MONTAGE 7 SUBDIVISION AT MESA DEL SOL
DRAINAGE STUDY

CITY OF ALBUQUERQUE

PREPARED FOR:

PREPARED BY:

HUITT-ZOLLARS
333 RIO RANCHO BLVD., SUITE 101
RIO RANCHO, NEW MEXICO 87124

MARCH 2023

HZI Project No. R315530.01

Montage 7 – Mesa Del Sol
Drainage Study

I, Nina Leung-Villa, being first duly sworn upon my oath, state that I am a registered professional engineer, qualified in civil engineering and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.

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INTRODUCTION

This drainage report addresses the infrastructure required to convey the storm water runoff from the Montage 7 subdivision in Mesa Del Sol. Both existing and proposed conditions have been analyzed to determine infrastructure requirements for the proposed development. This report will demonstrate that the development of this project complies with the City of Albuquerque ordinances and policies.

PROJECT LOCATION

Montage 7 is proposed to be a residential subdivision within the Mesa Del Sol development in Albuquerque. It is located on Bobby Foster Rd. between Newhall Dr. and Sagan Loop. The project site will have 57 residential detached units on 7.5 acres of land.

FLOOD HAZARD ZONE

The proposed site does not lie within a flood hazard area as shown on Flood Insurance Rate Map Number 35001C0555H, effective date August 16, 2012. See **Appendix A** for the FEMA Flood Insurance Rate Map.

RELATED REPORTS

This report references the drainage study for Bobby Foster Rd. and University Blvd. Amendment by Huitt-Zollars, Inc., dated January, 2023. That report provided analysis for this project site and the surrounding area. Hydrology calculations were completed for the 100-year, 6-hour storm. Pond volume calculations were completed for the 100-year, 10-day storm.

This report also references the Drainage Report for Mesa del Sol Residential Montage Unit 3 and 4 by Bohannan Huston, Inc., dated August 10, 2020. That report resulted in upsizing of Pond 2A which is a part of a network of ponds for the Bobby Foster and University Boulevard Project.

JURISDICTIONS OF PUBLIC AGENCIES

This project is located entirely within the City of Albuquerque (CoA) Municipal Limits and is therefore within its jurisdiction and must comply with the City's development requirements.

METHODOLOGY

This drainage report follows procedures outlined in the CoA Development Process Manual (DPM). This report will utilize AHYMO for hydrology modeling to match methodology used in the Bobby Foster Rd. and University Blvd. Amendment drainage report. AHYMO is utilized in this study to determine peak flow rates and volumes for Montage 7 subdivision. See **Appendix C** for the AHYMO input and output.

PRECIPITATION

The 100-yr, 24-hr design storm was used for this analysis. For these storms, the AHYMO Computer program requires the 1, 6, and 24-hr precipitation values. These values were obtained from the NOAA Atlas and are shown on **Table 1**. These precipitation values are consistent with current data obtained from NOAA Atlas 14 Precipitation Frequency Data Server. See **Appendix B** for site specific "Point Precipitation Frequency Estimates".

Table 1
Precipitation Values

Return Period (yrs)	24 hr Rainfall (in)	6 hr Rainfall (in)	1 hr Rainfall (in)
100	2.63	2.29	1.83

LAND TREATMENTS

The land treatments used in the AHYMO Computer model are as described by the CoA DPM, and are summarized in **Table 2**.

Table 2
Land Treatment Classifications

Treatment	Land Condition
A	Soil uncompacted by human activity with 0 to 10% slopes. Native grasses, weeds, and shrubs in typical densities with minimal disturbance to grading, ground cover, and infiltration capacity.
B	Irrigated lawns, parks and golf courses with 0 to 10% slopes. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes greater than 10% and less than 20%.
C	Soil compacted by human activity. Minimal vegetation. Unpaved parking, roads, trails. Most vacant lots. Gravel or rock (desert landscaping). Irrigated lawns and parks with slopes greater than 10%. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes at 20%or greater. Native grass, weed and shrub areas with clay or clay loam soils, and other soils of very low permeability as classified by SCS Hydrologic Soil Group D.
D	Impervious areas, pavement, and roofs. Ponds, channels, and wetlands, even if seasonally dry

Because this project site is comprised of Single-Family Detached Units, the corresponding Percent of Treatment D is determined by the equation: $7 * ((N * N) + (5 * N))$^0.5 where N = units/acre. The remaining percentage points are to be split between treatments B and C. "N" for Montage 7 Subdivision is calculated to be 7.7 units/acre. Please refer to **Exhibit 1** for specific basin land treatments.

EXISTING CONDITIONS

The project site is currently undeveloped and generally slopes from north to south towards an existing Pond. Due to the existing road network, there is currently no offsite flow that reaches the site. Pond 2a has been designed to accommodate the runoff retention of this project and other designated basins. See **Exhibit 5** for Pond 2a design details (Pond 2a provided by Bohannan Huston, Inc). Pond 1 currently is a natural pond and will require a design suitable to retain the runoff volume from this project and future projects.

PROPOSED CONDITIONS

The site is proposed for development of detached residential units. Please refer to the Developed Conditions Basin Map in **Exhibit 1** for basin characteristics including area, peak flow amounts, and land type. Montage 7 exists as Basin W-3 as established with the Bobby Foster and University Blvd Basin Report. As previously studied in the master drainage report, Pond 1 and Pond 2a will serve as the ponding facilities which will provide adequate volume to manage runoff from this project.

Montage 7 will utilize the hydraulic system in Bobby Foster Rd, Newhall Dr, Sagan Loop, Stieglitz Ave, and the internal subdivision network. See **Exhibit 1** for the basin schematic that will utilize the aforestated discharge routes.

Each lot on the perimeter of Montage 7 will face outwards with the driveway on the backside of the house. The internal lots will face south, west, and north respectively starting from the most northern internal lots and working your way down to the most southern internal lots.

The project discharge to the west will utilize three locations connecting to Newhall Dr and include Wood Rd, and two sidewalk culverts. One sidewalk culvert is located at Hopper Alley and another sidewalk culvert is located at Rose Alley. The sidewalk culvert connecting to Hopper Alley will discharge basins 100 and 200. This flow will combine with the surface flow coming from Bobby Foster Road. Flow will continue down Newhall Dr. and see additional flow from the adjacent basin 300 as well as basins discharging via Wood Rd which include basins 500 and 600. Existing on-grade inlets placed in Newhall Dr. will collect flow at this point and allow the remaining flow to carry down towards Pond 1. Additional runoff will be added from basins 700 and 800 before discharging into Pond 1 via a sump inlet at the intersection of Newhall Dr. and Steiglitz Ave.

Basins 400 and 900 will discharge to the east and will utilize Sagan Loop as the main network path. There are two sets of existing inlets in Sagan Loop, one set on the north end and one set on the south end. All basins, including surrounding roads, utilizing Sagan Loop and north of Aaron Rd. will enter the pipe network in the north inlets. Basins utilizing Sagan Loop and south of Aaron Rd. will enter the pipe network in the south inlets. This pipe network will ultimately drain into Pond 2a.

Basin 101 will surface drain into Stieglitz Ave. and utilize inlets located at the intersection with Newhall Rd. Refer to **Table 3** for a flowrate comparison of each proposed or utilized street section.

Pond 1 will be designed as a retention pond and will accommodate designated basins from this project and future related projects. The required retention volume for pond 1 is 427,009 CF and is designed to accommodate 721,371 CF. Refer to Bobby Foster Rd. and University Blvd. Amendment drainage report for more details.

Table 3
Proposed Flow Capacity

Street Section	Allowable Street Capacity Q (CFS)	Actual Q (CFS)
Alley A (Hopper Alley)	10.2	7.7
Alley B (Wood Alley)	10.2	5.5
Alley C (Aaron Alley)	10.2	2.7
Alley D (Rose Alley)	10.2	2.6
Parcel J	10.8	2.7
NewHall Dr.	23.6	22.1
Steiglitz Ave. down stream	26.1	6.1
Wood Rd.	20.8	5.5
Bobby Foster East Bound + Bobby Foster West Bound	41.5	11.10
Sagan Loop	48.4	9.3
Steiglitz Ave. up stream	18.6	1.4

Basin Montage 7, formerly named W-3 is part of the drainage report for Bobby Foster and University Boulevard Amendment and will discharge to Pond 1 and Pond 2a along with Basins T, U, V, Park, W-1, and W-2. For more details refer to the Drainage study for Bobby Foster Rd. and University Blvd. Amendment.

