system is comprised of two curb inlets located near the entrance to the existing building which ties to other grate inlets and crosses the access road and drains into the north pond. Plate 2 in Appendix C delineates the proposed basin boundaries. The proposed peak discharges and volumes associated with the various basins are as follows:

Table 3- Proposed Conditions for Eisenhower Middle School

Basin	Area	Peak Discharge	Runoff Volume
ID	(acres)	100yr-24hr (ft <sup>3</sup> /sec)	100yr-24hr (acre-ft)
201	0.94	3.78	0.141
202	4.92	15.85	0.711
203	4.16	20.67	1.102
204	8.88	38.27	1.681

Hydraflow Storm Sewer 2005 calculations may be found in Appendix B. for Specific storm drain configuration and sizes are outlined in Plate 3, Appendix C.

### LEED Certification

The new gym is applying for Silver LEED certification. To accomplish this credit is needed for SS credits 6.1 and 6.2. To qualify for these credits a stormwater management plan is needed that will decrease the volume of stormwater runoff and remove 80% of the total suspended solids from the 2 year 24 hour storm. The pond capacities on the campus have been increased by lowering the ponds while keeping the outlets at existing elevations to allow the complete storage of the 2 year storm, thus satisfying the LEED requirements. AHYMO calculations were made to determine this amount. See Appendix A for calculations. The lowering of the ponds also alleviates the existing problems that are currently occurring on site. The proposed pond calculations are as follows:

Table 2- Proposed Pond Data

*agrees w/ AHYMO*

Pond	Volume (ac-ft)	WSEL (ft)	Q in (cfs)	Q out (cfs)
North	1.32	5748.81	38.27	9.78
South	2.15	5745.51	37.20	6.43

## V. CONCLUSIONS

Eisenhower Middle School ponds have not been designed to handle the existing runoff. Due to the expansion at the school and the need for LEED certification the ponds were re-designed to safely handle the generated runoffs without changing any of the existing culverts connecting the ponds and discharge from the site has been reduced from historic flows leaving the site.



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- VERSION: 1997.02c

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USER NO.= AHYMO-C-9803c01UNMLIB-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S*****										
*S										
*S	24 HOUR STORM - EXISTING RUNOFF ANALYSIS FOR BASINS DRAINING									
*S	ULTIMATELY TO JUAN TABO BLVD									
*S	RAINFALL DATA FROM DPM Chapter 22 - ZONE 4									
*S										
*S*****										
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RAINFALL TYPE= 2	RAIN24= 3.650									
COMPUTE NM HYD	101.00	-	1	.00150	3.78	.141	1.76300	1.500	3.936	PER IMP= 16.00
COMPUTE NM HYD	102.00	-	2	.00790	16.55	.556	1.31889	1.500	3.273	PER IMP= 6.00
COMPUTE NM HYD	103.00	-	3	.00650	20.67	1.102	3.17890	1.500	4.970	PER IMP= 90.00
COMPUTE NM HYD	104.00	-	4	.01350	37.88	1.711	2.37669	1.500	4.384	PER IMP= 47.62
ROUTE RESERVOIR	POND1.1	4	10	.01350	26.41	1.711	2.37667	1.600	3.057	AC-FT= .353
ADD HYD	43.10	10&	3 43	.02000	43.04	2.813	2.63734	1.550	3.363	
ADD HYD	6.10	43&	2 6	.02790	58.17	3.369	2.26400	1.550	3.258	
ROUTE RESERVOIR	POND2.1	6	7	.02790	13.71	3.353	2.25325	2.100	.768	AC-FT= 2.439
FINISH										

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*S*****										
*S										
*S	24 HOUR STORM - PROPOSED RUNOFF ANALYSIS FOR BASINS DRAINING									
*S	ULTIMATELY TO JUAN TABO BLVD									
*S	RAINFALL DATA FROM DPM Chapter 22 - ZONE 4									
*S										
*S	*****									
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 3.650
COMPUTE NM HYD	201.00	-	1	.00150	3.78	.141	1.76300	1.500	3.936	PER IMP= 16.00
COMPUTE NM HYD	202.00	-	2	.00760	15.85	.532	1.31178	1.500	3.259	PER IMP= 6.00
COMPUTE NM HYD	203.00	-	3	.00650	20.67	1.102	3.17890	1.500	4.970	PER IMP= 90.00
COMPUTE NM HYD	204.00	-	4	.01390	38.27	1.681	2.26763	1.500	4.301	PER IMP= 42.00
ROUTE RESERVOIR	POND1.1	4	10	.01390	9.78	1.609	2.17108	1.900	1.100	AC-FT= .928
ADD HYD	43.10	10&	3	.02040	21.35	2.712	2.49219	1.500	1.635	
ADD HYD	6.10	43&	2	.02800	37.20	3.243	2.17178	1.500	2.076	
ROUTE RESERVOIR	POND2.1	6	7	.02800	6.43	2.335	1.56341	2.400	.359	AC-FT= 1.539
FINISH										

