

CITY OF ALBUQUERQUE



July 29, 2016

Richard J. Berry, Mayor

D. Mark Goodwin, P.E.
Mark Goodwin & Associates, P.A.
P.O. Box 90606
Albuquerque, NM, 87199

**RE: Fruita del Sol
(aka) Holy Cross Townhomes
Grading and Drainage Plan
Stamp 6-14-2016 (File: E19D021A)**

Dear Mr. Goodwin:

Based upon the information provided in your submittal received 11-20-2015, and a revision to the plan with Stamp Date 6-14-2016, the above referenced Grading and Plan is re-approved for Grading Permit. The changes are minor so they do not affect the previous Preliminary Plat approval.

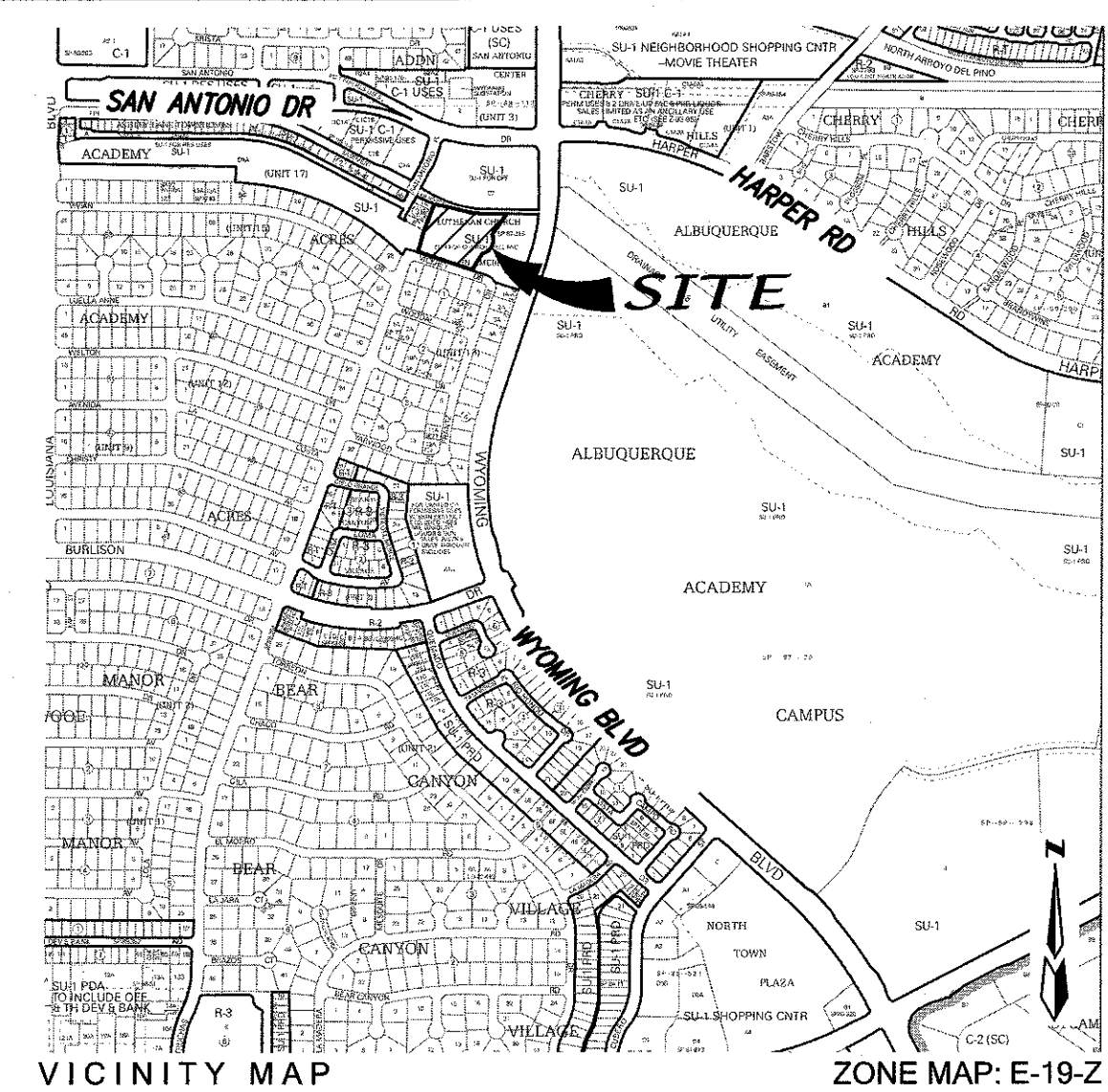
Since the original approval, the City implemented the Erosion and Sediment Control Plan and ESC Grading Permit procedures. Please coordinate with Curtis Cherne, Stormwater Quality Engineer for direction on how to complete these items prior to Construction.

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

Sincerely,

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

Orig: Drainage file



LEGAL DESCRIPTION

A TRACT OF LAND SITUATE WITHIN THE ELENA GALLEGOS GRANT, PROJECTED SECTION 30, TOWNSHIP 11 NORTH, RANGE 4 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, BEING PART OF TRACT A—1, A LAND OF LUTHERAN CHURCH IN AMERICA, AS THE SAME IS SHOWN AND DESIGNATED ON SAID PLAT FILED FOR RECORD IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON _____, 2015 IN PLAT BOOK _____, PAGE _____, AND CONTAINING 2.1514 ACRES MORE OR LESS.

NOTES

1. CONTRACTOR MUST OBTAIN A TOPSOIL DISBURSANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.
2. CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION SHALL GOVERN ALL WORK.
3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DISTRICT CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE LOTS INTO PUBLIC RIGHT-OF-WAY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
5. THE EARTHWORK CONTRACTOR SHALL STOCKPILE ENOUGH MATERIAL ADJACENT TO RETAINING WALL LOCATIONS TO BE UTILIZED FOR WALL BACKFILL.
6. SITE DOES NOT LIE IN A 100 YEAR FLOOD ZONE.
7. SIDEWALK CULVERTS ARE PER C.O.A. STANDARD DWG #2236.
8. ALL SITE WALLS SHALL CONFORM TO THE GENERAL HEIGHT AND DESIGN REGULATIONS CONTAINED IN SECTION 14-16--3-19 OF THE CITY ZONING CODE.

ENGINEER'S SEAL												SURVEY INFORMATION				BENCH MARKS				AS BUILT INFORMATION					
												FIELD NOTES													
												NO.		BY		DATE									
NO.		DATE		REMARKS				BY																	
DESIGN REVISIONS																									
DESIGNED BY		HLC		DATE		03/16																			
DRAWN BY		HLC		DATE		03/16																			
CHECKED BY		DMG		DATE		03/16																			
APPROVED FOR CONSTRUCTION																									
PROJECT NAME: WINDMILL HOMES E PLAN																									
MO./DAY/YR.												MO./DAY/YR.													
SHEET												OF													
1												1				1									

DRAINAGE REPORT

for

HOLY CROSS SUBDIVISION



Prepared for
Dragonfly Development, LLC
12809 Donette Court NE
Albuquerque, NM 87112

Prepared by
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199
(505) 828-2200
September 2015

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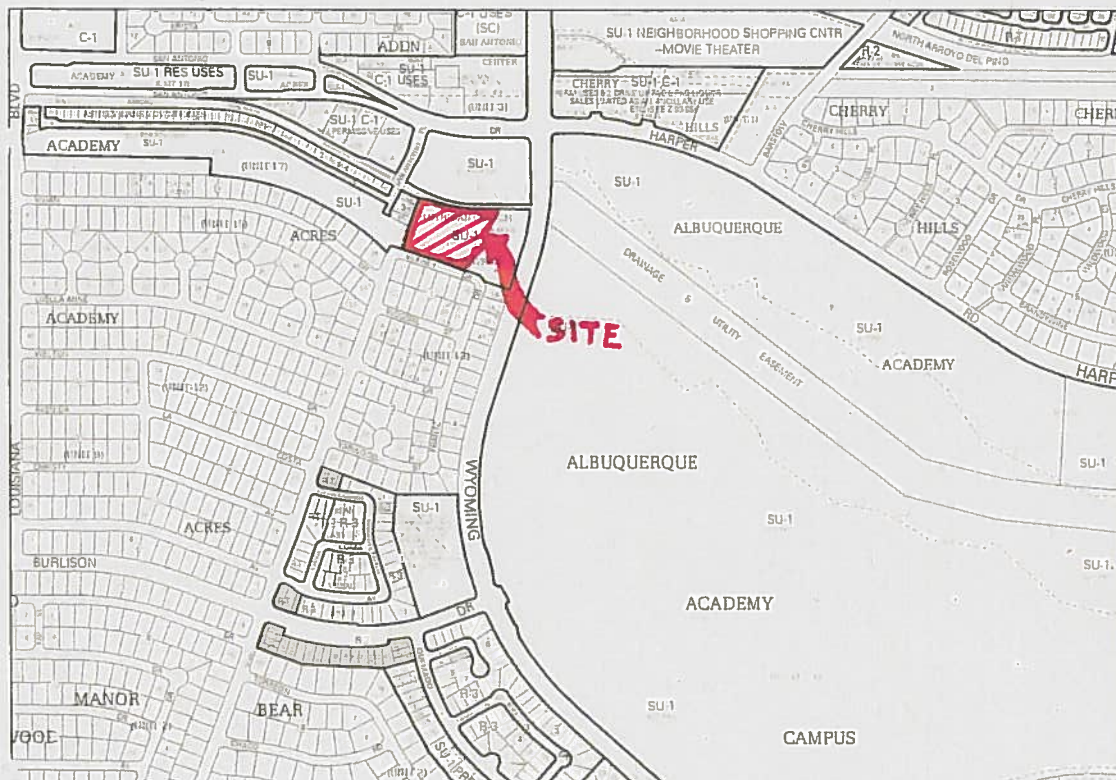
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INTRODUCTION

This report has been prepared in support of a proposed 2.15 acre site located on Albuquerque's east side (Zone Atlas E-19-Z). The proposed project includes a 21 lot single family residential townhome development. The site is bounded on the north by the Piño Arroyo Drainage channel, on the west by Academy Acres Subdivision Unit 17, on the south by Academy Acres Subdivision Unit 13 and the south by Holy Cross Church on Tract A-1-B. Once the site is subdivided into 21 lots, it will be named Holy Cross Subdivision (to be referred to as "HCS" in this report). This report is being submitted as part of the Holy Cross Subdivision preliminary plat submittal requirement.



LOCATION MAP (Zone Atlas E-19-Z)

NTS

EXISTING CONDITIONS

The HCS is vacant and covered by sparse native vegetation. The existing topography on this 2.15 acre site falls from southeast to northwest. An existing retaining wall along the western edge of the Academy Acres Unit 17 subdivision redirects portions of the existing runoff flow generated from the site. Once encountering the wall, flows are routed to the north to the Piño Arroyo Drainage Channel. All on-site runoff flows north and west to the Piño Arroyo Drainage Channel.

Runoff from the Academy Acres Units 13 & 17 flow west and north away from the HCS site. Vickrey Drive runoff flows west and through the Academy Acres site toward San Antonio Place and outfalls into the Piño Arroyo Channel. The Holy Cross church runoff flows are split north entering the channel. The Southern half flows west into the HCS into an existing temporary retention pond on our site. This will change under proposed conditions. The project site is not encumbered by a flood plain.

DEVELOPED CONDITIONS

The HCS will include 21 single family residential lots with one street connection to Vickrey Dr. It is proposed that on-site storm runoff be conveyed via street surface flow to the north stub end of Papaya Street. These flows will be routed through a 10' wide concrete rundown into the Piño Arroyo Drainage Channel. The HCS will utilize both mountable and standard curb and gutter. See Figure 1 for the on-site drainage basin map.

DRAINAGE DESIGN PROCEDURES AND RELATED STUDIES

The design criteria used in this report was in accordance with Section 22.2 of the Development Process Manual (DPM), Volume 2, Design Criteria, 1997 Edition. The hydrologic calculation procedures used to calculate the peak 10-YR and 100-YR flow rates for developed conditions are based on the DPM and the Arid Land Hydrologic Modeling (AHYMO-S4) program. Precipitation values are taken from NOAA Atlas 14. The 100-YR, 6-HR storm precipitation values are $P_{60}=1.81"$, $P_{360}=2.43"$, and $P_{24}=2.82"$. The 10-YR, 6-HR storm precipitation values are $P_{60}=1.13"$, $P_{360}=1.58"$, and $P_{24}=1.89"$. The hydrology input data and 100-YR and 10-YR runoff peak flow rates are summarized in Table 1. Appendix A contains the NOAA Precipitation Data and the AHYMO input and output data.