CONCLUSION

The proposed buildout of Montage 7 Subdivision will not exceed the capacity of the existing storm drain system in Newhall Dr. and Sagan Loop. Ponds 1 and Pond 2a will have enough capacity to retain the designated runoff. This drainage study substantially complies with the "Mesa Del Sol Master Plan" and the drainage study for "Bobby Foster Rd. and University Blvd. Amendment"

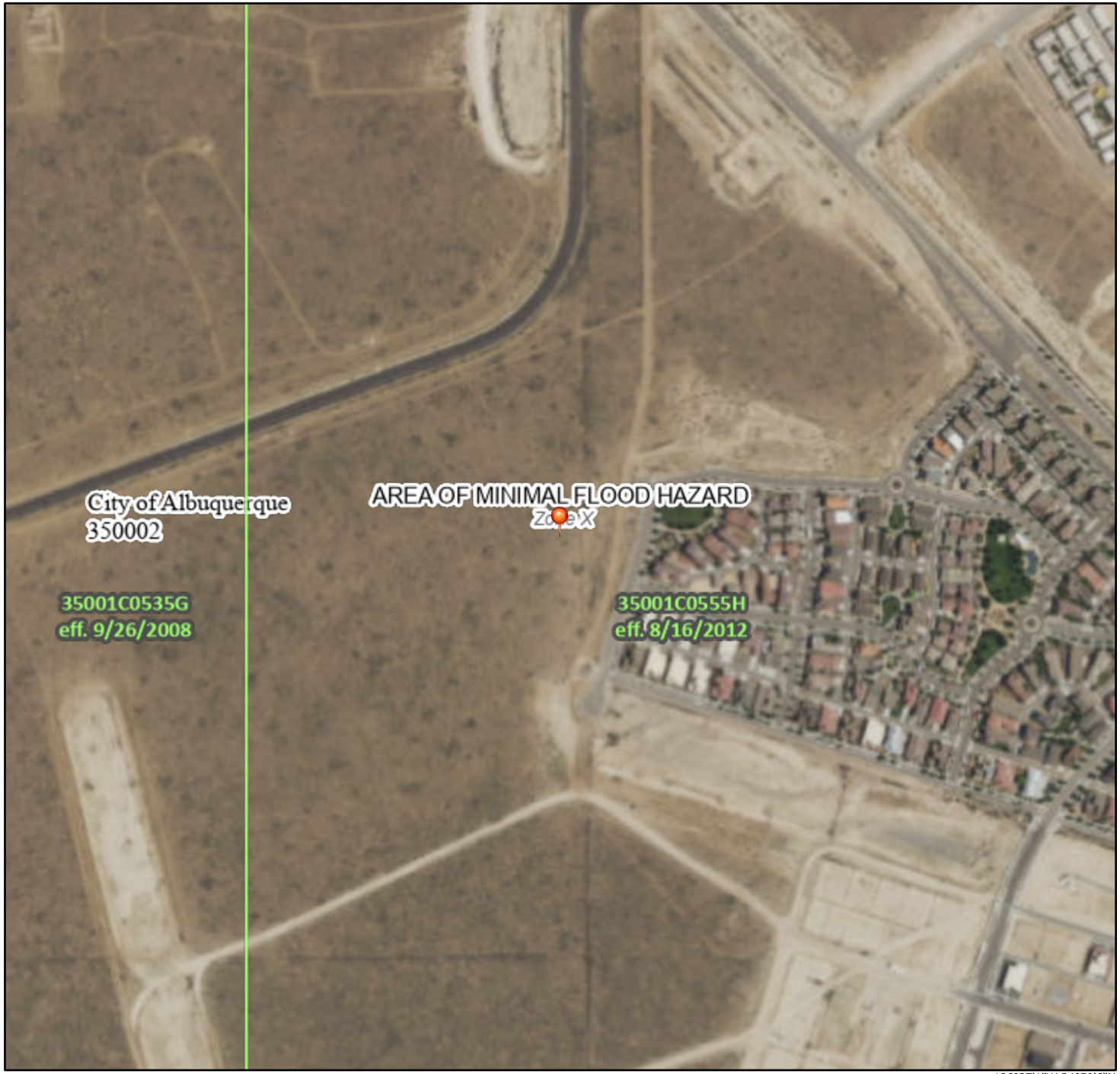
APPENDIX A

FEMA FLOOD INSURANCE RATE MAP

National Flood Hazard Layer FIRMette

FEMA

106°37'38"W 34°59'36"N



106°37'1"W 34°59'6"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/6/2022 at 7:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX B

NOAA Atlas Point Precipitation Frequency Estimates

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, USA*
Latitude: 34.9893°, Longitude: -106.6223°
Elevation: 5304.6 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.179** (0.155-0.207)	**0.232** (0.200-0.268)	**0.310** (0.267-0.358)	**0.370** (0.318-0.426)	**0.453** (0.387-0.520)	**0.516** (0.439-0.593)	**0.583** (0.493-0.670)	**0.654** (0.548-0.750)	**0.748** (0.621-0.860)	**0.823** (0.679-0.946)
10-min	**0.272** (0.236-0.315)	**0.352** (0.304-0.408)	**0.472** (0.406-0.545)	**0.563** (0.484-0.648)	**0.689** (0.589-0.791)	**0.786** (0.668-0.903)	**0.888** (0.750-1.02)	**0.995** (0.833-1.14)	**1.14** (0.945-1.31)	**1.25** (1.03-1.44)
15-min	**0.338** (0.293-0.390)	**0.437** (0.377-0.506)	**0.585** (0.503-0.675)	**0.698** (0.599-0.803)	**0.854** (0.730-0.981)	**0.974** (0.829-1.12)	**1.10** (0.929-1.26)	**1.23** (1.03-1.41)	**1.41** (1.17-1.62)	**1.55** (1.28-1.79)
30-min	**0.455** (0.394-0.525)	**0.589** (0.508-0.681)	**0.787** (0.678-0.909)	**0.940** (0.807-1.08)	**1.15** (0.983-1.32)	**1.31** (1.12-1.51)	**1.48** (1.25-1.70)	**1.66** (1.39-1.90)	**1.90** (1.58-2.19)	**2.09** (1.72-2.40)
60-min	**0.563** (0.488-0.650)	**0.729** (0.629-0.842)	**0.974** (0.839-1.13)	**1.16** (0.999-1.34)	**1.42** (1.22-1.64)	**1.62** (1.38-1.86)	**1.83** (1.55-2.11)	**2.06** (1.72-2.36)	**2.35** (1.95-2.70)	**2.59** (2.13-2.98)
2-hr	**0.640** (0.553-0.753)	**0.819** (0.705-0.964)	**1.08** (0.930-1.27)	**1.29** (1.11-1.51)	**1.58** (1.34-1.84)	**1.82** (1.53-2.11)	**2.06** (1.73-2.40)	**2.32** (1.93-2.69)	**2.68** (2.20-3.11)	**2.97** (2.42-3.45)
3-hr	**0.678** (0.591-0.794)	**0.862** (0.749-1.01)	**1.13** (0.980-1.32)	**1.34** (1.16-1.56)	**1.63** (1.40-1.90)	**1.87** (1.59-2.16)	**2.12** (1.79-2.45)	**2.38** (2.00-2.76)	**2.75** (2.28-3.18)	**3.05** (2.50-3.53)
6-hr	**0.788** (0.688-0.915)	**0.991** (0.868-1.15)	**1.27** (1.12-1.48)	**1.50** (1.31-1.73)	**1.80** (1.56-2.08)	**2.04** (1.76-2.35)	**2.29** (1.96-2.64)	**2.55** (2.17-2.93)	**2.91** (2.45-3.35)	**3.20** (2.67-3.69)
12-hr	**0.875** (0.771-0.994)	**1.10** (0.973-1.25)	**1.39** (1.23-1.58)	**1.62** (1.42-1.84)	**1.93** (1.69-2.19)	**2.17** (1.89-2.45)	**2.42** (2.09-2.73)	**2.67** (2.29-3.02)	**3.01** (2.56-3.42)	**3.29** (2.77-3.74)
24-hr	**0.985** (0.879-1.11)	**1.23** (1.10-1.39)	**1.54** (1.37-1.74)	**1.79** (1.59-2.01)	**2.12** (1.88-2.38)	**2.37** (2.09-2.66)	**2.63** (2.32-2.95)	**2.90** (2.54-3.24)	**3.25** (2.83-3.65)	**3.53** (3.06-3.96)
2-day	**1.05** (0.938-1.17)	**1.31** (1.18-1.46)	**1.63** (1.46-1.82)	**1.88** (1.69-2.09)	**2.22** (1.98-2.47)	**2.48** (2.21-2.76)	**2.75** (2.44-3.05)	**3.02** (2.67-3.35)	**3.38** (2.97-3.76)	**3.65** (3.20-4.07)
3-day	**1.13** (1.03-1.24)	**1.41** (1.28-1.55)	**1.74** (1.58-1.91)	**2.00** (1.82-2.19)	**2.34** (2.13-2.57)	**2.61** (2.36-2.86)	**2.88** (2.60-3.15)	**3.15** (2.83-3.45)	**3.50** (3.14-3.84)	**3.77** (3.37-4.14)
4-day	**1.22** (1.12-1.32)	**1.51** (1.39-1.64)	**1.84** (1.70-2.00)	**2.11** (1.95-2.28)	**2.47** (2.27-2.67)	**2.74** (2.52-2.96)	**3.01** (2.76-3.25)	**3.27** (2.99-3.54)	**3.63** (3.31-3.92)	**3.89** (3.54-4.22)
7-day	**1.40** (1.30-1.52)	**1.74** (1.61-1.88)	**2.11** (1.95-2.28)	**2.40** (2.22-2.59)	**2.78** (2.57-2.99)	**3.07** (2.83-3.30)	**3.35** (3.08-3.60)	**3.61** (3.33-3.89)	**3.96** (3.64-4.26)	**4.21** (3.85-4.54)
10-day	**1.54** (1.43-1.67)	**1.92** (1.77-2.07)	**2.34** (2.17-2.52)	**2.67** (2.48-2.87)	**3.11** (2.88-3.34)	**3.43** (3.17-3.69)	**3.76** (3.47-4.03)	**4.08** (3.75-4.38)	**4.49** (4.12-4.83)	**4.80** (4.38-5.16)
20-day	**1.96** (1.81-2.12)	**2.43** (2.25-2.63)	**2.95** (2.73-3.18)	**3.34** (3.10-3.59)	**3.84** (3.55-4.12)	**4.19** (3.88-4.50)	**4.54** (4.19-4.87)	**4.86** (4.48-5.21)	**5.27** (4.85-5.65)	**5.55** (5.11-5.96)
30-day	**2.34** (2.17-2.52)	**2.90** (2.69-3.12)	**3.49** (3.24-3.74)	**3.92** (3.64-4.20)	**4.46** (4.13-4.77)	**4.85** (4.48-5.18)	**5.21** (4.82-5.57)	**5.55** (5.12-5.93)	**5.95** (5.49-6.36)	**6.23** (5.74-6.66)
45-day	**2.84** (2.64-3.04)	**3.51** (3.27-3.76)	**4.18** (3.90-4.47)	**4.65** (4.34-4.97)	**5.22** (4.88-5.58)	**5.61** (5.24-5.99)	**5.96** (5.57-6.35)	**6.27** (5.85-6.67)	**6.60** (6.17-7.02)	**6.79** (6.37-7.22)
60-day	**3.28** (3.06-3.53)	**4.06** (3.78-4.36)	**4.84** (4.51-5.18)	**5.39** (5.03-5.77)	**6.05** (5.64-6.47)	**6.50** (6.07-6.95)	**6.91** (6.45-7.39)	**7.28** (6.79-7.78)	**7.68** (7.18-8.21)	**7.94** (7.43-8.48)