AHYMO PROGRAM SUMMARY TABLE (AHYMO\_97) -  
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- VERSION: 1997.02c

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USER NO.= AHYMO-C-9803c01UNMLIB-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S*****										
*S										
*S	24 HOUR STORM - PROPOSED RUNOFF ANALYSIS FOR BASINS DRAINING									
*S	ULTIMATELY TO JUAN TABO BLVD									
*S	RAINFALL DATA FROM DPM Chapter 22 - ZONE 4									
*S										
*S*****										
START										
RAINFALL	TYPE= 2									
COMPUTE NM HYD	201.00	-	1	.00150	1.15	.035	.44242	1.500	1.202	PER IMP= 16.00
COMPUTE NM HYD	202.00	-	2	.00760	3.10	.091	.22401	1.500	.638	PER IMP= 6.00
COMPUTE NM HYD	203.00	-	3	.00650	8.57	.425	1.22536	1.500	2.061	PER IMP= 90.00
COMPUTE NM HYD	204.00	-	4	.01390	13.45	.534	.72060	1.500	1.512	PER IMP= 42.00
ROUTE RESERVOIR	POND1.1	4	10	.01390	8.65	.534	.72058	1.600	.972	AC-FT= .135
ADD HYD	43.10	10& 3	43	.02040	15.35	.959	.88136	1.550	1.175	
ADD HYD	6.10	43& 2	6	.02800	18.21	1.050	.70293	1.550	1.016	
ROUTE RESERVOIR	POND2.1	6	7	.02800	5.37	1.043	.69858	2.050	.299	AC-FT= .461
FINISH										

# Culvert Calculator Report

## 24" CULVERT TO S Pond - east PIPE

Solve For: Discharge

### Culvert Summary

Allowable HW Elevation	5,750.00 ft	Headwater Depth/Height	1.19
Computed Headwater Elev.	5,750.00 ft	Discharge	13.58 cfs
Inlet Control HW Elev.	5,749.89 ft	Tailwater Elevation	5,745.90 ft
Outlet Control HW Elev.	5,750.00 ft	Control Type	Outlet Control

### Grades

Upstream Invert	5,747.62 ft	Downstream Invert	5,745.92 ft
Length	149.77 ft	Constructed Slope	0.011397 ft/ft

### Hydraulic Profile

Profile	M2	Depth, Downstream	1.33 ft
Slope Type	Mild	Normal Depth	1.72 ft
Flow Regime	Subcritical	Critical Depth	1.33 ft
Velocity Downstream	6.14 ft/s	Critical Slope	0.020253 ft/ft

### Section

Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

### Outlet Control Properties

Outlet Control HW Elev.	5,750.00 ft	Upstream Velocity Head	0.35 ft
Ke	0.90	Entrance Loss	0.31 ft

### Inlet Control Properties

Inlet Control HW Elev.	5,749.89 ft	Flow Control	N/A
Inlet Type	Projecting	Area Full	3.1 ft <sup>2</sup>
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