DRAINAGE MANAGEMENT PLAN

The on-site watershed was subdivided into four (4) drainage sub-basins (see Figure 1) which allows for hydraulic analysis at critical points within the subdivision to determine street flow carrying capacity and acceptable curb type. For Drainage Basin Map see Figure 1 in Appendix B. Flows for the HCS will be split and carried through a concrete rundown at the stub end of Papaya Street and by Vickrey Drive which is conveyed through San Antonio Place and into the Piño Arroyo Drainage.

In accordance with the City of Albuquerque's Stormwater Quality and Illicit Discharges (SQID), the use of a first flush design was not taken into consideration. The SQID refers to Section 9 of the Storm Water Pollution Control and its listings of best management practices requirements. These requirements excludes single family housing subdivisions. Appendix D contains a copy of the SQID ordinance and Section 9 of Storm Water Pollution Control.

Table 1- Summary of Hydrology

TABLE 1								
Holy Cross Subdivision								
Summary of Hydrology Parameters (AHYMO)								
Sub Basin	Area	Area	Area	Land Treatment Values				Discharge value
ID	sq.ft	acre	sq.mi.	A	B	C	D	cfs
DEVELOPED								100-R 24-HR
DB-1	12,197.5	0.28	0.000438	0.0	20.0	10.0	70.0	1.08
DB-2	27,418.4	0.63	0.000983	0.0	20.0	10.0	70.0	2.40
DB-3	40,814.3	0.94	0.001464	0.0	20.0	10.0	70.0	3.64
DB-4	13,430.7	0.31	0.000482	0.0	20.0	10.0	70.0	1.16
TOTAL	93,860.8	2.15	0.003367	0.0	20.0	10.0	70.0	8.28
EXISTING								100 yr-24 hr
100	93,715.0	2.15	0.003367	100.00				3.85

The hydraulic calculation procedures utilize the DPM Section 22 to establish the drainage design criteria for this project. It requires that the 100-YR water spread be contained within the road right-of-way and that the 10-YR design discharge may not exceed 0.5' in any collector or arterial street and will allow for one lane to remain open in both directions on arterial streets.

The Papaya St. drainage outfall will consist of a 10' wide concrete channel which conveys the on-site runoff in a controlled discharge to the Piño Arroyo Channel. This rundown constructed with a .7% slope will convey the design flow of 7.20 cfs at a depth of .36 feet with a velocity of 2.54 fps.

Autodesk Civil 3D hydraulic analysis software which uses the Manning's Equation to calculate street flow depths and velocities and the fundamental weir equation for curb opening flow capacity calculations was used to determine the hydraulic characteristics within a street cross-section at a given slope and flow rate. The results of this analysis are summarized in Table 2.

Table 2- Summary of On-site Street Capacity Results

STREET	CONTRIBUTING BASINS	Q100 (cfs)	V100 (fps)	FLOW DEPTH (ft.)	RECOMMEND CURB
Papaya St.	DB-1	1.08	1.72	.18	Roll Type
Papaya St.	DB-2	2.40	2.28	.22	Roll Type
Tangerine Ct.	DB-3	3.64	2.55	.25	Roll Type
Papaya St.	DB-4,	1.16	2.16	.17	Roll Type
Papaya St.*	DB-4, DB-3, DB-2	7.20	3.14	.30	Standard

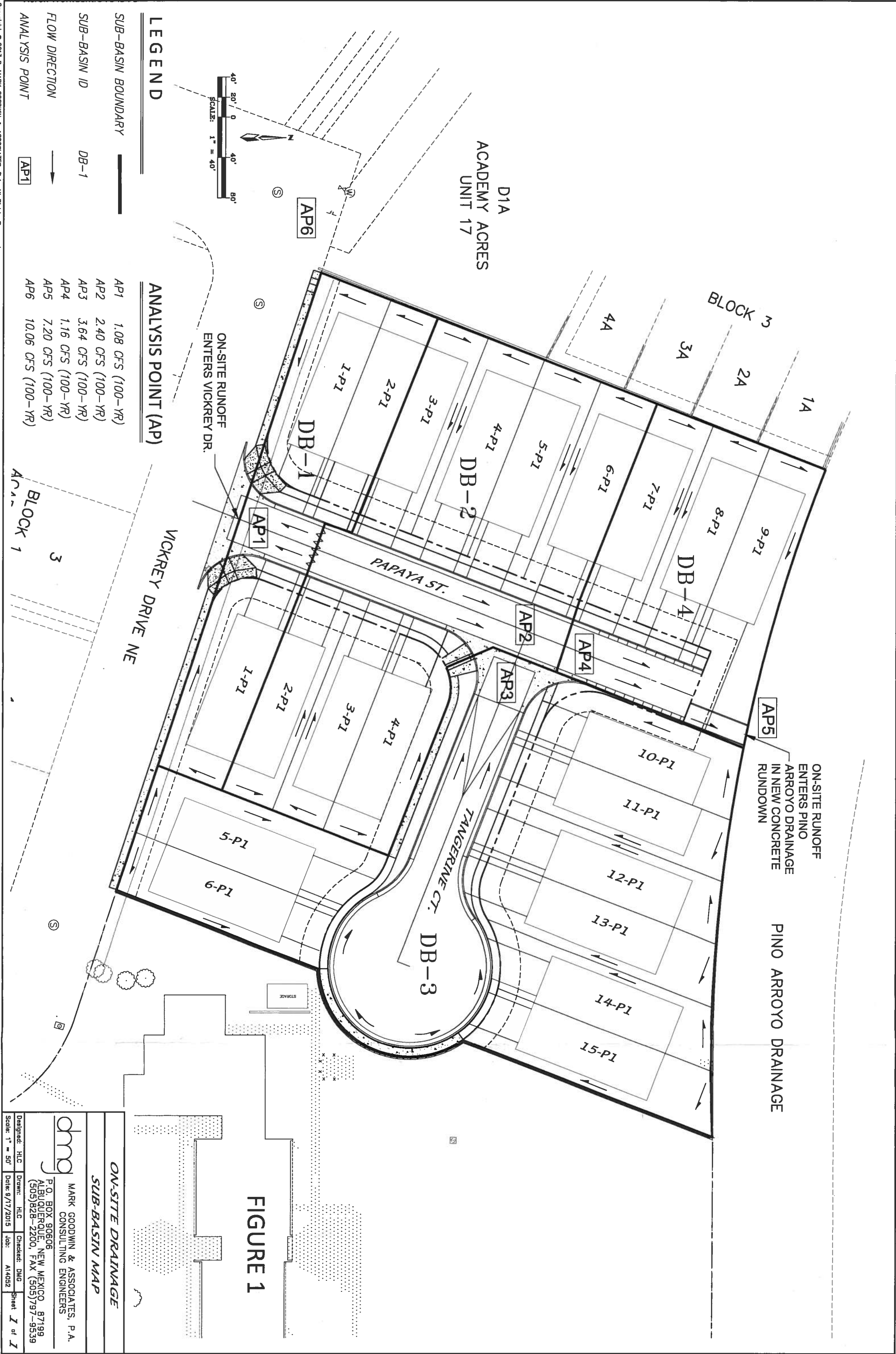
* Section of Papaya Dr. north of Tangerine Court intersection.

For all on-site streets, the 100-YR storm is contained within the road right-of-way. See Appendix B for 100-YR street hydraulic data output sheets.

CONCLUSION

As seen on the Grading & Drainage Plan, there is no underground storm drain improvements required within the Holy Cross Subdivision. Storm flow discharging will be routed within the subdivision streets to the north stub-end of Papaya Street and will be conveyed by a 10' rundown outfall structure into the Piño Arroyo Drainage Channel. A water block at the intersection of Papaya St. and Vickrey Dr. conveys the remaining 1.08 cfs which will be collected by a rundown to the west into the Academy Acres Unit 17 and discharged into the Piño Arroyo Channel crossing at San Antonio PL. See Appendix C for the flow calculations for Vickrey Dr. and San Antonio PL. A 5' concrete rundown will be installed in the existing church parking lot for drainage to the north and 3-12" wide sidewalk culverts will be installed for drainage of the south half of the existing Holy Cross Church property.

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APPENDIX A
NOAA PRECIPITATION & AHYMO INPUT & OUTPUT DATA



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Holy Cross

SUBJECT AFYMO

BY HLC

DATE 7/14/05

CHECKED _____

DATE _____

SHEET _____ OF _____

Holy Cross Townhomes: Existing Conditions

- Area of Site: $2.1514 \text{ Ac} \approx .003361563 \text{ sq mi} \approx 93714.98 \text{ sq ft}$
- Per DPM
- Existing Conditions:
 - Vacant, Sparsely covered native vegetation
 - Pino Arroyo Drainage Channel to the north
 - D1A Academy Acres Unit 17 to the West
 - Holy Cross Lutheran Church to the East
 - Vickrey Dr (R/W 50') to the South
 - Existing Run-off flows to the Northwest corner of the property towards the Pino Arroyo Drainage Channel
 - There is an existing 20' wide asphalt trail across the middle of the property

Land treatment types:

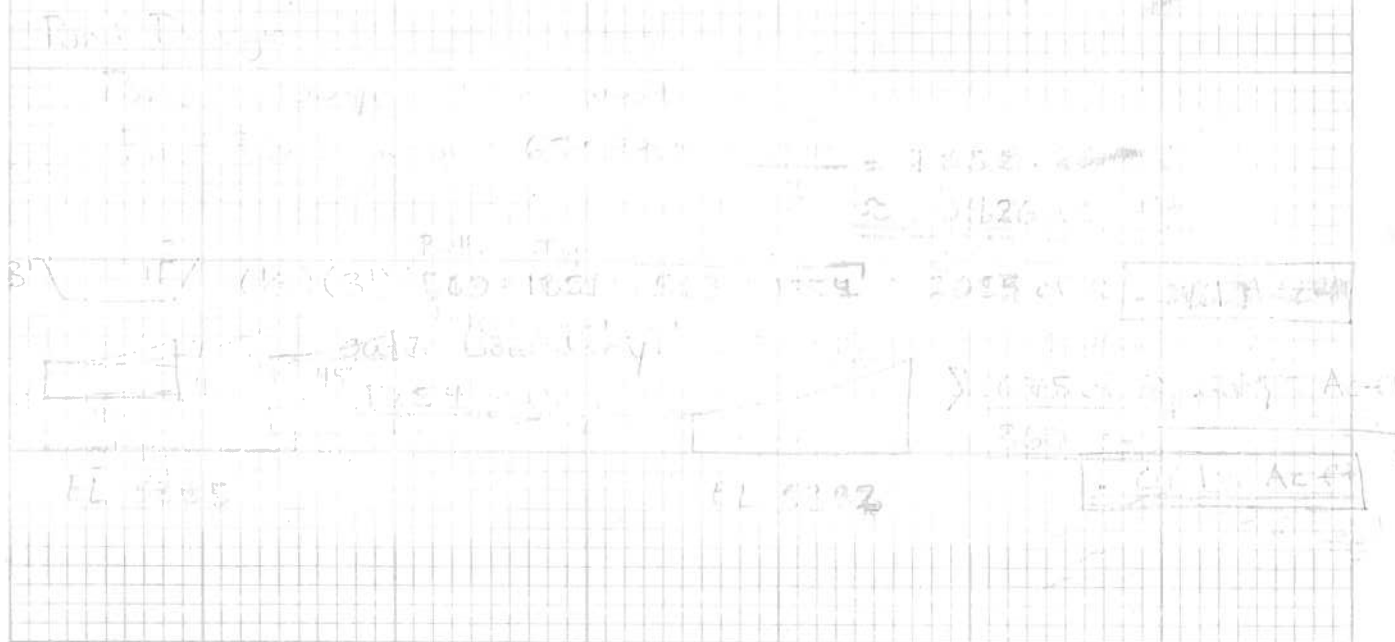
A = 100% B = 0% C = 0% D = 0%

100 yr

- Rain 1 hr: 1.81 in Rain 6 hr: 2.43 in Rain 24 hr: 2.82 in

Developed Conditions

A = 0 B = 20% C = 10% D = 70%





NOAA Atlas 14, Volume 1, Version 5
 Location name: Albuquerque, New Mexico, US*
 Latitude: 35.1575°, Longitude: -106.5609°
 Elevation: 5392 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maltaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypuk, 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 & aerals](#)