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

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

Please refer to NOAA Atlas 14 document for more information.

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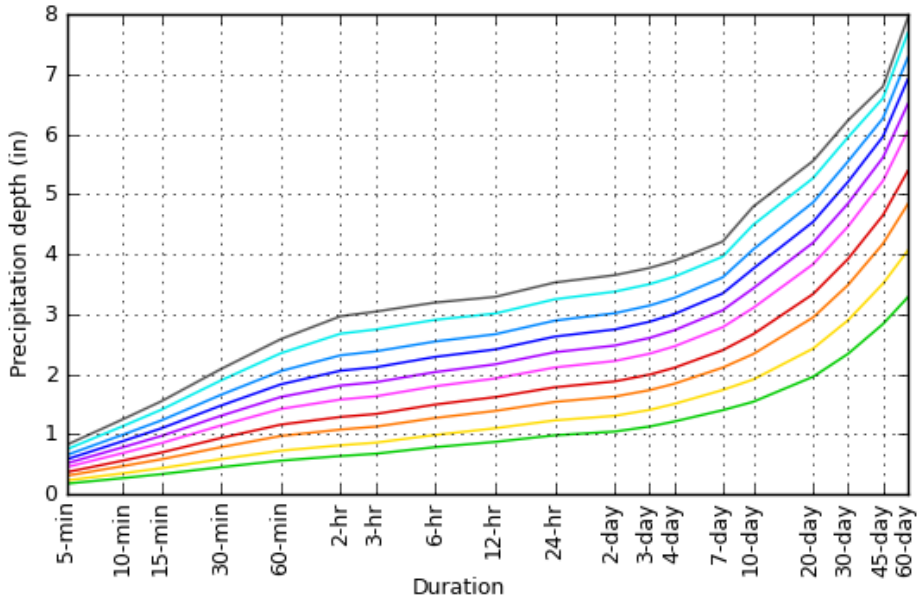
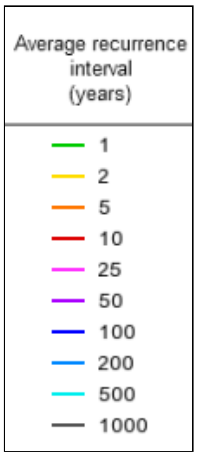
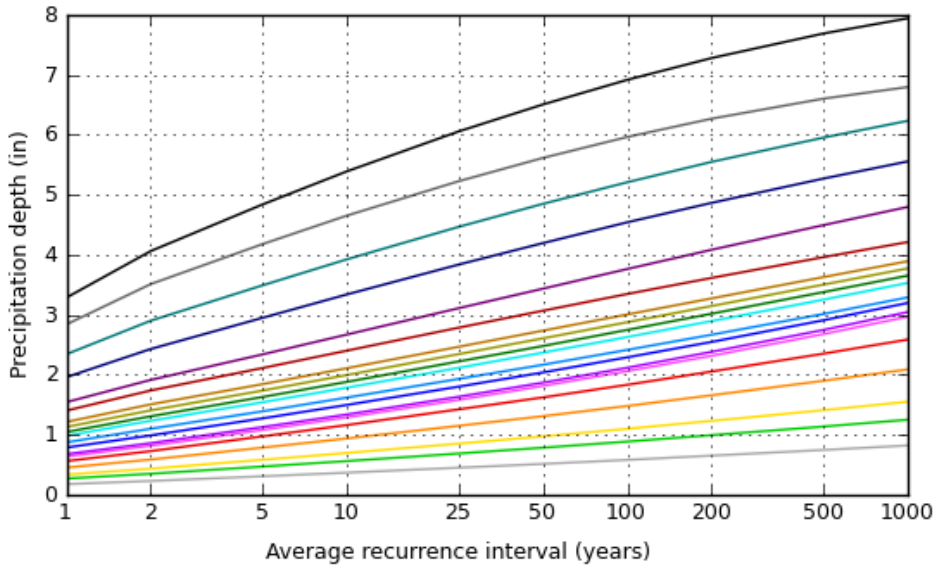
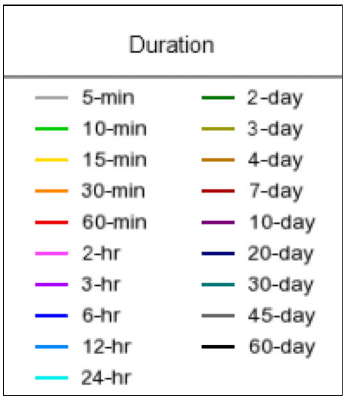
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 34.9893°, Longitude: -106.6223°









NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Mon Jun 6 23:15:21 2022

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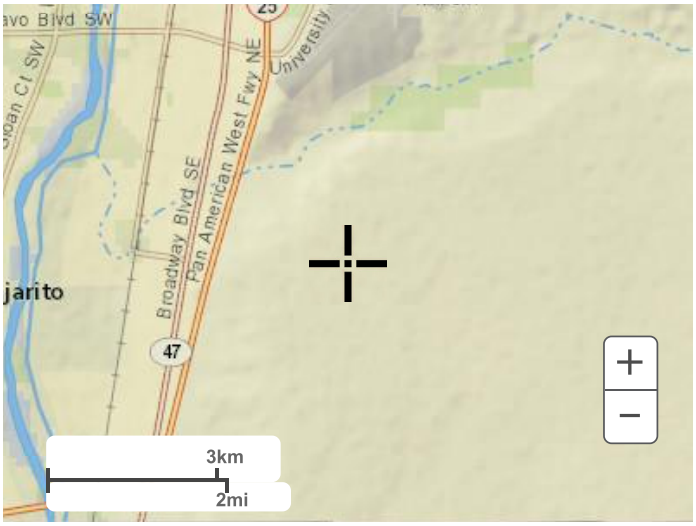
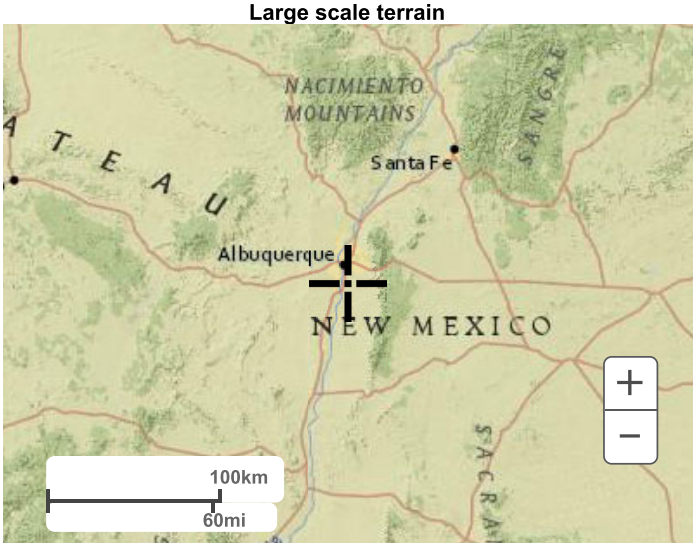
Maps & aerials

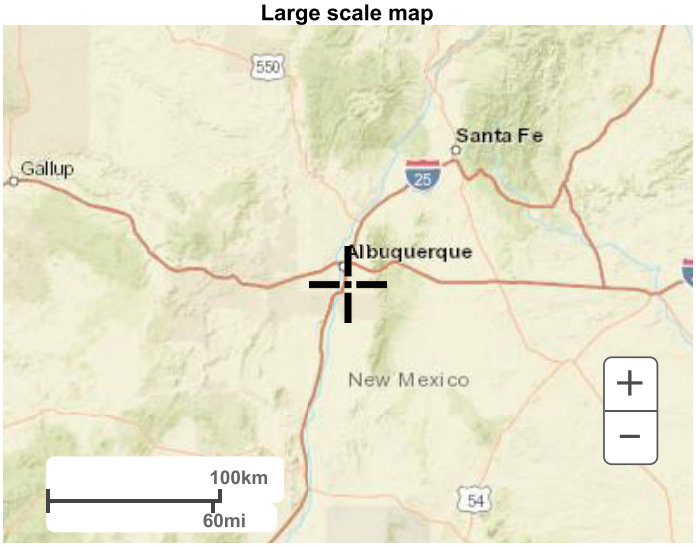
Small scale terrain



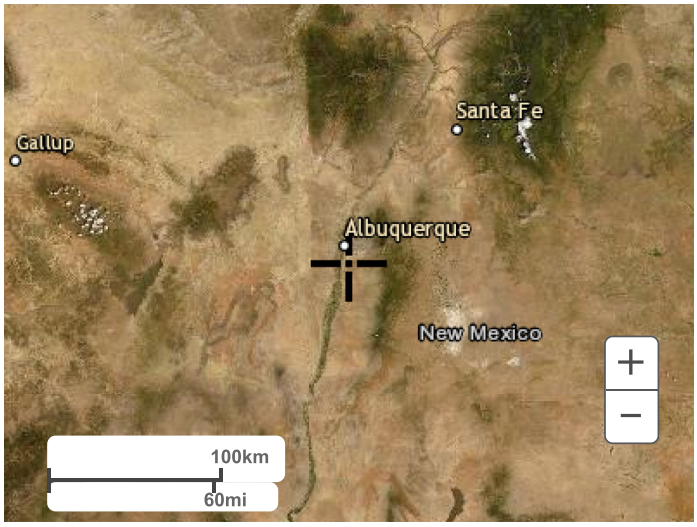
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