# Culvert Calculator Report

## 24" CULVERT TO S Pond - west PIPE

Solve For: Discharge

Culvert Summary			
Allowable HW Elevation	5,750.00 ft	Headwater Depth/Height	1.19
Computed Headwater Elev.	5,750.00 ft	Discharge	13.41 cfs
Inlet Control HW Elev.	5,749.87 ft	Tailwater Elevation	5,745.90 ft
Outlet Control HW Elev.	5,750.00 ft	Control Type	Outlet Control
Grades			
Upstream Invert	5,747.62 ft	Downstream Invert	5,746.05 ft
Length	149.27 ft	Constructed Slope	0.010545 ft/ft
Hydraulic Profile			
Profile	M2	Depth, Downstream	1.32 ft
Slope Type	Mild	Normal Depth	1.80 ft
Flow Regime	Subcritical	Critical Depth	1.32 ft
Velocity Downstream	6.10 ft/s	Critical Slope	0.020113 ft/ft
Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		
Outlet Control Properties			
Outlet Control HW Elev.	5,750.00 ft	Upstream Velocity Head	0.33 ft
Ke	0.90	Entrance Loss	0.29 ft
Inlet Control Properties			
Inlet Control HW Elev.	5,749.87 ft	Flow Control	N/A
Inlet Type	Projecting	Area Full	3.1 ft <sup>2</sup>
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		



# Culvert Calculator Report

## 12" PVC to SW Pond

Solve For: Discharge

### Culvert Summary

Allowable HW Elevation	5,755.00 ft	Headwater Depth/Height	1.30
Computed Headwater Elev.	5,754.54 ft	Discharge	3.49 cfs
Inlet Control HW Elev.	5,754.54 ft	Tailwater Elevation	5,745.00 ft
Outlet Control HW Elev.	5,754.54 ft	Control Type	Entrance Control

### Grades

Upstream Invert	5,753.24 ft	Downstream Invert	5,744.85 ft
Length	330.00 ft	Constructed Slope	0.025424 ft/ft

### Hydraulic Profile

Profile	S2	Depth, Downstream	0.48 ft
Slope Type	Steep	Normal Depth	0.48 ft
Flow Regime	Supercritical	Critical Depth	0.80 ft
Velocity Downstream	9.27 ft/s	Critical Slope	0.005961 ft/ft

### Section

Section Shape	Circular	Mannings Coefficient	0.010
Section Material	HDPE (Smooth Interior)	Span	1.00 ft
Section Size	12 inch	Rise	1.00 ft
Number Sections	1		