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	0.173 (0.146-0.206)	0.224 (0.188-0.267)	0.301 (0.253-0.359)	0.361 (0.301-0.429)	0.442 (0.368-0.525)	0.507 (0.420-0.603)	0.575 (0.473-0.682)	0.646 (0.529-0.767)	0.744 (0.603-0.883)	0.822 (0.663-0.974)
10-min	0.263 (0.222-0.314)	0.341 (0.286-0.406)	0.458 (0.385-0.546)	0.549 (0.458-0.653)	0.672 (0.560-0.800)	0.771 (0.639-0.917)	0.875 (0.719-1.04)	0.984 (0.804-1.17)	1.13 (0.918-1.34)	1.25 (1.01-1.48)
15-min	0.326 (0.276-0.389)	0.422 (0.354-0.503)	0.568 (0.478-0.677)	0.680 (0.568-0.809)	0.834 (0.694-0.991)	0.956 (0.793-1.14)	1.08 (0.892-1.29)	1.22 (0.997-1.45)	1.40 (1.14-1.67)	1.55 (1.25-1.84)
30-min	0.439 (0.371-0.524)	0.568 (0.477-0.677)	0.764 (0.643-0.912)	0.916 (0.765-1.09)	1.12 (0.935-1.33)	1.29 (1.07-1.53)	1.46 (1.20-1.73)	1.64 (1.34-1.95)	1.89 (1.53-2.24)	2.09 (1.68-2.48)
60-min	0.543 (0.459-0.648)	0.703 (0.590-0.838)	0.946 (0.796-1.13)	1.13 (0.947-1.35)	1.39 (1.16-1.65)	1.59 (1.32-1.90)	1.81 (1.49-2.14)	2.03 (1.66-2.41)	2.34 (1.90-2.78)	2.58 (2.08-3.06)
2-hr	0.656 (0.539-0.822)	0.844 (0.692-1.06)	1.12 (0.914-1.40)	1.34 (1.09-1.66)	1.64 (1.33-2.04)	1.89 (1.52-2.34)	2.15 (1.72-2.65)	2.42 (1.93-2.98)	2.81 (2.21-3.46)	3.12 (2.44-3.85)
3-hr	0.702 (0.580-0.868)	0.893 (0.735-1.11)	1.17 (0.968-1.45)	1.40 (1.15-1.72)	1.70 (1.39-2.10)	1.95 (1.58-2.40)	2.22 (1.79-2.72)	2.50 (2.00-3.07)	2.89 (2.29-3.54)	3.21 (2.53-3.94)
6-hr	0.822 (0.683-1.01)	1.04 (0.863-1.27)	1.34 (1.12-1.64)	1.58 (1.31-1.92)	1.91 (1.57-2.32)	2.16 (1.77-2.63)	2.43 (1.99-2.96)	2.71 (2.20-3.29)	3.10 (2.49-3.76)	3.41 (2.73-4.14)
12-hr	0.912 (0.772-1.08)	1.15 (0.970-1.37)	1.46 (1.23-1.74)	1.71 (1.43-2.02)	2.04 (1.71-2.41)	2.30 (1.91-2.72)	2.57 (2.13-3.03)	2.84 (2.34-3.36)	3.22 (2.63-3.81)	3.52 (2.85-4.17)
24-hr	1.03 (0.881-1.21)	1.29 (1.10-1.51)	1.63 (1.39-1.91)	1.89 (1.62-2.22)	2.25 (1.91-2.64)	2.53 (2.14-2.96)	2.82 (2.38-3.30)	3.12 (2.61-3.64)	3.52 (2.93-4.11)	3.84 (3.17-4.50)
2-day	1.08 (0.928-1.26)	1.36 (1.17-1.58)	1.72 (1.47-2.00)	2.00 (1.71-2.32)	2.38 (2.02-2.76)	2.67 (2.26-3.10)	2.98 (2.51-3.46)	3.29 (2.77-3.84)	3.72 (3.10-4.34)	4.05 (3.37-4.75)
3-day	1.20 (1.07-1.35)	1.50 (1.34-1.69)	1.87 (1.66-2.10)	2.16 (1.91-2.42)	2.55 (2.25-2.86)	2.85 (2.50-3.20)	3.15 (2.76-3.54)	3.46 (3.02-3.90)	3.88 (3.37-4.37)	4.20 (3.63-4.76)
4-day	1.32 (1.21-1.45)	1.64 (1.50-1.80)	2.02 (1.85-2.21)	2.32 (2.12-2.52)	2.72 (2.48-2.96)	3.02 (2.75-3.29)	3.33 (3.01-3.62)	3.63 (3.28-3.95)	4.04 (3.63-4.40)	4.34 (3.89-4.79)
7-day	1.52 (1.40-1.65)	1.89 (1.73-2.05)	2.30 (2.11-2.50)	2.62 (2.41-2.84)	3.05 (2.79-3.30)	3.36 (3.08-3.64)	3.68 (3.36-3.98)	3.98 (3.63-4.31)	4.38 (3.98-4.75)	4.67 (4.24-5.07)
10-day	1.69 (1.55-1.83)	2.09 (1.93-2.27)	2.56 (2.36-2.78)	2.93 (2.70-3.18)	3.42 (3.15-3.70)	3.79 (3.48-4.10)	4.16 (3.81-4.50)	4.52 (4.13-4.89)	4.99 (4.54-5.41)	5.34 (4.84-5.80)
20-day	2.13 (1.96-2.32)	2.65 (2.44-2.88)	3.22 (2.96-3.50)	3.65 (3.35-3.96)	4.20 (3.85-4.55)	4.60 (4.21-4.98)	4.98 (4.56-5.39)	5.35 (4.88-5.78)	5.81 (5.29-6.28)	6.13 (5.57-6.64)
30-day	2.56 (2.35-2.77)	3.18 (2.92-3.44)	3.83 (3.52-4.14)	4.31 (3.96-4.65)	4.91 (4.51-5.29)	5.34 (4.89-5.75)	5.75 (5.26-6.19)	6.13 (5.60-6.61)	6.59 (6.01-7.11)	6.91 (6.29-7.46)
45-day	3.13 (2.89-3.39)	3.88 (3.58-4.19)	4.63 (4.27-4.99)	5.16 (4.76-5.56)	5.81 (5.36-6.26)	6.25 (5.76-6.74)	6.66 (6.13-7.17)	7.01 (6.46-7.55)	7.42 (6.84-8.00)	7.68 (7.08-8.27)
60-day	3.61 (3.33-3.90)	4.47 (4.13-4.83)	5.33 (4.93-5.76)	5.94 (5.50-6.42)	6.69 (6.19-7.22)	7.20 (6.66-7.76)	7.66 (7.09-8.27)	8.08 (7.47-8.73)	8.56 (7.92-9.25)	8.86 (8.21-9.58)

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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```

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*S Holy Cross
*S 100 YEAR 24-HR STORM EVENT
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*S NEW MEXICO
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RAIN DAY=2.82 IN DT=0.0333 HRS
*S*****
*** *****
*S TOTAL SITE
*S DEVELOPED CONDITIONS
*** *****
*** BASIN 100
*** AREA = 2.1514 ACRES
*** AREA = .003361563
*** *****
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PER A=0 PER B=20 PER C=10 PER D=70
TP=-0.13333 HR MASS RAIN=-1
ID=1 CODE=1
PRINT HYD
*
FINISH

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- Version: S4.01a - Rel: 01a

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*****
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*S* Holy Cross
*S* 100 YEAR 24-HR STORM EVENT
*S*
*S* FILE: Holy Cross 2.1514ac.DAT
*S* LAST REVISED: 7-14-15
*S* NOAA ATLAS 14, VOL I ZONE: A 10
*S* NEW MEXICO
LOCATION
State of New Mexico soil infiltration values (LAND FACTORS) used for computations.
Land Treatment Initial Abstr.(in) Unif. Infiltr.(in/hour)
A 0.65 1.67
B 0.50 1.25
C 0.35 0.83
D 0.10 0.04

*****
RAINFALL
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RAIN ONE=1.81 IN RAIN SIX=2.43 IN
RAIN DAY=2.82 IN DT=0.0333 HRS

24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
DT = 0.033300 HOURS END TIME = 24.009300 HOURS
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0.0212 0.0247 0.0286 0.0324 0.0410 0.0496 0.0588
0.0684 0.0780 0.0883 0.0987 0.1093 0.1202 0.1310
0.1423 0.1536 0.1655 0.1780 0.1905 0.2045 0.2185
0.2341 0.2515 0.2689 0.2921 0.3155 0.3432 0.3759
0.4086 0.4571 0.5062 0.5717 0.6564 0.7412 0.9612
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1.8372 1.8768 1.9049 1.9323 1.9565 1.9766 1.9967
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2.1685 2.1730 2.1771 2.1811 2.1850 2.1890 2.1927
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2.2208 2.2241 2.2273 2.2305 2.2336 2.2367 2.2398
2.2428 2.2457 2.2486 2.2515 2.2544 2.2572 2.2600
2.2628 2.2655 2.2681 2.2708 2.2734 2.2760 2.2786
2.2811 2.2837 2.2862 2.2887 2.2911 2.2936 2.2960
2.2984 2.3008 2.3032 2.3056 2.3079 2.3102 2.3125
2.3148 2.3171 2.3193 2.3216 2.3238 2.3260 2.3282
2.3303 2.3325 2.3346 2.3368 2.3389 2.3410 2.3431
2.3451 2.3472 2.3492 2.3513 2.3533 2.3553 2.3573
2.3593 2.3612 2.3632 2.3651 2.3671 2.3690 2.3709

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2.3728	2.3747	2.3765	2.3784	2.3802	2.3821	2.3839
2.3857	2.3876	2.3893	2.3911	2.3929	2.3947	2.3964
2.3982	2.3999	2.4017	2.4034	2.4051	2.4068	2.4085
2.4102	2.4118	2.4135	2.4152	2.4168	2.4185	2.4201
2.4217	2.4233	2.4249	2.4265	2.4281	2.4297	2.4306
2.4313	2.4320	2.4328	2.4335	2.4342	2.4349	2.4356
2.4364	2.4371	2.4378	2.4385	2.4392	2.4400	2.4407
2.4414	2.4421	2.4429	2.4436	2.4443	2.4450	2.4457
2.4465	2.4472	2.4479	2.4486	2.4494	2.4501	2.4508
2.4515	2.4522	2.4530	2.4537	2.4544	2.4551	2.4558
2.4566	2.4573	2.4580	2.4587	2.4595	2.4602	2.4609
2.4616	2.4623	2.4631	2.4638	2.4645	2.4652	2.4659
2.4667	2.4674	2.4681	2.4688	2.4696	2.4703	2.4710
2.4717	2.4724	2.4732	2.4739	2.4746	2.4753	2.4760
2.4768	2.4775	2.4782	2.4789	2.4797	2.4804	2.4811
2.4818	2.4825	2.4833	2.4840	2.4847	2.4854	2.4861
2.4869	2.4876	2.4883	2.4890	2.4898	2.4905	2.4912
2.4919	2.4926	2.4934	2.4941	2.4948	2.4955	2.4962
2.4970	2.4977	2.4984	2.4991	2.4999	2.5006	2.5013
2.5020	2.5027	2.5035	2.5042	2.5049	2.5056	2.5063
2.5071	2.5078	2.5085	2.5092	2.5100	2.5107	2.5114
2.5121	2.5128	2.5136	2.5143	2.5150	2.5157	2.5164
2.5172	2.5179	2.5186	2.5193	2.5201	2.5208	2.5215
2.5222	2.5229	2.5237	2.5244	2.5251	2.5258	2.5266
2.5273	2.5280	2.5287	2.5294	2.5302	2.5309	2.5316
2.5323	2.5330	2.5338	2.5345	2.5352	2.5359	2.5367
2.5374	2.5381	2.5388	2.5395	2.5403	2.5410	2.5417
2.5424	2.5431	2.5439	2.5446	2.5453	2.5460	2.5468
2.5475	2.5482	2.5489	2.5496	2.5504	2.5511	2.5518
2.5525	2.5532	2.5540	2.5547	2.5554	2.5561	2.5569
2.5576	2.5583	2.5590	2.5597	2.5605	2.5612	2.5619
2.5626	2.5633	2.5641	2.5648	2.5655	2.5662	2.5670
2.5677	2.5684	2.5691	2.5698	2.5706	2.5713	2.5720
2.5727	2.5734	2.5742	2.5749	2.5756	2.5763	2.5771
2.5778	2.5785	2.5792	2.5799	2.5807	2.5814	2.5821
2.5828	2.5835	2.5843	2.5850	2.5857	2.5864	2.5872
2.5879	2.5886	2.5893	2.5900	2.5908	2.5915	2.5922
2.5929	2.5936	2.5944	2.5951	2.5958	2.5965	2.5973
2.5980	2.5987	2.5994	2.6001	2.6009	2.6016	2.6023
2.6030	2.6038	2.6045	2.6052	2.6059	2.6066	2.6074
2.6081	2.6088	2.6095	2.6102	2.6110	2.6117	2.6124
2.6131	2.6139	2.6146	2.6153	2.6160	2.6167	2.6175
2.6182	2.6189	2.6196	2.6203	2.6211	2.6218	2.6225
2.6232	2.6240	2.6247	2.6254	2.6261	2.6268	2.6276
2.6283	2.6290	2.6297	2.6304	2.6312	2.6319	2.6326
2.6333	2.6341	2.6348	2.6355	2.6362	2.6369	2.6377
2.6384	2.6391	2.6398	2.6405	2.6413	2.6420	2.6427
2.6434	2.6442	2.6449	2.6456	2.6463	2.6470	2.6478
2.6485	2.6492	2.6499	2.6506	2.6514	2.6521	2.6528
2.6535	2.6543	2.6550	2.6557	2.6564	2.6571	2.6579
2.6586	2.6593	2.6600	2.6607	2.6615	2.6622	2.6629