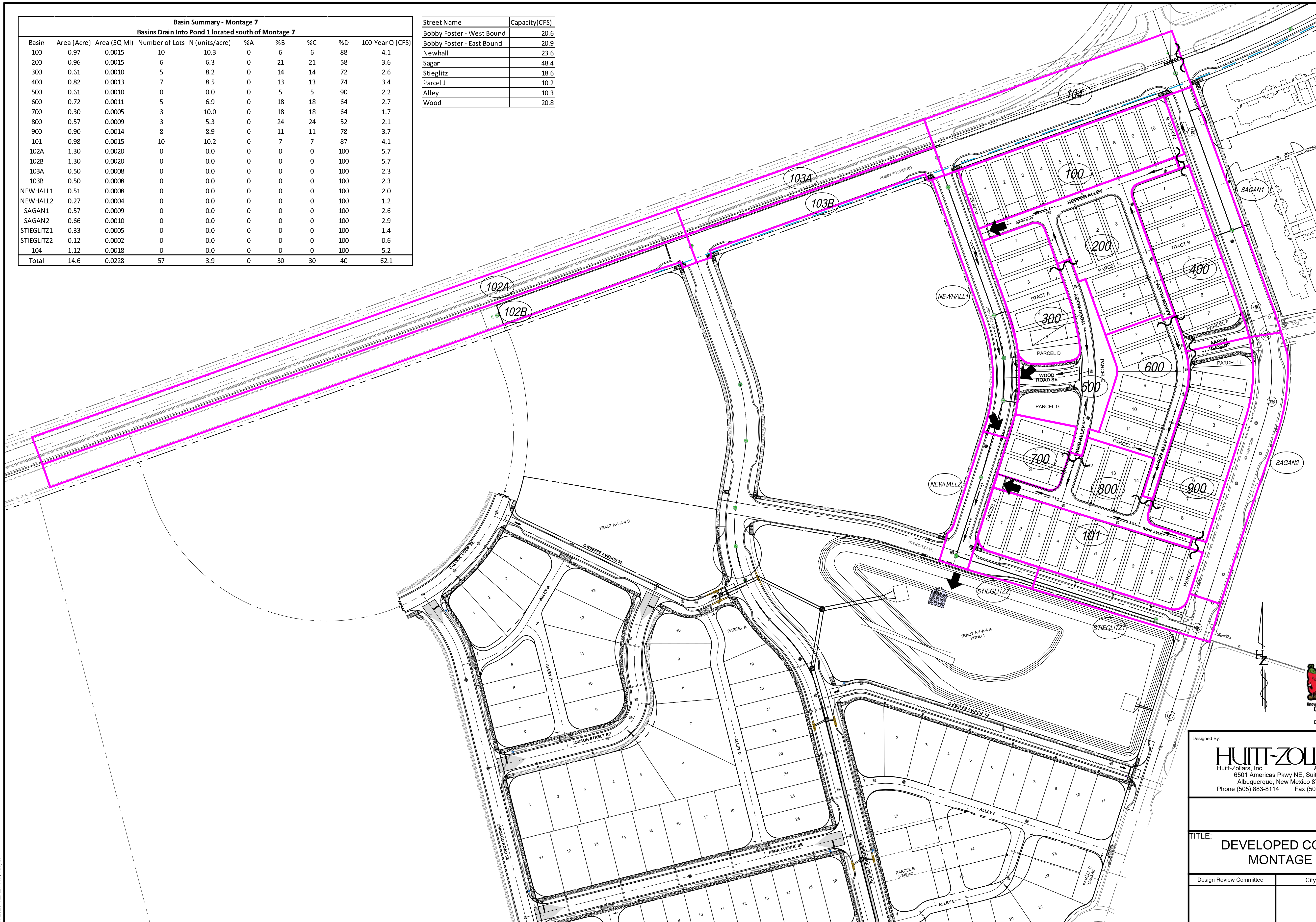
APPENDIX C

AHYMO Input and Output

Developed Conditions Basin Map

Basin Summary - Montage 7 Basins Drain Into Pond 1 located south of Montage 7									
Basin	Area (Acre)	Area (SQ MI)	Number of Lots	N (units/acre)	%A	%B	%C	%D	100-Year Q (CFS)
100	0.97	0.0015	10	10.3	0	6	6	88	4.1
200	0.96	0.0015	6	6.3	0	21	21	58	3.6
300	0.61	0.0010	5	8.2	0	14	14	72	2.6
400	0.82	0.0013	7	8.5	0	13	13	74	3.4
500	0.61	0.0010	0	0.0	0	5	5	90	2.2
600	0.72	0.0011	5	6.9	0	18	18	64	2.7
700	0.30	0.0005	3	10.0	0	18	18	64	1.7
800	0.57	0.0009	3	5.3	0	24	24	52	2.1
900	0.90	0.0014	8	8.9	0	11	11	78	3.7
101	0.98	0.0015	10	10.2	0	7	7	87	4.1
102A	1.30	0.0020	0	0.0	0	0	0	100	5.7
102B	1.30	0.0020	0	0.0	0	0	0	100	5.7
103A	0.50	0.0008	0	0.0	0	0	0	100	2.3
103B	0.50	0.0008	0	0.0	0	0	0	100	2.3
NEWHALL1	0.51	0.0008	0	0.0	0	0	0	100	2.0
NEWHALL2	0.27	0.0004	0	0.0	0	0	0	100	1.2
SAGAN1	0.57	0.0009	0	0.0	0	0	0	100	2.6
SAGAN2	0.66	0.0010	0	0.0	0	0	0	100	2.9
STIEGLITZ1	0.33	0.0005	0	0.0	0	0	0	100	1.4
STIEGLITZ2	0.12	0.0002	0	0.0	0	0	0	100	0.6
104	1.12	0.0018	0	0.0	0	0	0	100	5.2
Total	14.6	0.0228	57	3.9	0	30	30	40	62.1

Street Name	Capacity(CFS)
Bobby Foster - West Bound	20.6
Bobby Foster - East Bound	20.9
Newhall	23.6
Sagan	48.4
Stieglitz	18.6
Parcel J	10.2
Alley	10.3
Wood	20.8



AS BUILT INFORMATION

	DATE
CONTRACTOR	
WORK STARTED BY	
INSPECTOR'S ACCEPTANCE BY	
FIELD VERIFICATION BY	
DRAWINGS CORRECTED BY	
MICRO-FILM INFORMATION	
RECORDED BY	
NO.	

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NINA LEUNG-VILLA, NEW MEXICO, 25970, REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS REMARKS	BY

DESIGN
DESIGNED BY: CAT — DATE: January, 4 2023
DRAWN BY: CAT — DATE: January, 4 2023
DWG NAME: 2_MDS MONTAGE 7 BASINS.dwg — PROJ #:
CHECKED BY: SAE — DATE: January, 4 2023

Know what's below. Call before you dig. nm811
TWO WORKING DAYS BEFORE YOU DIG CALL 811 OR 260-1990

Designed By:
HUITT-ZOLLARS
Huitt-Zollars, Inc. Albuquerque
6501 Americas Pkwy NE, Suite 550
Albuquerque, New Mexico 87110
Phone (505) 883-8114 Fax (505) 883-5022

TITLE:
DEVELOPED CONDITIONS BASIN MAP
MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Mo./Day/Yr.	Mo./Day/Yr.
		Last Update	

City Project No. | Zone Map No. | Sheet Of EXHIBIT 1

Plotted: 1/24/2023 1:31:02 PM, By:Trujillo, Corie
H:\proj\R315530.01 - Montage Unit 7 - Mesa del Sol\05 Design\05.13 Drainage\Hydrology\2_MDS MONTAGE 7 BASINS.dwg
Last Saved:1/24/2023 1:27:27 PM, ctrujillo

```
START                TIME=0.0 CODE=0  LINES=0

*S      MESA DEL SOL MONTAGE 7     DECEMBER 2022   HZI NO. R315530.01
*S--------------------------------------------------------------------------------
*S--------------------------------------------------------------------------------
*S 100 - YEAR RAINFALL    ------------------------------------------------------
RAINFALL            TYPE=-1 RAIN QUAR=0.0 RAIN ONE= 1.83
                    RAIN SIX= 2.29 RAIN DAY=2.63 DT=0.0
*S---------------------------------------------------------------------
*S---------------------------------------------------------------------
*S-------THE FOLLOWING BASINS DRAIN INTO POND 1------------------------
*S---------------------------------------------------------------------
*S---------------------------------------------------------------------
*S BASIN 100 - DISCHARGE TO HOPPER ALLEY
COMPUTE NM HYD  ID=10 HYD NO=100  DA=0.0015 SQ MI
                PER A=0.0 PER B=6.0 PER C=6.0 PER D=88.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=10   CODE=1
*S---------------------------------------------------------------------
*S BASIN 200 - DISCHARGE VIA AARON ALLEY AND HOPPER ALLEY
COMPUTE NM HYD  ID=20 HYD NO=200  DA=0.0015 SQ MI
                PER A=0.0 PER B=21.0 PER C=21.0 PER D=58.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=20   CODE=1
*S---------------------------------------------------------------------
*S BASIN 300 - DISCHARGE TO NEWHALL DRIVE
COMPUTE NM HYD  ID=30 HYD NO=300  DA=0.0010 SQ MI
                PER A=0.0 PER B=14.0 PER C=14.0 PER D=72.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=30   CODE=1
*S---------------------------------------------------------------------
*S BASIN 400 - DISCHARGE TO SAGAN LOOP TO NORTH SUMP INLET
COMPUTE NM HYD  ID=40 HYD NO=400  DA=0.0013 SQ MI
                PER A=0.0 PER B=13.0 PER C=13.0 PER D=74.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=40   CODE=1
*S---------------------------------------------------------------------
*S BASIN 500 - DISCHARGE TO NEWHALL VIA WOOD ROAD
COMPUTE NM HYD  ID=50 HYD NO=500  DA=0.0010 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=50   CODE=1
*S---------------------------------------------------------------------
*S BASIN 600 - DISCHARGE TO AARON ALLEY TO PARCEL J TO WOOD ALLEY TO
COMPUTE NM HYD  ID=60 HYD NO=600  DA=0.0011 SQ MI
                PER A=0.0 PER B=18.0 PER C=18.0 PER D=64.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=60   CODE=1
*S---------------------------------------------------------------------
*S BASIN 700 - DISCHARGE TO NEWHALL DR
COMPUTE NM HYD  ID=70 HYD NO=700  DA=0.0005 SQ MI
                PER A=0.0 PER B=18.0 PER C=18.0 PER D=64.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=70   CODE=1
 *S--------------------------------------------------------------------
*S BASIN 800 - DISCHARGE TO ROSE ALLEY TO NEWHALL
COMPUTE NM HYD  ID=80 HYD NO=800  DA=0.0009 SQ MI
                PER A=0.0 PER B=24.0 PER C=24.0 PER D=52.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=80   CODE=1
 *S--------------------------------------------------------------------
*S BASIN 900 - DISCHARGE TO SAGAN LOOP AND TRAVELS SOUTH
COMPUTE NM HYD  ID=90 HYD NO=900  DA=0.0014 SQ MI