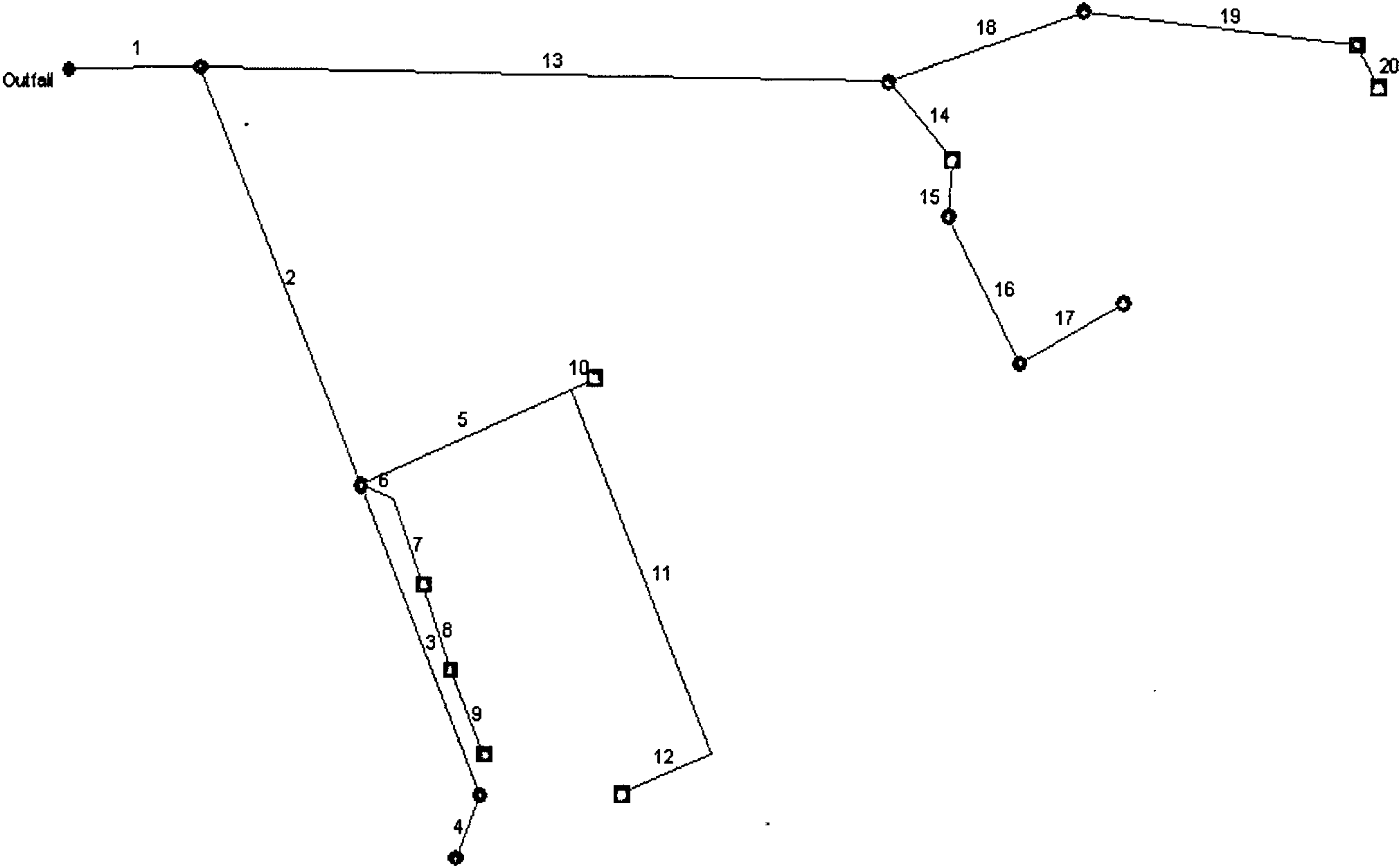
### Outlet Control Properties

Outlet Control HW Elev.	5,754.54 ft	Upstream Velocity Head	0.42 ft
Ke	0.20	Entrance Loss	0.08 ft

### Inlet Control Properties

Inlet Control HW Elev.	5,754.54 ft	Flow Control	N/A
Inlet Type	Beveled ring, 33.7° bevels	Area Full	0.8 ft <sup>2</sup>
K	0.00180	HDS 5 Chart	3
M	2.50000	HDS 5 Scale	B
C	0.02430	Equation Form	1
Y	0.83000		

# Hydraflow Plan View



A	No. Lines: 20	04-24-2009
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# Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)		
1	End	73.6	0.00	0.00	0.00	0.00	0.00	0.0	6.1	0.0	32.00	41.28	10.29	24	2.84	5748.09	5746.00	5749.98	5748.00	5753.86	5752.00	Inserted Line	
2	1	233.9	0.00	0.00	0.00	0.00	0.00	0.0	5.1	0.0	12.00	43.93	4.88	24	3.21	5755.73	5748.21	5756.96	5751.44	5759.30	5753.86		
3	2	173.5	0.00	0.00	0.00	0.00	0.00	0.0	0.5	0.0	2.00	11.36	3.49	18	1.00	5759.73	5758.00	5760.27	5758.54	5762.28	5759.30		
4	3	34.8	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.00	10.03	2.96	18	0.78	5760.00	5759.73	5760.54	5760.44	5762.02	5762.28		
5	2	127.3	0.00	0.00	0.00	0.00	0.00	0.0	4.6	0.0	7.00	8.07	5.19	18	0.50	5758.74	5758.10	5759.88	5759.11	0.00	5759.30		
6	2	19.8	0.00	0.00	0.00	0.00	0.00	0.0	2.5	0.0	3.00	8.09	3.98	18	0.51	5758.20	5758.10	5758.87	5758.76	0.00	5759.30		
7	6	47.0	0.00	0.00	0.00	0.00	0.00	0.0	2.1	0.0	3.00	8.13	3.05	18	0.51	5758.54	5758.30	5759.26	5759.26	5766.00	0.00		
8	7	47.0	0.00	0.00	0.00	0.00	0.00	0.0	1.4	0.0	2.00	8.13	2.24	18	0.51	5758.88	5758.64	5759.54	5759.54	5766.00	5766.00		
9	8	47.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.00	8.13	0.79	18	0.51	5758.78	5758.54	5759.69	5759.69	5766.00	5766.00		
10	5	14.6	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.00	7.89	2.83	18	0.48	5758.91	5758.84	5760.52	5760.49	0.00	0.00		
11	5	203.3	0.00	0.00	0.00	0.00	0.00	0.0	1.6	0.0	2.00	8.06	1.77	18	0.50	5759.86	5758.84	5760.57	5760.47	0.00	0.00		
12	11	54.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.00	8.04	1.28	18	0.50	5760.13	5759.86	5760.71	5760.71	5766.00	0.00		
13	1	385.0	0.00	0.00	0.00	0.00	0.00	0.0	1.6	0.0	20.00	41.62	6.93	24	2.89	5759.32	5748.21	5760.90	5751.03	5769.41	5753.86		
14	13	54.2	0.00	0.00	0.00	0.00	0.00	0.0	1.1	0.0	10.00	24.46	5.52	24	1.00	5763.68	5763.14	5764.80	5764.26	5770.00	5769.41		
15	14	29.7	0.00	0.00	0.00	0.00	0.00	0.0	0.9	0.0	5.00	11.43	3.36	18	1.01	5763.98	5763.68	5765.04	5765.06	5773.00	5770.00		
16	15	85.7	0.00	0.00	0.00	0.00	0.00	0.0	0.4	0.0	5.00	11.40	3.96	18	1.00	5764.84	5763.98	5765.69	5765.26	5775.00	5773.00		
17	16	65.5	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.00	11.34	4.23	18	0.99	5765.49	5764.84	5766.34	5765.93	5775.56	5775.00		
18	13	114.9	0.00	0.00	0.00	0.00	0.00	0.0	1.0	0.0	10.00	45.20	5.52	24	3.40	5765.11	5761.20	5766.23	5762.32	5770.00	5769.41	Inserted Line	
19	18	154.0	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	10.00	44.06	5.06	24	3.23	5770.22	5765.24	5771.34	5766.55	5777.43	5770.00		
20	19	25.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.00	19.70	4.66	18	3.00	5771.54	5770.79	5772.39	5771.69	5778.25	5777.43		
A																Number of lines: 20				Run Date: 04-24-2009			
NOTES: Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs.																							