2.6636 2.6644 2.6651 2.6658 2.6665 2.6672 2.6680
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2.6939 2.6947 2.6954 2.6961 2.6968 2.6975 2.6983
2.6990 2.6997 2.7004 2.7012 2.7019 2.7026 2.7033
2.7040 2.7048 2.7055 2.7062 2.7069 2.7076 2.7084
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2.7646 2.7654 2.7661 2.7668 2.7675 2.7683 2.7690
2.7697 2.7704 2.7711 2.7719 2.7726 2.7733 2.7740
2.7747 2.7755 2.7762 2.7769 2.7776 2.7784 2.7791
2.7798 2.7805 2.7812 2.7820 2.7827 2.7834 2.7841
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2.7899 2.7906 2.7913 2.7921 2.7928 2.7935 2.7942
2.7949 2.7957 2.7964 2.7971 2.7978 2.7986 2.7993
2.8000 2.8007 2.8014 2.8022 2.8029 2.8036 2.8043
2.8050 2.8058 2.8065 2.8072 2.8079 2.8087 2.8094
2.8101 2.8108 2.8115 2.8123 2.8130 2.8137 2.8144
2.8151 2.8159 2.8166 2.8173 2.8180 2.8188 2.8195
2.8200

*** TOTAL SITE

**S DEVELOPED CONDITIONS

*** BASIN 100

*** AREA = 2.1514 ACRES

*** AREA = .003361563

COMPUTE NM HYD

ID=1 HYD NO=100 AREA= 0.003361563 SQ MI

PER A=0 PER B=20 PER C=10 PER D=70

TP=-0.13333 HR MASS RAIN=-1

K = 0.072665HR TP = 0.133330HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 9.2881 CFS UNIT VOLUME = 0.9982 B = 526.28 P60 = 1.8100
AREA = 0.002353 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033300

K = 0.123123HR TP = 0.133330HR K/TP RATIO = 0.923444 SHAPE CONSTANT, N = 3.832145
UNIT PEAK = 2.6006 CFS UNIT VOLUME = 0.9953 B = 343.82 P60 = 1.8100
AREA = 0.001008 SQ MI IA = 0.45000 INCHES INF = 1.11000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033300

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 2.06535 INCHES = 0.3703 ACRE-FEET
PEAK DISCHARGE RATE = 8.28 CFS AT 1.532 HOURS BASIN AREA = 0.0034 SQ. MI.

*
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:09:03
-(sOp10h4099T~&l6D

APPENDIX B
STREET CAPACITY ANALYSIS

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Friday, Sep 18 2015

DB-1 Papaya St. Q100 Street Capacity (27' F-F) AP1

User-defined

Invert Elev (ft) = 0.01
Slope (%) = 1.32
N-Value = 0.015

Highlighted

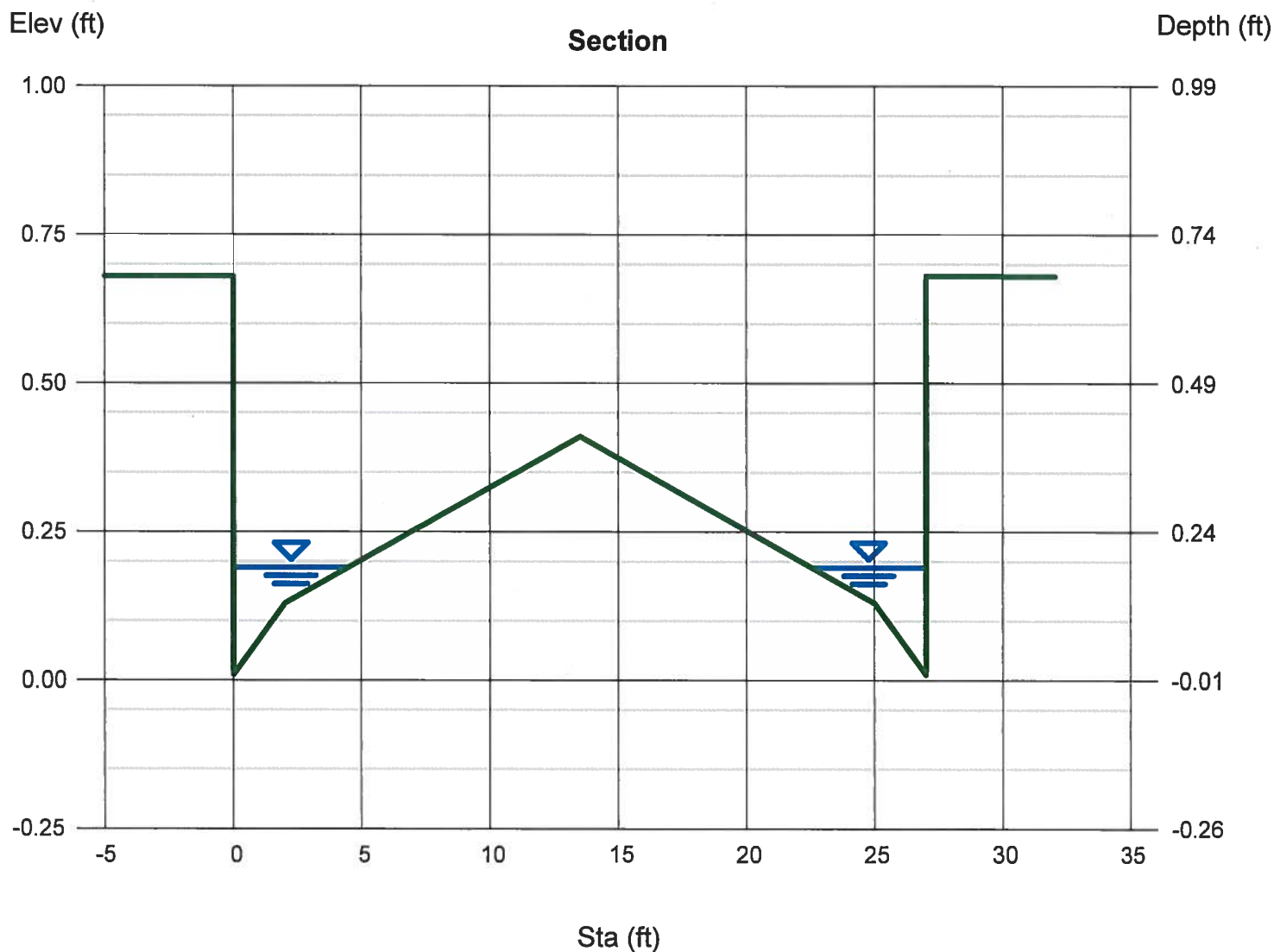
Depth (ft) = 0.18
Q (cfs) = 1.080
Area (sqft) = 0.63
Velocity (ft/s) = 1.72
Wetted Perim (ft) = 9.30
Crit Depth, Yc (ft) = 0.19
Top Width (ft) = 8.93
EGL (ft) = 0.23

Calculations

Compute by: Known Q
Known Q (cfs) = 1.08

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(13.51, 0.41, 0.017)-(25.01, 0.13, 0.017)-(27.01, 0.01, 0.013)-(27.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Friday, Sep 18 2015

DB-2 Papaya St. Q100 Street Capacity (27' F-F) AP2

User-defined

Invert Elev (ft) = 0.01
Slope (%) = 2.00
N-Value = 0.016

Calculations

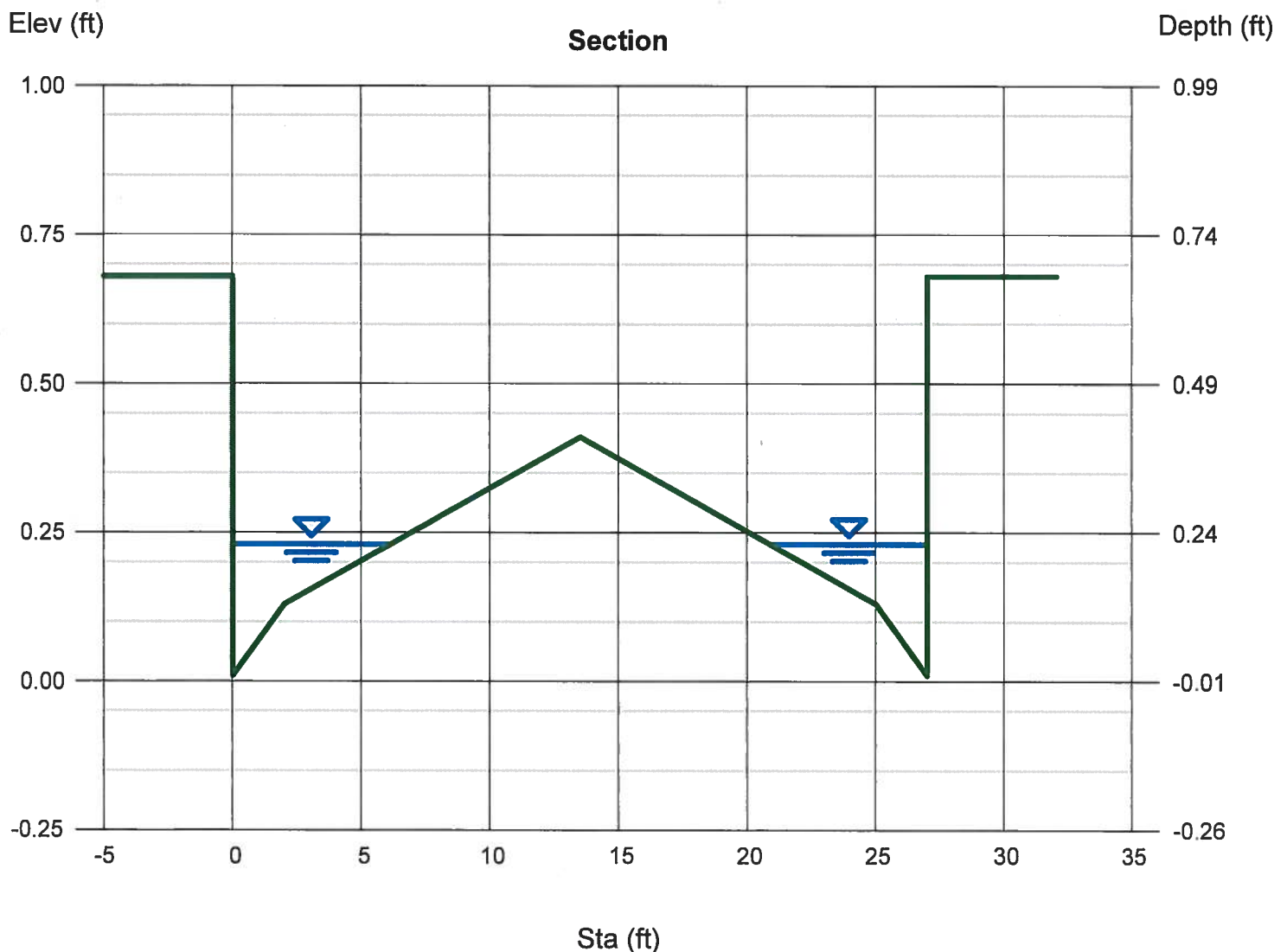
Compute by: Known Q
Known Q (cfs) = 2.40

Highlighted

Depth (ft) = 0.22
Q (cfs) = 2.400
Area (sqft) = 1.05
Velocity (ft/s) = 2.28
Wetted Perim (ft) = 12.66
Crit Depth, Yc (ft) = 0.25
Top Width (ft) = 12.22
EGL (ft) = 0.30

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(13.51, 0.41, 0.017)-(25.01, 0.13, 0.017)-(27.01, 0.01, 0.013)-(27.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Tuesday, Sep 22 2015