                PER A=0.0 PER B=11.0 PER C=11.0 PER D=78.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=90   CODE=1
*S---------------------------------------------------------------------
*S BASIN 101 - DISCHARGE TO STIEGLITZ
COMPUTE NM HYD  ID=91 HYD NO=910  DA=0.0015 SQ MI
                PER A=0.0 PER B=6.0 PER C=6.0 PER D=88.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=91   CODE=1
*S---------------------------------------------------------------------
*S BASIN 102A - DISCHARGE CONTINUE ON BOBBY FOSTER
COMPUTE NM HYD  ID=92 HYD NO=920  DA=0.0020 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=92   CODE=1
```

```
*S--------------------------------------------------------------------
*S PARTIAL BASIN 102A - DISCHARGE OF 92 THAT DISCHARGES DOWN NEWHALL
COMPUTE NM HYD  ID=93 HYD NO=930  DA=0.000685 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=93   CODE=1
*S--------------------------------------------------------------------
*S PARTIAL BASIN 102A - DISCHARGE OF 92 THAT DISCHARGES DOWN SAGAN
COMPUTE NM HYD  ID=85 HYD NO=850  DA=0.000685 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=85   CODE=1
*S--------------------------------------------------------------------
*S BASIN 102B - DISCHARGE TO DIEBENKORN
COMPUTE NM HYD  ID=94 HYD NO=940  DA=0.0020 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=94   CODE=1
*S--------------------------------------------------------------------
*S BASIN 103A - DISCHARGE CONTINUE ON BOBBY FOSTER
COMPUTE NM HYD  ID=95 HYD NO=950  DA=0.0008 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=95   CODE=1
*S--------------------------------------------------------------------
*S BASIN 103B - DISCHARGE TO NEWHALL DR
COMPUTE NM HYD  ID=96 HYD NO=960  DA=0.0008 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=96   CODE=1
*S--------------------------------------------------------------------
*S BASIN 104 - DISCHARGE TO SAGAN LOOP
COMPUTE NM HYD  ID=97 HYD NO=970  DA=0.0018 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=97   CODE=1
*S--------------------------------------------------------------------
*S BASIN NEWHALL1 - DISCHARGE FROM NORTH HALF OF NEWHALL
COMPUTE NM HYD  ID=98 HYD NO=980  DA=0.0008 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=98   CODE=1
*S--------------------------------------------------------------------
*S BASIN NEWHALL2 - DISCHARGE FROM SOUTH HALF OF NEWHALL, TO POND 1 INLET
COMPUTE NM HYD  ID=99 HYD NO=990  DA=0.0004 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=99   CODE=1
*S--------------------------------------------------------------------
*S BASIN SAGAN1 - DISCHARGE FROM NORTH HALF OF SAGAN
COMPUTE NM HYD  ID=81 HYD NO=810  DA=0.0009 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=81   CODE=1
*S--------------------------------------------------------------------
*S BASIN SAGAN2 - DISCHARGE FROM SOUTH HALF OF SAGAN
COMPUTE NM HYD  ID=82 HYD NO=820  DA=0.0010 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=82   CODE=1
*S--------------------------------------------------------------------
*S BASIN STIEGLITZ1 - DISCHARGE FROM EAST HALF OF STIEGLITZ
COMPUTE NM HYD  ID=83 HYD NO=830  DA=0.0005 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=83   CODE=1
*S--------------------------------------------------------------------
*S BASIN STIEGLITZ2 - DISCHARGE FROM WEST HALF OF STIEGLITZ
COMPUTE NM HYD  ID=84 HYD NO=840  DA=0.0002 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=84   CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS 100, 200 - AP HOPPER ALLEY
ADD HYD                 ID=75 HYD=SUM IDi=10 IDii=20
PRINT HYD               ID=75 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS 500, 600 - AP WOOD ALLEY
```

```
ADD HYD                 ID=65 HYD=SUM IDi=60 IDii=50
PRINT HYD               ID=65 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS 102A/2(93), 103B(96), NH1(98), 100, 200, 300, 500, 600 - AP NEWHALL
ADD HYD                 ID=75 HYD=SUM IDi=96 IDii=98
ADD HYD                 ID=75 HYD=SUM IDi=75 IDii=10
ADD HYD                 ID=75 HYD=SUM IDi=75 IDii=20
ADD HYD                 ID=75 HYD=SUM IDi=75 IDii=30
ADD HYD                 ID=75 HYD=SUM IDi=75 IDii=65
ADD HYD                 ID=75 HYD=SUM IDi=75 IDii=93
PRINT HYD               ID=75 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS 700, NH2(99) - AP NEWHALL
ADD HYD                 ID=75 HYD=SUM IDi=70 IDii=99
PRINT HYD               ID=75 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS 102A/2(93), 103A(95), 104(97) - AP SAGAN AND BOBBY FOSTER
ADD HYD                 ID=75 HYD=SUM IDi=97 IDii=95
ADD HYD                 ID=75 HYD=SUM IDi=75 IDii=85
PRINT HYD               ID=75 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS 400, SG1(81) - AP SAGAN LOOP
ADD HYD                 ID=75 HYD=SUM IDi=40 IDii=81
PRINT HYD               ID=75 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS 900, SG2(82) - AP SAGAN LOOP
ADD HYD                 ID=74 HYD=SUM IDi=90 IDii=82
PRINT HYD               ID=74 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS (900, SG2(82)), ST1(81), 0.70*101(85) - AP STIEGLITZ
DIVIDE HYD              ID=91   PER=-75         IDi=85  HYD NO=75.PER
                                                IDii=86 HYD NO=25.PER
ADD HYD                 ID=75 HYD=SUM IDi=85 IDii=74
ADD HYD                 ID=75 HYD=SUM IDi=75 IDii=81
PRINT HYD               ID=75 CODE=1
*S--------------------------------------------------------------------
*S ADD BASINS (900, SG2, ST1, 0.70*101), 0.30*101(86), ST2(84) - AP WEST END OF STIEGLITZ
ADD HYD                 ID=75 HYD=SUM   IDi=74  IDii=84
ADD HYD                 ID=75 HYD=SUM   IDi=75  IDii=86
PRINT HYD               ID=75 CODE=1
*S--------------------------------------------------------------------
FINISH
```