MAP SCALE 1" = 500'

0 500 1000 FEET

NFIP

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:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
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

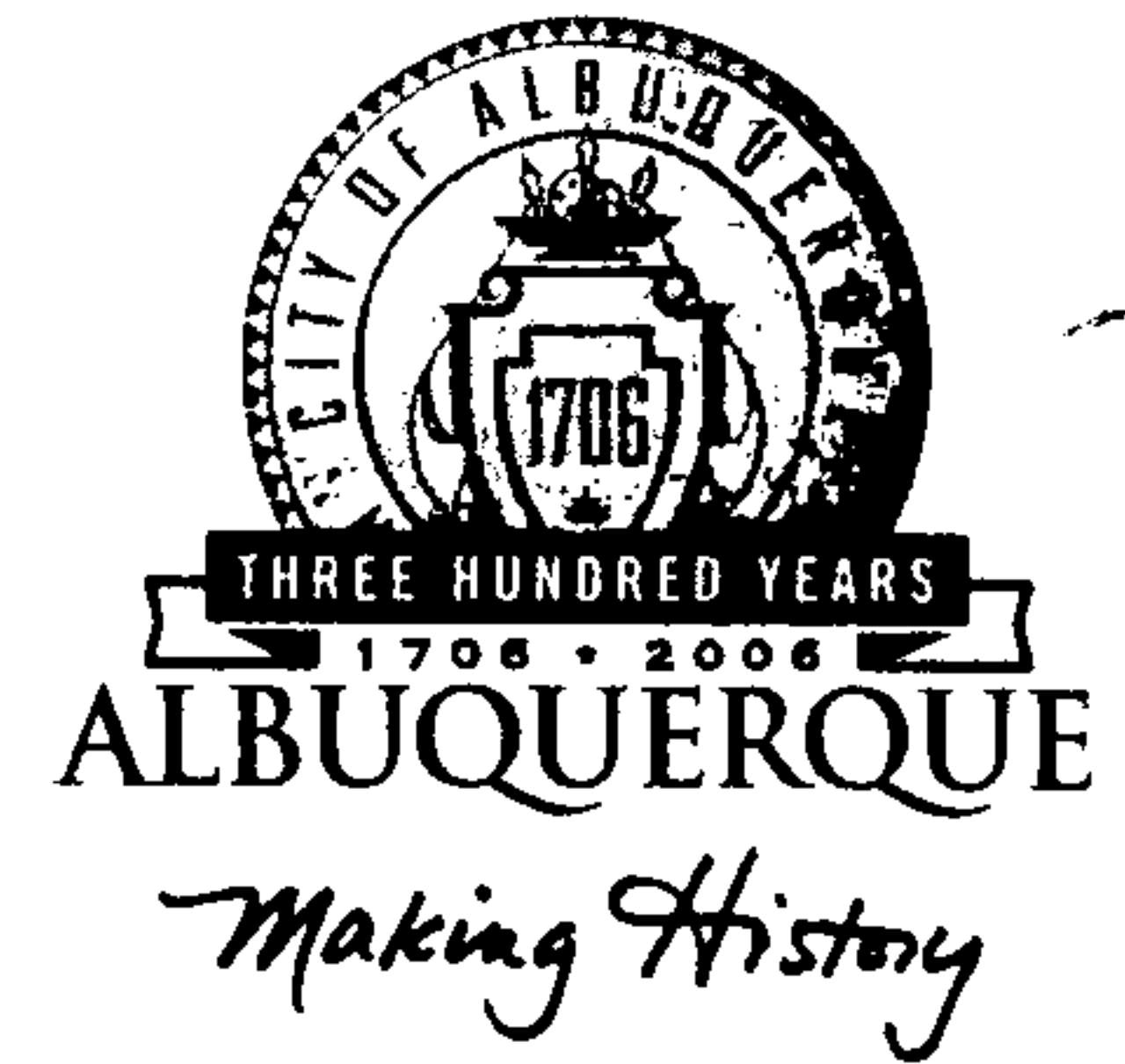
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