DB-3 Papaya St. Q100 Street Capacity (26' F-F) AP3

User-defined

Invert Elev (ft) = 0.01
Slope (%) = 2.00
N-Value = 0.016

Calculations

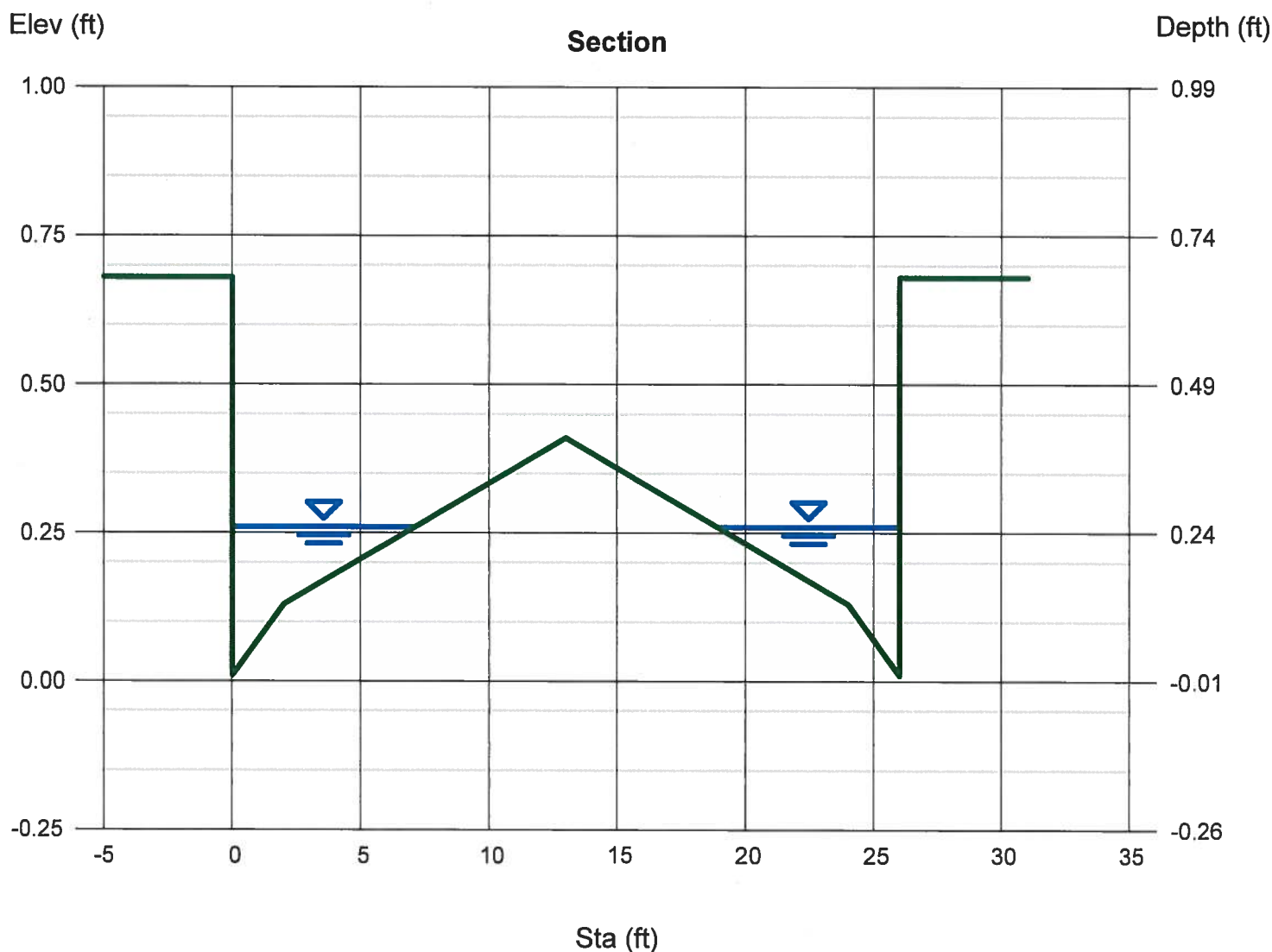
Compute by: Known Q
Known Q (cfs) = 3.64

Highlighted

Depth (ft) = 0.25
Q (cfs) = 3.640
Area (sqft) = 1.42
Velocity (ft/s) = 2.55
Wetted Perim (ft) = 14.72
Crit Depth, Yc (ft) = 0.29
Top Width (ft) = 14.22
EGL (ft) = 0.35

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(13.01, 0.41, 0.017)-(24.01, 0.13, 0.017)-(26.01, 0.01, 0.013)-(26.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Tuesday, Sep 22 2015

DB-4 Papaya St. Q100 Street Capacity (27' F-F) AP4

User-defined

Invert Elev (ft) = 0.01
Slope (%) = 2.00
N-Value = 0.015

Highlighted

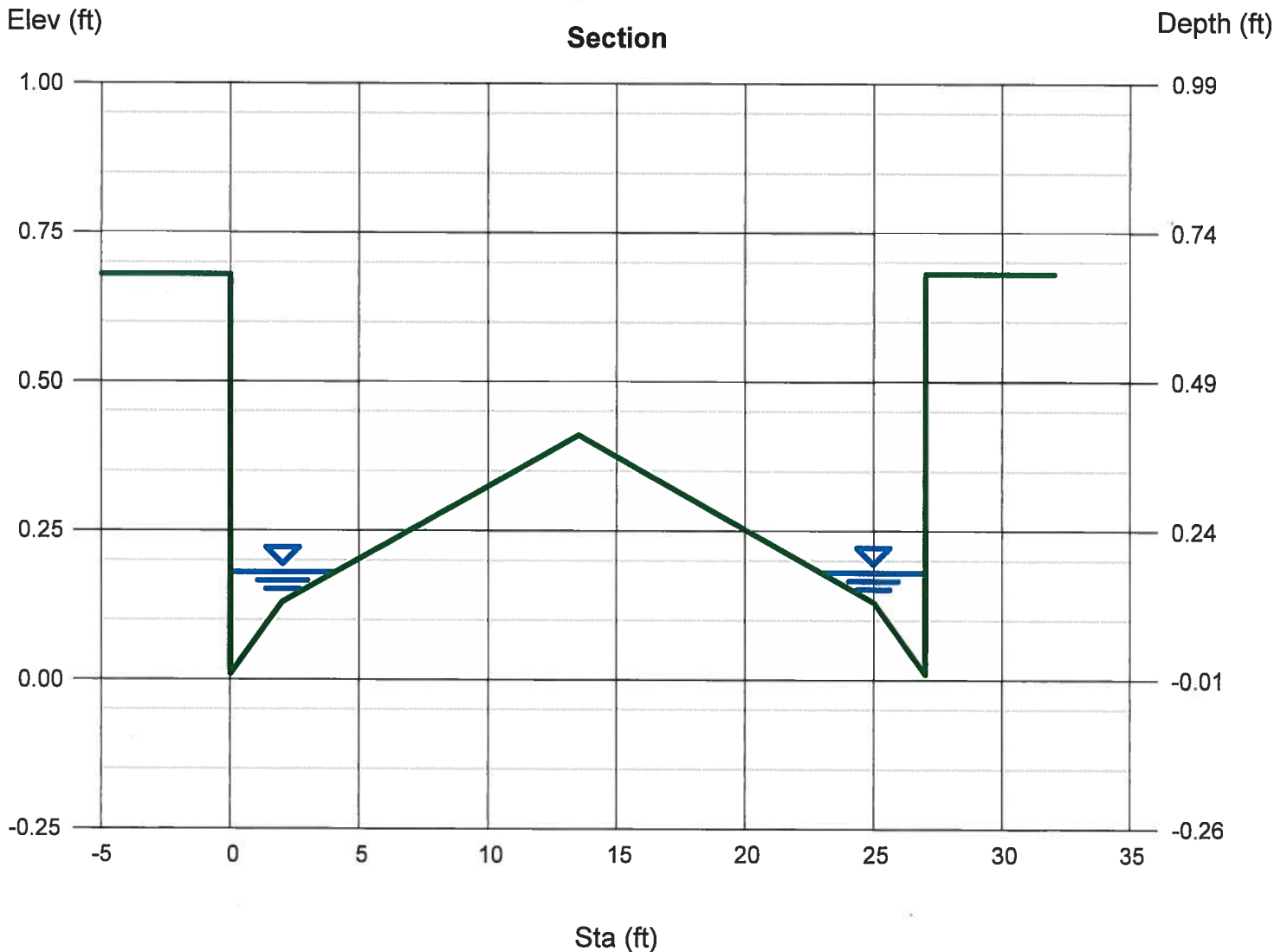
Depth (ft) = 0.17
Q (cfs) = 1.160
Area (sqft) = 0.54
Velocity (ft/s) = 2.14
Wetted Perim (ft) = 8.46
Crit Depth, Yc (ft) = 0.20
Top Width (ft) = 8.11
EGL (ft) = 0.24

Calculations

Compute by: Known Q
Known Q (cfs) = 1.16

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(13.51, 0.41, 0.017)-(25.01, 0.13, 0.017)-(27.01, 0.01, 0.013)-(27.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Tuesday, Sep 22 2015

DB-4 Papaya St. Q100 Street Capacity (27' F-F) AP5

User-defined

Invert Elev (ft) = 0.01
Slope (%) = 2.00
N-Value = 0.016

Highlighted

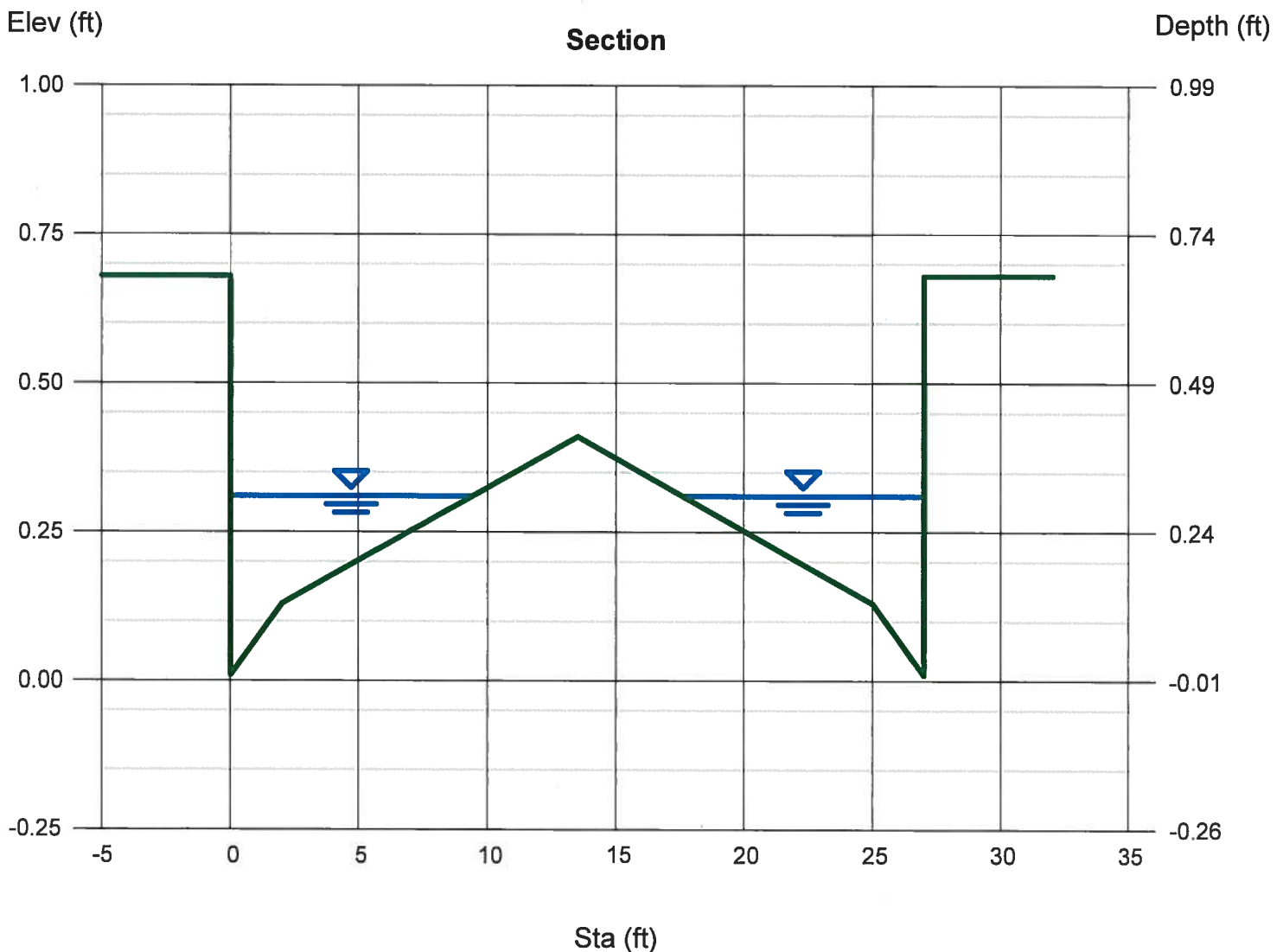
Depth (ft) = 0.30
Q (cfs) = 7.200
Area (sqft) = 2.29
Velocity (ft/s) = 3.14
Wetted Perim (ft) = 19.40
Crit Depth, Yc (ft) = 0.35
Top Width (ft) = 18.79
EGL (ft) = 0.45

Calculations

Compute by: Known Q
Known Q (cfs) = 7.20

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(13.51, 0.41, 0.017)-(25.01, 0.13, 0.017)-(27.01, 0.01, 0.013)-(27.02, 0.68, 0.013)