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.02a, Rel: 02a RUN DATE (MON/DAY/YR) =01/19/2023
INPUT FILE = C:\Users\ctrujillo\Desktop\3_Montage 7 INPUT.txt USER NO.= AHYMO-S4TempUser05901704

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= 0.00
*S	ESA DEL SOL MONTAGE 7 DECEMBER 2022 HZI NO. R315530.01									
*S----------										
*S----------										
*S 100 - YEAR RAINFALL ----------										
RAINFALL TYPE= 1 NOAA 14										RAIN6= 2.290
*S----------										
*S----------										
*S-------THE FOLLOWING BASINS DRAIN INTO POND 1----------										
*S----------										
*S----------										
*S BASIN 100 - DISCHARGE TO HOPPER ALLEY										
COMPUTE NM HYD	100.00	-	10	0.00150	4.10	0.152	1.90601	1.530	4.276	PER IMP= 88.00
*S----------										
*S BASIN 200 - DISCHARGE VIA AARON ALLEY AND HOPPER ALLEY										
COMPUTE NM HYD	200.00	-	20	0.00150	3.62	0.126	1.57789	1.530	3.769	PER IMP= 58.00
*S----------										
*S BASIN 300 - DISCHARGE TO NEWHALL DRIVE										
COMPUTE NM HYD	300.00	-	30	0.00100	2.57	0.092	1.73101	1.530	4.016	PER IMP= 72.00
*S----------										
*S BASIN 400 - DISCHARGE TO SAGAN LOOP TO NORTH SUMP INLET										
COMPUTE NM HYD	400.00	-	40	0.00130	3.36	0.122	1.75289	1.530	4.043	PER IMP= 74.00
*S----------										
*S BASIN 500 - DISCHARGE TO NEWHALL VIA WOOD ROAD										
COMPUTE NM HYD	500.00	-	50	0.00100	2.76	0.103	1.92788	1.530	4.320	PER IMP= 90.00
*S----------										
*S BASIN 600 - DISCHARGE TO AARON ALLEY TO PARCEL J TO WOOD ALLEY TO										
COMPUTE NM HYD	600.00	-	60	0.00110	2.73	0.096	1.64352	1.530	3.878	PER IMP= 64.00
*S----------										
*S BASIN 700 - DISCHARGE TO NEWHALL DR										
COMPUTE NM HYD	700.00	-	70	0.00050	1.25	0.044	1.64351	1.530	3.912	PER IMP= 64.00
*S BASIN 800 - DISCHARGE TO ROSE ALLEY TO NEWHALL										
COMPUTE NM HYD	800.00	-	80	0.00090	2.12	0.073	1.51227	1.530	3.682	PER IMP= 52.00
*S BASIN 900 - DISCHARGE TO SAGAN LOOP AND TRAVELS SOUTH										
COMPUTE NM HYD	900.00	-	90	0.00140	3.68	0.134	1.79664	1.530	4.108	PER IMP= 78.00
*S----------										
*S BASIN 101 - DISCHARGE TO STIEGLITZ										
COMPUTE NM HYD	910.00	-	91	0.00150	4.10	0.152	1.90601	1.530	4.276	PER IMP= 88.00
*S----------										
*S BASIN 102A - DISCHARGE CONTINUE ON BOBBY FOSTER										
COMPUTE NM HYD	920.00	-	92	0.00200	5.51	0.206	1.92788	1.530	4.305	PER IMP= 90.00
*S----------										
*S PARTIAL BASIN 102A - DISCHARGE OF 92 THAT DISCHARGES DOWN NEWHALL										
COMPUTE NM HYD	930.00	-	93	0.00069	1.90	0.070	1.92788	1.530	4.335	PER IMP= 90.00
*S----------										
*S PARTIAL BASIN 102A - DISCHARGE OF 92 THAT DISCHARGES DOWN SAGAN										
COMPUTE NM HYD	850.00	-	85	0.00069	1.90	0.070	1.92788	1.530	4.335	PER IMP= 90.00
*S----------										
*S BASIN 102B - DISCHARGE TO DIEBENKORN										