## APPENDIX D



# CITY OF ALBUQUERQUE



August 5, 2004

Mr. Mario Juarez-Infante, P.E.  
**WILSON & COMPANY**  
2600 The American Rd. SE, Suite 100  
Rio Rancho, NM 87124

**Re: EISENHOWER MIDDLE SCHOOL**  
**11001 Camero Avenue NE**  
**Approval of Permanent Certificate of Occupancy (C.O.)**  
**Engineer's Stamp dated 12/04/2003 (E-21/D007)**  
**Certification dated 08/04/2004**

Dear Mario,

P.O. Box 1293

Based upon the information provided in your submittal received 08/05/2004, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

Albuquerque

If you have any questions, you can contact me at 924-3982.

New Mexico 87103

Sincerely,

*Arlene V. Portillo*

Arlene V. Portillo  
Plan Checker, Planning Dept. - Hydrology  
Development and Building Services

*pub*

www.cabq.gov

C: Phyllis Villanueva  
File



# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 20, 2004

Mario Juarez-Infante, P.E.  
Wilson & Company  
2600 The American Rd. SE, Suite 100  
Rio Rancho, NM 87124

**Re: Eisenhower Middle School Cafeteria Addition, 11001 Camero Ave. NE,  
Grading and Drainage Plan**

**Engineer's Stamp dated 12-04-03 (E21/D7)**

Dear Mr. Juarez-Infante,

Based upon the information provided in your submittal received 1-15-04, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro  
Engineering Associate, Planning Dept.  
Development and Building Services

*bus*

C: File



# *City of Albuquerque*

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 30, 1993

Jeff Mortensen, P.E.  
Jeff Mortensen & Assoc.  
6010-B Midway Park Blvd NE  
Albuquerque, N.M. 87109

RE: DRAINAGE REPORT FOR EISENHOWER MID SCHOOL (E-21/D7) '  
RECEIVED JUNE 10, 1993 FOR MASTER PLAN APPROVAL  
ENGINEER'S STAMP DATED 06-07-93

Dear Mr. Mortensen:

Based on the information included in the submittal referenced above, City Hydrology APPROVES the Master Plan for this project.

The Downstream Capacity section would be stronger if it referenced the "Far Northeast Heights Drainage Master Plan" which covers this site.

Site specific Grading & Drainage Plans must be approved for each phase of the project.

At the Detention Pond the 4' concrete rundowns must extend to the 39 contour not the 44 contour. It may be more efficient to use catch basins and pipes to do this.