Weir Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Thursday, Sep 24 2015

10 ft. Concrete Rundown Capacity

Rectangular Weir

Crest = Sharp
Bottom Length (ft) = 10.00
Total Depth (ft) = 0.58

Calculations

Weir Coeff. Cw = 3.33
Compute by: Known Q
Known Q (cfs) = 7.20

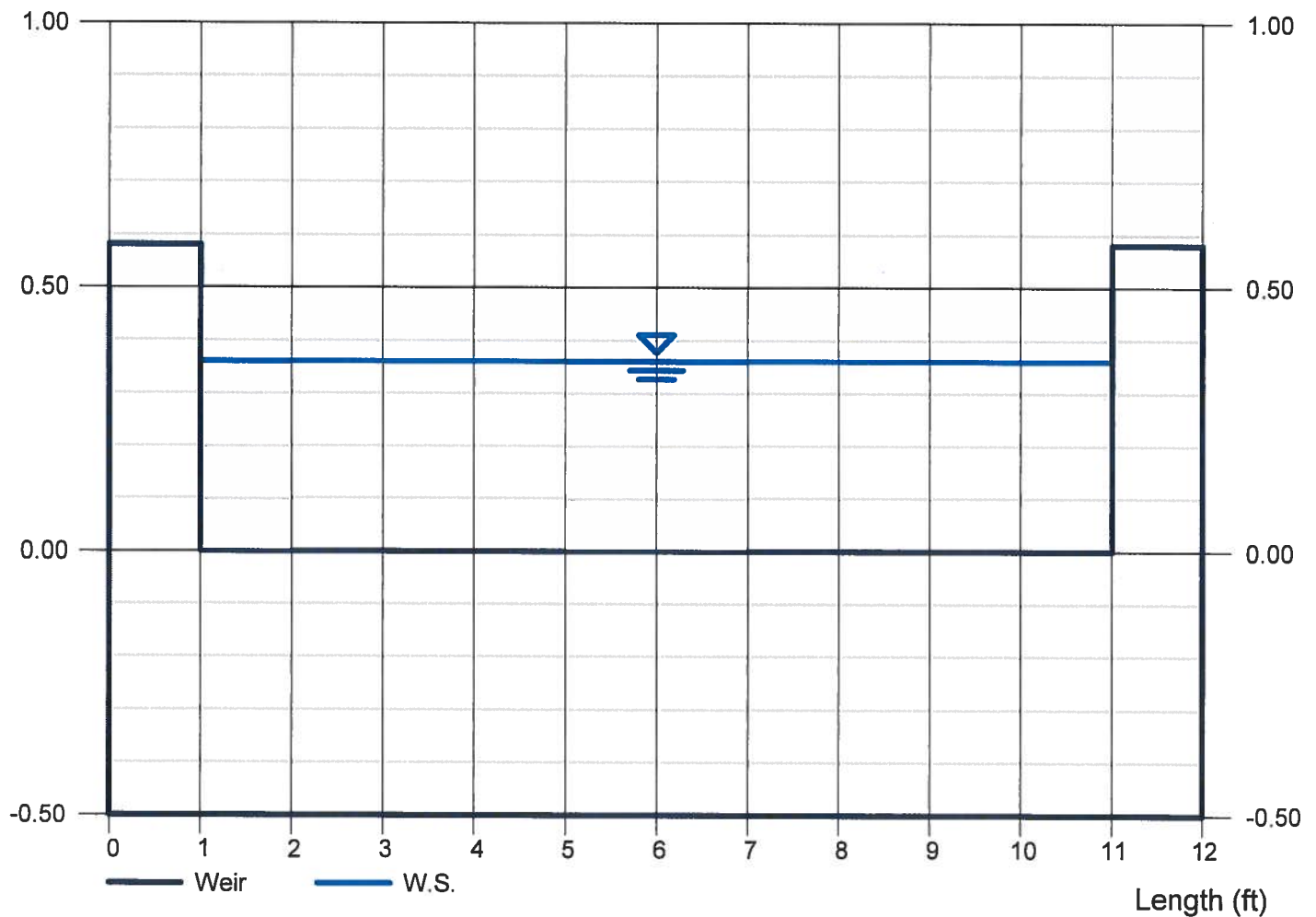
Highlighted

Depth (ft) = 0.36
Q (cfs) = 7.200
Area (sqft) = 3.60
Velocity (ft/s) = 2.00
Top Width (ft) = 10.00

Depth (ft)

10 ft. Concrete Rundown Capacity

Depth (ft)



APPENDIX C
VICKREY DR. / SAN ANTONIO PL. NE
RUN OFF ANALYSIS

Received 10/10/76

DRAINAGE REPORT

ACADEMY ACRES

UNIT - 13.

ALBUQUERQUE, NEW MEXICO



MURRAY-McCORMICK, INC.
ENVIRONMENTAL DESIGN

ECOSYSTEMS ANALYSIS • PLANNING • LAND SURVEYS • ENGINEERING

2601 WYOMING BLVD., NE. SUITE F / ALBUQUERQUE, N.M. 87110 / 505-292-1936

10.06 cfs in Vickrey Drive

Holy Cross
Subdivision

Holy Cross Church

UNPLATTED

1.08 cfs



→ 2000

SCALE IN FEET

ACADEMY ACRE
SUSDIVISION

Handwritten examples of the letter 'N' in various styles and sizes, including cursive and print variations.

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ALBUQUERQUE
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ACADEMY ACRES

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BEING A REPLAT OF
TRACT "A-2"

ALBUQUERQUE, NEW MEXICO

MAY 1975

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 104-10000-10000 (APR 2004)

THE 1980s (Approx)

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FIGURE 1

DRAINAGE CHARACTERISTICS

MURRAY-McCORMICK, INC.
ENVIRONMENTAL DESIGN

THE UNIVERSITY OF CHICAGO

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Tuesday, Sep 22 2015

VICKREY RD. Q100 Street Capacity (50 ROW)

User-defined

Invert Elev (ft) = 0.01
Slope (%) = 2.00
N-Value = 0.016

Calculations

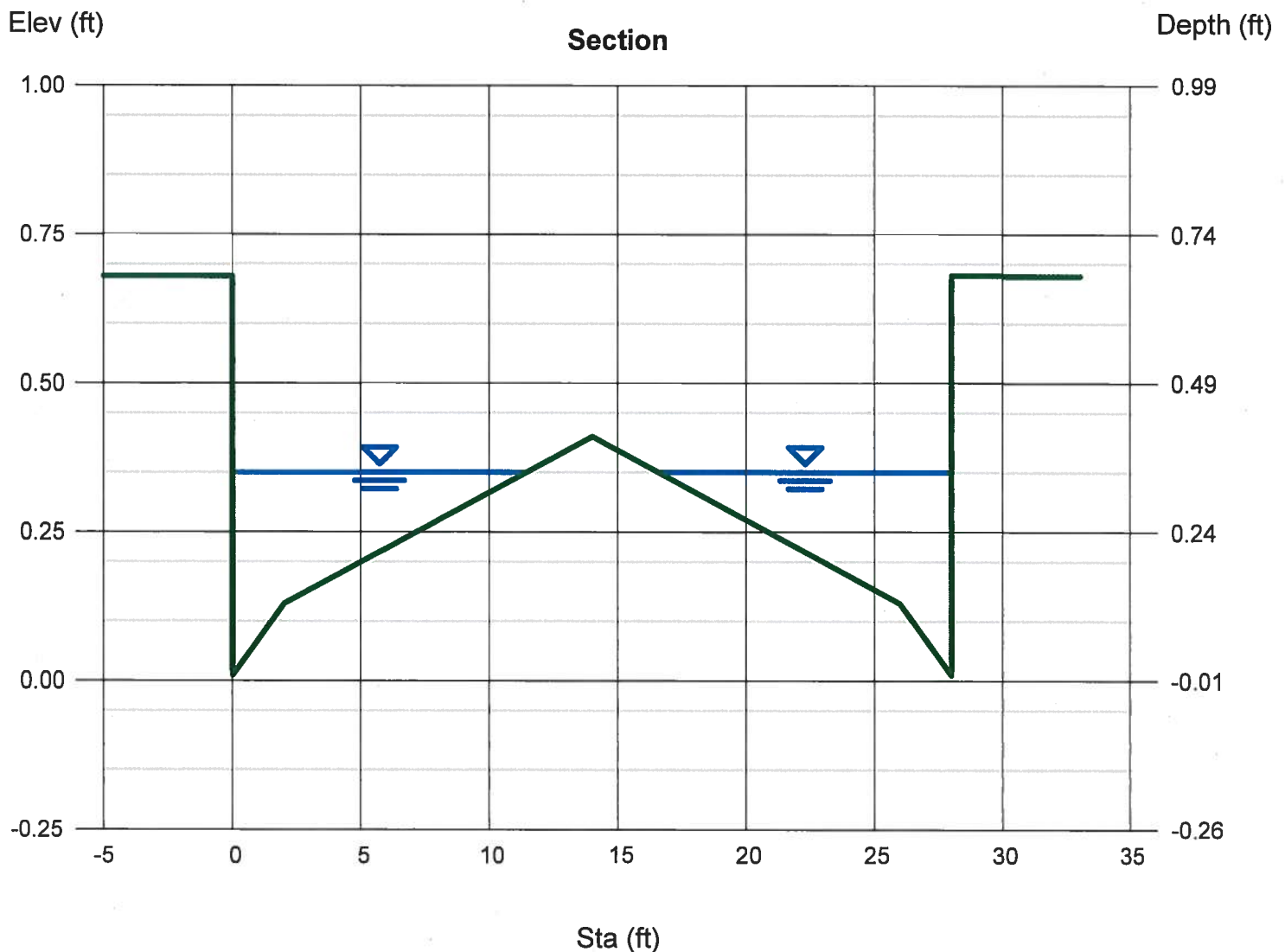
Compute by: Known Q
Known Q (cfs) = 10.06

Highlighted

Depth (ft) = 0.34
Q (cfs) = 10.06
Area (sqft) = 3.20
Velocity (ft/s) = 3.15
Wetted Perim (ft) = 23.55
Crit Depth, Yc (ft) = 0.39
Top Width (ft) = 22.87
EGL (ft) = 0.49

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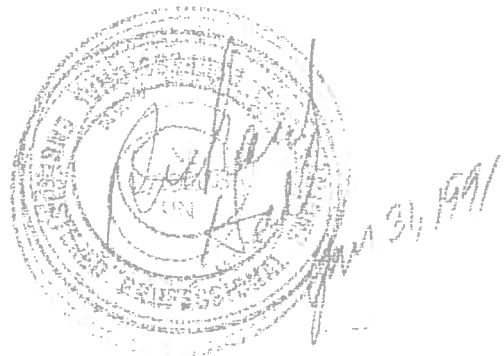
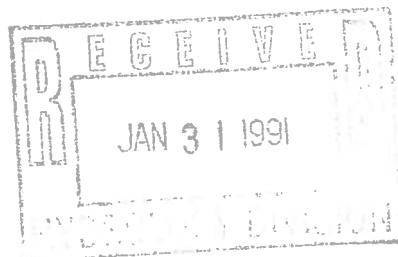


HALL ENGINEERING COMPANY INC.
ENGINEERING • SURVEYING • PLANNING • CONSTRUCTION

DRAINAGE REPORT

TRACTS D-1-A AND D-1-B
ACADEMY ACRES UNIT 17

January, 1991



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Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Thursday, Sep 24 2015

San Antonio Dr. Q100 Street Capacity (24' F-F)

User-defined

Invert Elev (ft) = 0.50
Slope (%) = 1.00
N-Value = 0.015

Calculations

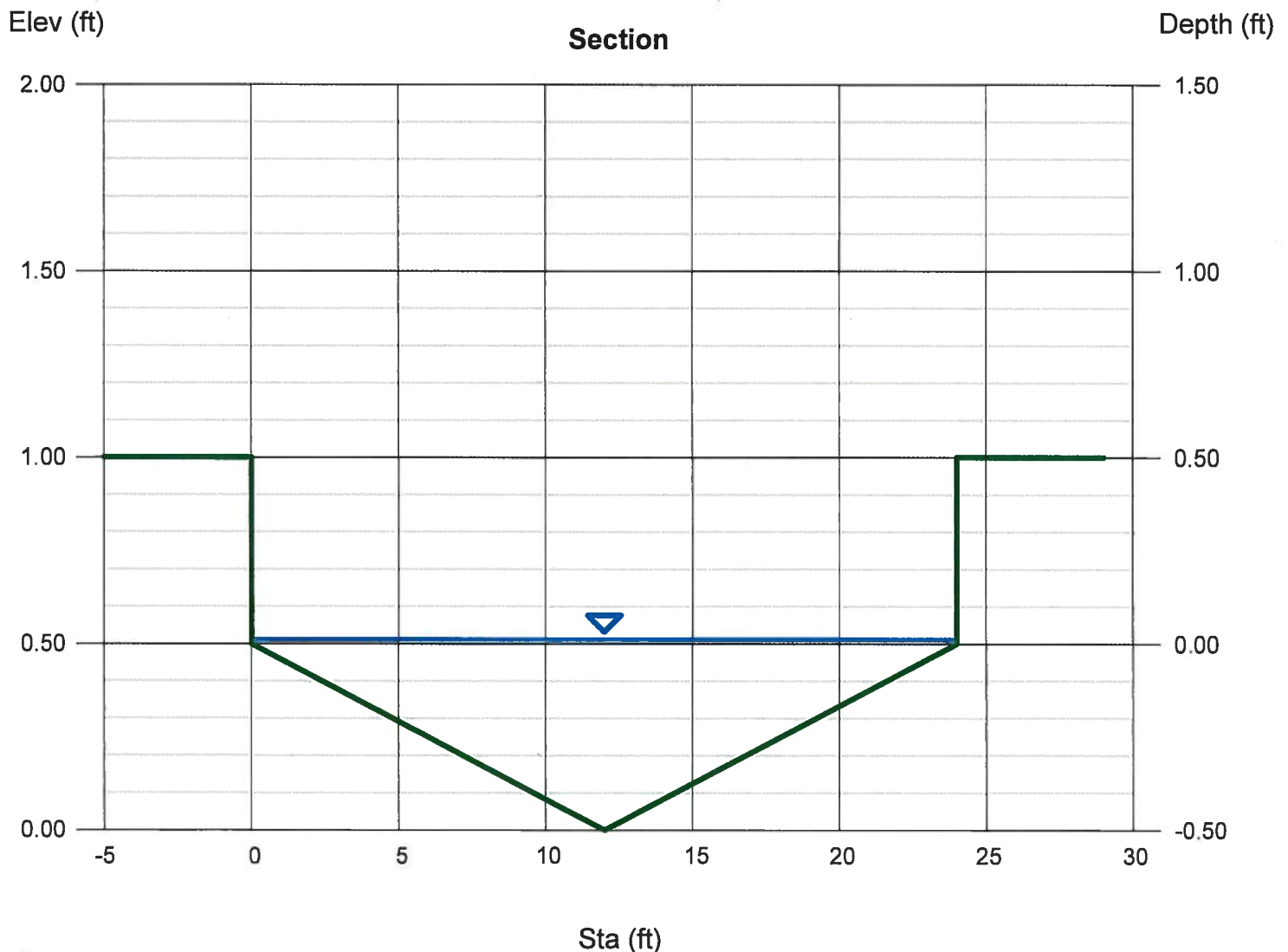
Compute by: Known Q
Known Q (cfs) = 24.30

Highlighted

Depth (ft) = 0.01
Q (cfs) = 24.30
Area (sqft) = 6.24
Velocity (ft/s) = 3.89
Wetted Perim (ft) = 24.04
Crit Depth, Yc (ft) = 0.07
Top Width (ft) = 24.00
EGL (ft) = 0.25

(Sta, El, n)-(Sta, El, n)...

(0.00, 1.00)-(24.00, 0.50, 0.015)-(24.00, 1.00, 0.015)



APPENDIX D

**CITY OF ALBUQUERQUE STORM WATER QUALITY & ILLICIT DISCHARGES
ORDINANCE & SECTION 9 STORM WATER POLLUTION CONTROL**

ORDINANCE

STORMWATER QUALITY AND ILLICIT DISCHARGES

REGULATING STORMWATER QUALITY AND PROHIBITING ILLICIT DISCHARGES INTO THE CITY'S STORMWATER DRAINAGE FACILITIES

WHEREAS the Clean Water Act was enacted by Congress in 1972;

WHEREAS the City has been subject to stormwater regulation through its Municipal Separate Stormwater System (MS4) permit since 2003;

WHEREAS the City was issued a new Watershed Based MS4 Permit on December 22, 2014 that increased regulatory requirements;

WHEREAS enhanced water quality in the Rio Grande is a community value;

WHEREAS enacting this Ordinance will further compliance with an unfunded federal mandate and will reduce stormwater contaminants; and

WHEREAS this ordinance is a significant step toward addressing issues with the existing developed environment relating to stormwater;

BE IT ORDAINED BY THE COUNCIL, THE GOVERNING BODY OF THE CITY OF ALBUQUERQUE:

SECTION 1. The Stormwater Quality and Illicit Discharges Ordinance is hereby adopted to read as follows:

Sec 1. Definitions.

As used in this article, the following terms shall have the meanings ascribed in this section unless the context of their usage clearly indicates another meaning:

Discharge shall mean the introduction or addition of any pollutant, stormwater, or other substance into the MS4, or to allow, permit, or suffer any such introduction or addition that is not specifically allowed by the City of Albuquerque's current MS4 permit.

Discharger shall mean a person who allows, causes, permits, suffers, or threatens to cause a discharge.

Illicit Discharge means any discharge to the MS4 that is not composed entirely of stormwater except discharges pursuant to a NPDES permit or those allowed in Section 10(b).

Impervious – Pertaining to surfaces that are mainly artificial structures that are the result of design, construction, and maintenance – such as pavements (roads, sidewalks, driveways, and parking lots) that are covered by impenetrable materials such as asphalt, concrete, brick, and

stone – and rooftops. Soils compacted by urban development are also highly impervious.

Industrial Activity Certification (IAC) means a certification submitted to the Stormwater Engineer showing compliance with EPA industrial activity regulations.

Industrial Facility means a property that has discharges associated with industrial activity as defined by federal regulations

MS4 or Municipal separate storm sewer system shall mean the system of conveyances owned or operated by the City or any co-permittee of the City that is designed or used for collecting, retention, storage, or conveying storm water.

Non-structural control shall mean a maintenance or operational practice designed to prevent, reduce, or mitigate the potential of stormwater runoff contact with pollution-causing activities.

NPDES shall mean National Pollutant Discharge Elimination System.

NPDES permit shall mean a permit issued by the EPA under Title 33 of the United States Code that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general basis.

Parcel shall mean a contiguous piece of land that is under common ownership or control or that is part of a larger common plan of development or sale.

Person shall mean an individual, corporation, organization, governmental entity, business trust, partnership, association, or other legal entity, or an agent or an employee thereof.

Point Source means any discernible and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural Stormwater runoff.

Pollutant shall mean, but shall not be limited to, dredged soil, solid waste, incinerator residue, sewage, garbage, sewage sludge, filter backwash, munitions, chemical wastes, biological materials, radioactive materials, wrecked or discarded equipment, sediment, and other material, or any combination thereof, discharged into the MS4 or any waters of the United States.

Pollution shall mean the alteration of the physical, chemical, or biological quality of, or the contamination of, any waters of the United States that renders the water harmful, detrimental or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or otherwise impairs the quality of the water.

Stormwater means stormwater runoff, snow melt runoff, and surface runoff and drainage.

Stormwater Discharge Associated with Industrial Activity means the discharge from any

conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant (See 40 CFR 122.26(b)(14) for specifics of this definition).

Stormwater Engineer means the individual who is responsible for enforcement of this ordinance as designated by the Director of the Department of Municipal Development.

Stormwater Control Permit for Erosion and Sediment Control or SWP. The permit issued pursuant to the Drainage Control Ordinance or this ordinance.

Structure shall mean that which is built or constructed, an edifice or building of any kind, or any piece of work, including, but not limited to, a paved surface, that is artificially built up or composed of parts joined together in some definite manner. The term does not include a street, a channel, or a public utility.

Structural Control, any structure built and maintained to prevent, reduce, or mitigate the potential of stormwater runoff contact with pollution-causing activities.

Sec. 2. General Requirements.

- (A) A person who owns a parcel of property within the City of Albuquerque's corporate boundaries shall be responsible for obtaining a SWP as required in the Drainage Ordinance or as desired by the person owning the parcel in order to comply with this Ordinance. Until a change in ownership of the parcel or termination of the applicable SWP, that person is the SWP permittee.
- (B) If a parcel is located outside the corporate boundaries of the City and stormwater from any portion of the parcel drains into the MS4, then that parcel is subject to this Ordinance.
- (C) Any requirement for a SWP is in addition to any other permit required for development of a parcel.
- (D) The requirements contained in the SWP, at the time of issuance, shall not be increased due to new regulations or adoption of more restrictive requirements in the Development Process Manual, so long as compliance with all permit requirements are maintained.

Sec. 3. Industrial Activity Certification.

At any facility with activity covered by the EPA's Standard Industrial Codes, the operator shall submit to the Stormwater Engineer an Industrial Activity Certification (IAC) in a form approved by the Stormwater Engineer. The IAC may include any one of the following:

- (A) A copy of the application for an individual permit from the EPA for stormwater discharges from industrial activity at the facility;

- (B) A copy of the permit issued by the EPA for stormwater discharges from industrial activity at the facility;
- (C) A copy of the Notice of Intent (NOI) for coverage under a Multi-Sector General Permit for stormwater discharges associated with industrial activity issued by the EPA;
- (D) A statement of commitment to file an application for an individual permit from the EPA for stormwater discharges from industrial activity at the facility by a date certain agreed to by the Stormwater Engineer; or
- (E) A statement of commitment to file a NOI for coverage under a general permit for stormwater discharges associated with industrial activity issued by the EPA by a date certain agreed to by the Stormwater Engineer.

Sec. 4. Amendment of a SWP.

- (A) An amendment to the SWP is required in the following events:
 - (1) Change in ownership of the property associated with the SWP. An amended permit issued due solely to a change in ownership shall contain the same terms and conditions as the initial permit;
 - (2) Any substantial deviation is made to a non-structural control or any change is made to a structural control on which the SWP is based; or
 - (3) The subsequent additional development of any parcel covered by that SWP, unless the additional development has already been anticipated and provided for in the Stormwater Pollution Prevention Plan (SWPPP) on which the SWP is based.
- (B) Amendments to a SWP to satisfy subsections (A)(2) and (A)(3) of this section must be obtained before commencement of the activity that triggers the need for the amendment.
- (C) To amend a SWP, the SWP permittee must submit any revisions to the permit including the inspection checklist, maintenance plan and associated construction drawings, together with the appropriate form and amendment fee. The Stormwater Engineer shall review the amendment application and either approve or deny the amendment application based on compliance with the applicable provisions of this article and the Development Process Manual.
- (D) If an amendment is denied, the applicant can appeal to the Technical Standards Advisory Committee set forth in Section 14-5-2-15 of the Drainage Ordinance.

Sec. 5. Revocation of SWP

- (A) The Stormwater Engineer may revoke a SWP after notice and opportunity for a hearing pursuant to this Ordinance if he finds that:
 - (1) The SWP permittee knew or should have known that a statement made in the application for the SWP was false;
 - (2) The SWP permittee has violated any provision of its SWP or of this Ordinance including, but not limited to, failure to amend a SWP;
 - (3) The SWP permittee or anyone acting on his behalf commits or threatens to commit an act of violence against an official either on or off the job for the purpose of intimidating the official so that he will not perform his duties under this Ordinance; or
 - (4) The SWP has been issued in error.
- (B) The Stormwater Engineer shall send a written notification by certified mail, return receipt requested, to the SWP permittee informing him of the grounds for revoking his SWP and inform them of appeal right. The SWP permittee may request a hearing pursuant to this Ordinance by filing a written request with the Stormwater Engineer not later than the tenth day after notification of the grounds for revocation is sent.

Sec. 6. SWP Duration and Termination

- (A) A SWP shall be in effect until expiration, amendment, or termination.
- (B) A SWP may be terminated if a regional or other large stormwater quality program eliminates the need for the SWP or if:
 - (1) All Structural Controls are dedicated to and accepted by the City for maintenance; and
 - (2) No Nonstructural Controls are continuing.
- (C) Determinations regarding termination of a SWP are made by the Stormwater Engineer under the Amendment procedures of this ordinance.

Sec. 7, SWP Exemptions

- (A) Exemptions from the requirement to obtain a SWP may be granted to property owners whose property falls under the following percentage of impervious surface versus overall parcel area criteria:

- (1) Detached Residential, Attached Residential and Commercial properties less than one (1) acre in area are exempt. Certain commercial land uses may require further examination when determining if such an exemption is appropriate to the proposed land use**.
- (2) Commercial ^{and} multi-family properties between one (1) and two and one half ~~(2.5)~~ 5 acres whose total impervious area is less than 65% of the total area are exempt, otherwise a SWP is required. Certain commercial land uses may require further examination when determining if such an exemption is appropriate to the proposed land use**. Non-exempt properties which fall into this size category are given six (6) years to obtain a SWP from the date of Certificate-of-Occupancy (CO).
- (3) Commercial multi-family properties between five (5.0) and twenty (20) acres whose total impervious area is less than 65% of the total area are exempt, otherwise a SWP is required within two (2) years. Certain commercial land uses may require further examination when determining if such an exemption is appropriate to the proposed land use**. Non-exempt properties which fall into this size category are given three (3) years to obtain a SWP from the date of CO or three (3) years from date of ordinance.
- (4) Commercial multi-family properties greater than twenty (20) acres whose total impervious area is less than 65% of the total area are exempt, otherwise a SWP is required. Certain commercial land uses may require further examination when determining if such an exemption is appropriate to the proposed land use**. Non-exempt properties which fall into this size category are required to obtain a SWP prior to obtaining a CO within one (1) year.
- (5) In the event an otherwise exempt parcel is determined in writing by the Stormwater Engineer to have a heightened risk of improper discharge, then that parcel shall not be exempt from the requirement to obtain an SWP.