If you have any questions about this project, you may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.  
Civil Engineer/Hydrology

xc: Fred Aguirre

WPHYD+7818;jpc

PUBLIC WORKS DEPARTMENT

3/17/93

# **HYDROLOGY COMPUTATION WORKSHEET** City of Albuquerque DPM Section 22.2 (January, 1993) **PRECIPITATION ZONE "4"**

**Site Information:**

Project Name: *Eisenhower Middle School*  
Project Location: *Juan Tabo / Camero NE*  
Analysis Condition: *Pre-Construction*  
Analysis Date: *3/17/93*

Summary Table of Land Treatments	
Treatment	Area (Ac.)
A	0.0000
B	0.0000
C	1.2598
D	1.1658

**Total Area = 2.4256 Acres**

**Peak Discharge Rate:**

Treatment	Peak Discharge Rate (cfs/Acre)	Q x A
A	2.20	0.00
B	2.92	0.00
C	3.73	4.70
D	5.25	6.12

**Total Qp = 10.82 cfs**

Utilizing the Rational Method: Peak Intensity = 5.61 IN/HR. at Tc=0.2 Hr.

Treatment	Rational Method Coefficient, C	Q x A
A	0.39	0.00
B	0.52	0.00
C	0.66	4.66
D	0.94	6.15

**Total Qp = 10.81 cfs**

**Volumetric Runoff:**

Treatment	Excess Precipitation, E (Inches)	E x A
A	0.8	0.00
B	1.08	0.00
C	1.46	1.84
D	2.64	3.08

**Total E x A = 4.92**

Weighted E = 2.027 inches

**Volume (360) = 0.41 Acre-Ft.**

3/17/93

**HYDROLOGY COMPUTATION WORKSHEET**  
City of Albuquerque DPM Section 22.2  
(January, 1993)  
**PRECIPITATION ZONE "4"**

**Site Information:**

Project Name: *Eisenhower Middle School*

Project Location: *Juan Tabo / Camero NE*

Analysis Condition: *Post-Construction*

Analysis Date: *3/17/93*

Summary Table of Land Treatments	
Treatment	Area (Ac.)
A	0.0000
B	0.0000
C	1.1242
D	1.3014

**Total Area = 2.4256 Acres**

**Peak Discharge Rate:**

Treatment	Peak Discharge Rate (cfs/Acre)	Q x A
A	2.20	0.00
B	2.92	0.00
C	3.73	4.19
D	5.25	6.83

**Total Qp = 11.03 cfs**

Utilizing the Rational Method: Peak Intensity = 5.61 IN/HR. at Tc=0.2 Hr.

Treatment	Rational Method Coefficient, C	Q x A
A	0.39	0.00
B	0.52	0.00
C	0.66	4.16
D	0.94	6.86

**Total Qp = 11.03 cfs**

**Volumetric Runoff:**

Treatment	Excess Precipitation, E (Inches)	E x A
A	0.8	0.00
B	1.08	0.00
C	1.46	1.64
D	2.64	3.44

**Total E x A = 5.08**

Weighted E = 2.093 inches

**Volume (360) = 0.42 Acre-Ft.**



3/17/93

# **HYDROLOGY COMPUTATION WORKSHEET** City of Albuquerque DPM Section 22.2 (January, 1993) **PRECIPITATION ZONE "4"**

**Site Information:**

Project Name: *Eisenhower Middle School*  
Project Location: *Juan Tabo / Camero NE*  
Analysis Condition: *Sidewalk Culvert Sizing*  
Analysis Date: *3/17/93*

Summary Table of Land Treatments	
Treatment	Area (Ac.)
A	0.0000
B	0.0000
C	0.5149
D	1.0000

**Total Area = 1.5149 Acres**

**Peak Discharge Rate:**

Treatment	Peak Discharge Rate (cfs/Acre)	Q x A
A	2.20	0.00
B	2.92	0.00
C	3.73	1.92
D	5.25	5.25

**Total Qp = 7.17 cfs**

Utilizing the Rational Method: Peak Intensity = 5.61 IN/HR. at Tc=0.2 Hr.

Treatment	Rational Method Coefficient, C	Q x A
A	0.39	0.00
B	0.52	0.00
C	0.66	1.91
D	0.94	5.27

**Total Qp = 7.18 cfs**

**Volumetric Runoff:**

Treatment	Excess Precipitation, E (Inches)	E x A
A	0.8	0.00
B	1.08	0.00
C	1.46	0.75
D	2.64	2.64

**Total E x A = 3.39**

**Weighted E = 2.239 inches**

**Volume (360) = 0.28 Acre-Ft.**