** Commercial uses which may require additional examination include, but are not limited to: animal kennels, animal health care, auto repair shops (indoor and outdoor), auto parts sales, auto salvage, auto sales, carwashes, gas stations, fueling facilities, laundry dry cleaners, restaurants, warehouses, and other commercial uses not covered under the EPA's Multi-Sector General Permit (MSGP).

Sec. 8. SWQP Reporting

At a minimum, the SWP permittee shall certify that all required Structural Controls have been maintained and Non-structural Controls have been performed according to the SWP every three

years in a form satisfactory to the City. Shorter reporting durations may be required within the SWP. If Structural Controls are in use, then a New Mexico registered professional engineer or other entity acceptable to the City shall also certify that all Structural controls continue to conform to the plans and technical specifications..NOTE: Sentence is underlined.

Sec. 9. SWP Recordation.

A copy of the approved SWP and any amendments shall be kept on file with the City.

ILLICIT DISCHARGES AND CONNECTIONS

Sec. 10. Discharge to MS4 Prohibited.

(A) A person commits an offense if the person attempts to introduce, introduces, or causes to be introduced into the MS4 any discharge that is not composed entirely of storm water except:

- (1) A discharge authorized by, and in compliance with, a current NPDES permit (other than the City of Albuquerque's NPDES permit for discharges from the MS4);
- (2) Any discharge in compliance with a SWP
- (3) Any nonprohibited discharge from an exempt parcel
- (4) A discharge or flow resulting from fire fighting by the fire department if that discharge is not reasonably expected to be a significant source of pollutants to the MS4;
- (5) Water line flushing, provided that the water is not significantly chlorinated when reaching a receiving water;
- (6) Rising ground waters;
- (7) Ground water infiltration;
- (8) Irrigation water from agricultural operations;
- (9) Flows from riparian habitats and wetlands;
- (10) Dechlorinated discharges of potable water; or
- (11) Materials resulting from a spill where the discharge is necessary to prevent loss of life, personal injury, or property damage provided that the party responsible for the spill takes all reasonable steps to minimize or prevent any adverse effects to human health or the environment.
- (12) Any stormwater flows from property in a native undisturbed state.

- (B) Notwithstanding the exceptions above, no discharge shall be allowed if:
 - (1) The discharge or flow in question has been determined by the City Engineer to be a source of a pollutant or pollutants to the MS4;
 - (2) Written notice of such determination has been provided to the discharger; and,
 - (3) The discharge has continued after the expiration of the time given in the notice to cease the discharge.

Sec. 11. Express Prohibitions

No person shall:

- (A) Leave, accumulate, discharge, or allow animal waste on a publicly owned property or on private property that will drain to the MS4;
- (B) Allow any fluids from motor vehicles to drip or flow on public property or in the MS4;
- (C) Blow or cause dirt, leaves or other organic or inorganic material to leave private property and be located on any public property or in the MS4;
- (D) Allow sanitary sewer overflows from private property to enter publicly owned property. Sanitary sewer overflows shall be contained to the property of origin and the owner of the property shall bear the cost of proper disposal and cleanup. Disposal and cleanup shall be initiated and completed as expeditiously as possible, and in no case shall exceed 48 hours from the time of detection.
- (E) Allow sanitary sewer from private property to enter the MS4 through an underground cross-connection of sanitary sewer pipe into storm sewer pipe. Should such a cross-connection be detected, the owner of the property that is the origin of the sanitary sewer discharge shall bear the cost of removing the cross-connection. Proper permitting must be obtained prior to performing the work.
- (F) Allow any other non-authorized, non-stormwater discharge to enter the MS4.

Sec. 12. Unpermitted Discharges Associated with Industrial Activity Prohibited.

A person who is the owner or operator of an industrial facility that has discharges associated with industrial activity as defined by federal regulations must apply for and acquire an EPA Multi Sector General Permit. The owner or operator shall notify the Stormwater Engineer of such application and any federal notice of intent or notice of termination.

COMPLIANCE AND ENFORCEMENT

Sec. 13. Compliance Monitoring; Methods.

- (A) At any facility that discharges stormwater to the MS4, the Stormwater Engineer shall have the right to install, or to require the installation of, such devices as are necessary to conduct sampling or metering of the discharger's operations at the expense of the City.
- (B) The Stormwater Engineer may require any facility that is reasonably determined to have discharged a pollutant or any substance that causes, continues to cause, or will cause pollution, to conduct specified sampling, testing, analysis and other monitoring of its stormwater discharges. The Stormwater Engineer may specify the frequency and parameters of any required sampling or monitoring.
- (C) The Stormwater Engineer may require any facility that has been found to have violated this ordinance to install monitoring equipment as necessary at the discharger's expense. The discharger, at its own expense, shall at all times maintain the facility's sampling and monitoring equipment in a safe and operating condition. Each device used to measure storm water flow and quality must be calibrated regularly to ensure accuracy. The Stormwater Engineer may also require monitoring of non-storm water discharges if the Stormwater Engineer reasonably believes that such discharges violate the City's MS4 permit requirements.
- (D) Upon written request of the Stormwater Engineer, a facility shall submit in writing the results of any sampling or monitoring undertaken pursuant to the requirements of this article.
- (E) facilities shall maintain the results of any monitoring and any supporting documentation undertaken pursuant to this Ordinance for three (3) years
- (F) All monitoring required by this Ordinance shall be performed in accordance with the established methodologies and protocols of the EPA or New Mexico Environmental Department.

Sec. 14. Regulations and Forms Authorized.

The Stormwater Engineer shall promulgate regulations and forms regarding compliance with the requirements of this article. Such regulations and forms shall be available at the office of the City Engineer; the office of the Stormwater Engineer; and on the City website. The regulations and forms established hereunder may be amended or supplemented from time to time.

Sec. 15. Cumulative Effect.

- (A) This Ordinance is cumulative of other requirements imposed by Ordinances and Regulations of the City. To the extent of any inconsistency, the more restrictive provision shall govern.
- (B) Any authorization granted by this Ordinance does not excuse compliance with federal or state law or any other provisions of this Code or any other City ordinance relating to the activities regulated by this article.

Sec. 16. Remedies Not Exclusive.

The remedies listed in this article are not exclusive of any other remedies available under any applicable federal, state, or local law. It is within the discretion of the City to seek cumulative remedies. The suspension, revocation, cancellation, or denial of any permit issued under this article shall not prohibit imposition of any civil or criminal penalty. The imposition of a civil or criminal penalty shall not prohibit any other remedy and shall not prohibit the suspension, revocation, or denial of any permit issued under this article. (NOTE: These two sentences are underlined).

Sec. 17. Access to facilities and records.

- (A) When it is necessary to make an inspection to enforce the provisions of this article or to inspect or investigate conditions related to water quality, an authorized City official may enter a building or premises at reasonable times to inspect or to perform the duties imposed by this article or to inspect or review records, reports, data, plans, or other documents relating to compliance with this article or with any NPDES storm water permit. If the building or premises is occupied, credentials must be presented to the occupant and entry requested. If the building or premises is unoccupied, the authorized City official shall first make a reasonable effort to locate the owner or other person having charge or control of the building or premises and request entry. If refused, the authorized City official shall have recourse to the remedies provided by law to secure entry.
- (B) When, due to emergency, immediate entry is necessary to protect life or property, or when the authorized City official shall have first obtained a proper inspection warrant or other remedy provided by law to secure entry, no owner, occupant or any other person having charge, care or control of any building or premises shall fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the authorized City official for the purpose of inspection and investigation pursuant to this article or other laws relating to storm water quality.
- (C) Any temporary or permanent obstruction to safe and easy access to a facility that is to be inspected or sampled must be promptly removed upon the written request of the authorized City Official or Stormwater Engineer and may not be replaced.

The cost of clearing access to the facility shall be borne by the discharger.

- (D) The Stormwater Engineer or any City police officer are hereby authorized to undertake the activities authorized by this section.

Sec. 18. Criminal enforcement provisions applicable.

- (A) Any person who violates any provision of this article shall be guilty of an offense and upon conviction thereof, shall be punished by a fine of not less than \$250.00 nor more than \$500.00 and up to thirty (30) days in jail for each violation. Each day in which any violation shall occur shall constitute a separate offense. Prosecution or conviction under this section shall not preclude any civil remedy or relief for a violation of this article. Once cited for an offense, an additional citation may be issued for each day the violation continues unless the violator has entered into an agreement with the City for mitigation, correction and any other necessary action and is acting in conformity with the agreement and the schedule in the agreement.
- (B) In addition to criminal prosecution, where applicable, the City shall have the right to seek the judicial remedies provided in section 18 of this Ordinance for any violation of this article.

Sec. 19. Civil enforcement provisions applicable.

- (A) The City, acting through the City attorney, is hereby authorized to file an action in a court of competent jurisdiction to:
 - (1) Enjoin any person from violating or threatening to violate the terms, conditions and restrictions of any permit issued under this article;
 - (2) Enjoin the violation or threatened violation of the provisions of this Ordinance; or
 - (3) Recover civil penalties for violation of the terms, conditions and restrictions of any permit authorized under this article;
 - (4) Recover civil penalties for violation of the provisions of this Ordinance; or
 - (5) Recover damages from the owner of a parcel in an amount adequate for the City to undertake any construction remediation, cleanup, or other activity necessary to bring about compliance with this chapter. In addition to judicial remedies, such damages are recoverable through the imposition of a municipal lien on the parcel under NMSA 1978, § 3-36-1 to 3-36-5.
- (B) The City, acting through the City Attorney, is hereby authorized to enter into

agreements in lieu of litigation to achieve compliance with the terms, conditions and restrictions of any SWQP authorized under this article or the provisions of this article.

- (C) The City's authority in subsections (A) and (B) is in addition to all provisions of these Ordinances relative to the definition of offenses and the provision of penalties for violations of such offenses.
- (D) Nothing in this Ordinance shall provide for a private cause of action.

Sec. 20. Appeals; Hearing.

Any person whose SWQP is revoked, or who is otherwise aggrieved by a notice, action or decision by the Stormwater Engineer, Director of Department of Municipal Development, or Building Official undertaken pursuant to this article, shall submit a written notice of appeal to the Stormwater Engineer within fifteen (15) days of such revocation, notice, action, or decision. Upon such timely submission, the aggrieved person shall be entitled to a hearing to be conducted by a hearing officer designated by the City. The hearing officer shall render a decision within five days after the close of the hearing. Where time is of the essence, the aggrieved person may so advise and state the reason therefore in the request and, to the extent reasonably warranted and allowed by the circumstances, an expedited hearing of the issue may be afforded."

SECTION 2.1 SEVERABILITY If any section, paragraph, sentence, clause, word or phrase of this Ordinance is for any reason held to be invalid or unenforceable by any court of competent jurisdiction, such decision shall not affect the validity of the remaining provisions of this Ordinance. The Council hereby declares that it would have passed this Ordinance and each section, paragraph, sentence, clause, word or phrase thereof irrespective of any provision being declared unconstitutional or otherwise invalid.

SECTION 2.2. COMPILATION. This Ordinance shall be incorporated in and made part of the Revised Ordinances of Albuquerque, New Mexico, 1994.

SECTION 2.3. EFFECTIVE DATE. This Ordinance shall take effect five days after publication by title and general summary.

Section 9. STORM WATER POLLUTION CONTROL

A. General

As a requirement in the City of Albuquerque Municipal Storm Water Discharge Permit from the Environmental Protection Agency (EPA), the City must include post construction controls to minimize the discharge of storm water pollutants from areas of new development and significant redevelopment.

The following design standards were created in an effort to ensure that, to the maximum extent practicable, new development and projects that require drainage plans do not increase post-development pollutant loads from the project site.

B. Applicability

Priority Project categories have been developed to address the more serious development categories that historically have the potential to generate serious post-development storm water pollution problems. All new development and projects that require drainage plans and that fall into one of the following Priority Project categories are subject to Structural Treatment Control Best Management Practices (BMPs) requirements.

- Retail, Warehouse and Office Developments in excess of 0.5 acres site size.
- Automotive Repair Shops
- Restaurants
- Gas Stations/Fueling Facilities
- Dumpster, Compactor and Waste Collection and Storage Pads on all commercial and industrial sites
- Residential developments with more than 10 residential units, excluding single family housing subdivisions