COMPUTE NM HYD	940.00	-	94	0.00200	5.51	0.206	1.92788	1.530	4.305	PER IMP= 90.00
*S----------										
*S BASIN 103A - DISCHARGE CONTINUE ON BOBBY FOSTER										
COMPUTE NM HYD	950.00	-	95	0.00080	2.22	0.082	1.92788	1.530	4.328	PER IMP= 90.00
*S----------										
*S BASIN 103B - DISCHARGE TO NEWHALL DR										
COMPUTE NM HYD	960.00	-	96	0.00080	2.22	0.082	1.92788	1.530	4.328	PER IMP= 90.00
*S----------										
*S BASIN 104 - DISCHARGE TO SAGAN LOOP										
COMPUTE NM HYD	970.00	-	97	0.00180	4.96	0.185	1.92788	1.530	4.306	PER IMP= 90.00
*S----------										
*S BASIN NEWHALL1 - DISCHARGE FROM NORTH HALF OF NEWHALL										
COMPUTE NM HYD	980.00	-	98	0.00080	2.22	0.082	1.92788	1.530	4.328	PER IMP= 90.00
*S----------										
*S BASIN NEWHALL2 - DISCHARGE FROM SOUTH HALF OF NEWHALL, TO POND 1 INLET										
COMPUTE NM HYD	990.00	-	99	0.00040	1.12	0.041	1.92788	1.530	4.370	PER IMP= 90.00
*S----------										

```
*S BASIN SAGAN1 - DISCHARGE FROM NORTH HALF OF SAGAN
COMPUTE NM HYD        810.00   -    81       0.00090         2.49       0.093      1.92788    1.530    4.324 PER IMP=  90.00
*S--------------------------------------------------------------------
*S BASIN SAGAN2 - DISCHARGE FROM SOUTH HALF OF SAGAN
COMPUTE NM HYD        820.00   -    82       0.00100         2.76       0.103      1.92788    1.530    4.320 PER IMP=  90.00
*S--------------------------------------------------------------------
*S BASIN STIEGLITZ1 - DISCHARGE FROM EAST HALF OF STIEGLITZ
COMPUTE NM HYD        830.00   -    83       0.00050         1.39       0.051      1.92788    1.530    4.353 PER IMP=  90.00
*S--------------------------------------------------------------------
*S BASIN STIEGLITZ2 - DISCHARGE FROM WEST HALF OF STIEGLITZ
COMPUTE NM HYD        840.00   -    84       0.00020         0.56       0.021      1.92788    1.530    4.407 PER IMP=  90.00
*S--------------------------------------------------------------------
*S ADD BASINS 100, 200 - AP HOPPER ALLEY
ADD HYD                SUM 10&20  75       0.00300         7.72       0.279      1.74177    1.530    4.023
*S--------------------------------------------------------------------
*S ADD BASINS 500, 600 - AP WOOD ALLEY
ADD HYD                SUM 60&50  65       0.00210         5.49       0.199      1.77867    1.530    4.088
*S--------------------------------------------------------------------
*S ADD BASINS 102A/2(93), 103B(96), NH1(98), 100, 200, 300, 500, 600 - AP NEWHAL
ADD HYD                SUM 96&98  75       0.00160         4.43       0.164      1.92754    1.530    4.328
ADD HYD                SUM 75&10  75       0.00310         8.54       0.317      1.91703    1.530    4.303
ADD HYD                SUM 75&20  75       0.00460        12.16       0.443      1.80638    1.530    4.129
ADD HYD                SUM 75&30  75       0.00560        14.73       0.535      1.79287    1.530    4.109
ADD HYD                SUM 75&65  75       0.00770        20.22       0.735      1.78900    1.530    4.103
ADD HYD                SUM 75&93  75       0.00839        22.12       0.805      1.80031    1.530    4.122
*S--------------------------------------------------------------------
*S ADD BASINS 700, NH2(99) - AP NEWHALL
ADD HYD                SUM 70&99  75       0.00090         2.37       0.085      1.76931    1.530    4.115
*S--------------------------------------------------------------------
*S ADD BASINS 102A/2(93), 103A(95), 104(97) - AP SAGAN AND BOBBY FOSTER
ADD HYD                SUM 97&95  75       0.00260         7.18       0.267      1.92767    1.530    4.313
ADD HYD                SUM 75&85  75       0.00329         9.08       0.338      1.92763    1.530    4.318
*S--------------------------------------------------------------------
*S ADD BASINS 400, SG1(81) - AP SAGAN LOOP
ADD HYD                SUM 40&81  75       0.00220         5.85       0.214      1.82423    1.530    4.158
*S--------------------------------------------------------------------
```



```
*S ADD BASINS 900, SG2(82) - AP SAGAN LOOP
ADD HYD                SUM 90&82  74       0.00240         6.45       0.237      1.85109    1.530    4.197
*S--------------------------------------------------------------------
*S ADD BASINS (900, SG2(82)), ST1(81), 0.70*101(85) - AP STIEGLITZ
DIVIDE HYD            75.PER   91   85       0.00113         3.08       0.114      1.90583    1.530    4.276
                      25.PER  and   86       0.00037         1.03       0.038      1.90583    1.530    4.276
ADD HYD                SUM 85&74  75       0.00353         9.52       0.351      1.86854    1.530    4.222
ADD HYD                SUM 75&81  75       0.00442        12.01       0.444      1.88054    1.530    4.243
*S--------------------------------------------------------------------
*S ADD BASINS (900, SG2, ST1, 0.70*101), 0.30*101(86), ST2(84) - AP WEST END OF
ADD HYD                SUM 74&84  75       0.00260         7.01       0.257      1.85692    1.530    4.213
ADD HYD                SUM 75&86  75       0.00298         8.04       0.296      1.86300    1.530    4.221
*S--------------------------------------------------------------------
FINISH
```

```
    AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.02a - Rel: 02a
         RUN DATE (MON/DAY/YR) = 01/19/2023
         START TIME (HR:MIN:SEC) = 15:00:56     USER NO.= AHYMO-S4TempUser05901704
         INPUT FILE = C:\Users\ctrujillo\Desktop\3_Montage 7 INPUT.txt

START               TIME=0.0 CODE=0  LINES=0

*S                  ESA DEL SOL MONTAGE 7     DECEMBER 2022   HZI NO. R315530.01
*S-------------------------------------------------------------------------
*S-------------------------------------------------------------------------
*S 100 - YEAR RAINFALL    ------------------------------------------------------
RAINFALL            TYPE=-1 RAIN QUAR=0.0 RAIN ONE= 1.83
                    RAIN SIX= 2.29 RAIN DAY=2.63 DT=0.0

               6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
               DT =   0.005000 HOURS       END TIME =     6.000000 HOURS
*S---------------------------------------------------------------------
*S---------------------------------------------------------------------
*S-------THE FOLLOWING BASINS DRAIN INTO POND 1------------------------
*S---------------------------------------------------------------------
*S---------------------------------------------------------------------
*S BASIN 100 - DISCHARGE TO HOPPER ALLEY
COMPUTE NM HYD      ID=10 HYD NO=100  DA=0.0015 SQ MI
                    PER A=0.0 PER B=6.0 PER C=6.0 PER D=88.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   5.2114    CFS   UNIT VOLUME =   0.9975       B =   526.28      P60 = 1.8300
     AREA =     0.001320 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.47851    CFS   UNIT VOLUME =   0.9698       B =   354.36      P60 = 1.8300
     AREA =     0.000180 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=10   CODE=1

                                  PARTIAL HYDROGRAPH   100.00


    RUNOFF VOLUME =     1.90601 INCHES     =       0.1525 ACRE-FEET
    PEAK DISCHARGE RATE =       4.10 CFS  AT   1.530 HOURS   BASIN AREA =  0.0015 SQ. MI.



*S---------------------------------------------------------------------
*S BASIN 200 - DISCHARGE VIA AARON ALLEY AND HOPPER ALLEY
COMPUTE NM HYD      ID=20 HYD NO=200  DA=0.0015 SQ MI
                    PER A=0.0 PER B=21.0 PER C=21.0 PER D=58.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.4348    CFS   UNIT VOLUME =   0.9962       B =   526.28      P60 = 1.8300
     AREA =     0.000870 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =   1.6748    CFS   UNIT VOLUME =   0.9914       B =   354.36      P60 = 1.8300
     AREA =     0.000630 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=20   CODE=1

                                  PARTIAL HYDROGRAPH   200.00


    RUNOFF VOLUME =     1.57789 INCHES     =       0.1262 ACRE-FEET
    PEAK DISCHARGE RATE =       3.62 CFS  AT   1.530 HOURS   BASIN AREA =  0.0015 SQ. MI.



*S---------------------------------------------------------------------
*S BASIN 300 - DISCHARGE TO NEWHALL DRIVE
COMPUTE NM HYD      ID=30 HYD NO=300  DA=0.0010 SQ MI
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                    PER A=0.0 PER B=14.0 PER C=14.0 PER D=72.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.8426    CFS   UNIT VOLUME =   0.9955       B =   526.28      P60 = 1.8300
     AREA =     0.000720 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.74434    CFS   UNIT VOLUME =   0.9805       B =   354.36      P60 = 1.8300
     AREA =     0.000280 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=30   CODE=1

                                      HYDROGRAPH FROM AREA   300.00


    RUNOFF VOLUME =     1.73101 INCHES     =       0.0923 ACRE-FEET
    PEAK DISCHARGE RATE =       2.57 CFS  AT   1.530 HOURS   BASIN AREA =  0.0010 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 400 - DISCHARGE TO SAGAN LOOP TO NORTH SUMP INLET
COMPUTE NM HYD      ID=40 HYD NO=400  DA=0.0013 SQ MI
                    PER A=0.0 PER B=13.0 PER C=13.0 PER D=74.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.7980    CFS   UNIT VOLUME =   0.9966       B =   526.28      P60 = 1.8300
     AREA =     0.000962 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.89853    CFS   UNIT VOLUME =   0.9840       B =   354.36      P60 = 1.8300
     AREA =     0.000338 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=40   CODE=1

                                      HYDROGRAPH FROM AREA   400.00


    RUNOFF VOLUME =     1.75289 INCHES     =       0.1215 ACRE-FEET
    PEAK DISCHARGE RATE =       3.36 CFS  AT   1.530 HOURS   BASIN AREA =  0.0013 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 500 - DISCHARGE TO NEWHALL VIA WOOD ROAD
COMPUTE NM HYD      ID=50 HYD NO=500  DA=0.0010 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.5532    CFS   UNIT VOLUME =   0.9964       B =   526.28      P60 = 1.8300
     AREA =     0.000900 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.26584    CFS   UNIT VOLUME =   0.9456       B =   354.36      P60 = 1.8300
     AREA =     0.000100 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=50   CODE=1

                                   OUTFLOW HYDROGRAPH RESERVOIR   500.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.1028 ACRE-FEET
    PEAK DISCHARGE RATE =       2.76 CFS  AT   1.530 HOURS   BASIN AREA =  0.0010 SQ. MI.
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*S--------------------------------------------------------------------
*S BASIN 600 - DISCHARGE TO AARON ALLEY TO PARCEL J TO WOOD ALLEY TO
COMPUTE NM HYD      ID=60 HYD NO=600  DA=0.0011 SQ MI
                    PER A=0.0 PER B=18.0 PER C=18.0 PER D=64.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.7794    CFS   UNIT VOLUME =   0.9953       B =   526.28      P60 = 1.8300
     AREA =     0.000704 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =   1.0527    CFS   UNIT VOLUME =   0.9863       B =   354.36      P60 = 1.8300
     AREA =     0.000396 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=60   CODE=1

                                      HYDROGRAPH FROM AREA   600.00


    RUNOFF VOLUME =     1.64352 INCHES     =       0.0964 ACRE-FEET
    PEAK DISCHARGE RATE =       2.73 CFS  AT   1.530 HOURS   BASIN AREA =  0.0011 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 700 - DISCHARGE TO NEWHALL DR
COMPUTE NM HYD      ID=70 HYD NO=700  DA=0.0005 SQ MI
                    PER A=0.0 PER B=18.0 PER C=18.0 PER D=64.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.2634    CFS   UNIT VOLUME =   0.9896       B =   526.28      P60 = 1.8300
     AREA =     0.000320 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.47851    CFS   UNIT VOLUME =   0.9698       B =   354.36      P60 = 1.8300
     AREA =     0.000180 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=70   CODE=1

                                      HYDROGRAPH FROM AREA   700.00


    RUNOFF VOLUME =     1.64351 INCHES     =       0.0438 ACRE-FEET
    PEAK DISCHARGE RATE =       1.25 CFS  AT   1.530 HOURS   BASIN AREA =  0.0005 SQ. MI.



 *S--------------------------------------------------------------------
*S BASIN 800 - DISCHARGE TO ROSE ALLEY TO NEWHALL
COMPUTE NM HYD      ID=80 HYD NO=800  DA=0.0009 SQ MI
                    PER A=0.0 PER B=24.0 PER C=24.0 PER D=52.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.8477    CFS   UNIT VOLUME =   0.9930       B =   526.28      P60 = 1.8300
     AREA =     0.000468 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =   1.1484    CFS   UNIT VOLUME =   0.9874       B =   354.36      P60 = 1.8300
     AREA =     0.000432 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=80   CODE=1

                                      HYDROGRAPH FROM AREA   800.00


    RUNOFF VOLUME =     1.51227 INCHES     =       0.0726 ACRE-FEET
    PEAK DISCHARGE RATE =       2.12 CFS  AT   1.530 HOURS   BASIN AREA =  0.0009 SQ. MI.
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 *S--------------------------------------------------------------------
*S BASIN 900 - DISCHARGE TO SAGAN LOOP AND TRAVELS SOUTH
COMPUTE NM HYD      ID=90 HYD NO=900  DA=0.0014 SQ MI
                    PER A=0.0 PER B=11.0 PER C=11.0 PER D=78.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   4.3113    CFS   UNIT VOLUME =   0.9970       B =   526.28      P60 = 1.8300
     AREA =     0.001092 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.81878    CFS   UNIT VOLUME =   0.9823       B =   354.36      P60 = 1.8300
     AREA =     0.000308 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=90   CODE=1

                                      HYDROGRAPH FROM AREA   900.00


    RUNOFF VOLUME =     1.79664 INCHES     =       0.1341 ACRE-FEET
    PEAK DISCHARGE RATE =       3.68 CFS  AT   1.530 HOURS   BASIN AREA =  0.0014 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 101 - DISCHARGE TO STIEGLITZ
COMPUTE NM HYD      ID=91 HYD NO=910  DA=0.0015 SQ MI
                    PER A=0.0 PER B=6.0 PER C=6.0 PER D=88.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   5.2114    CFS   UNIT VOLUME =   0.9975       B =   526.28      P60 = 1.8300
     AREA =     0.001320 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.47851    CFS   UNIT VOLUME =   0.9698       B =   354.36      P60 = 1.8300
     AREA =     0.000180 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=91   CODE=1

                                      HYDROGRAPH FROM AREA   910.00


    RUNOFF VOLUME =     1.90601 INCHES     =       0.1525 ACRE-FEET
    PEAK DISCHARGE RATE =       4.10 CFS  AT   1.530 HOURS   BASIN AREA =  0.0015 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 102A - DISCHARGE CONTINUE ON BOBBY FOSTER
COMPUTE NM HYD      ID=92 HYD NO=920  DA=0.0020 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   7.1065    CFS   UNIT VOLUME =   0.9982       B =   526.28      P60 = 1.8300
     AREA =     0.001800 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.53167    CFS   UNIT VOLUME =   0.9727       B =   354.36      P60 = 1.8300
     AREA =     0.000200 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=92   CODE=1

                                      HYDROGRAPH FROM AREA   920.00
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    RUNOFF VOLUME =     1.92788 INCHES     =       0.2056 ACRE-FEET
    PEAK DISCHARGE RATE =       5.51 CFS  AT   1.530 HOURS   BASIN AREA =  0.0020 SQ. MI.



*S--------------------------------------------------------------------
*S PARTIAL BASIN 102A - DISCHARGE OF 92 THAT DISCHARGES DOWN NEWHALL
COMPUTE NM HYD      ID=93 HYD NO=930  DA=0.000685 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.4340    CFS   UNIT VOLUME =   0.9947       B =   526.28      P60 = 1.8300
     AREA =     0.000617 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.18210    CFS   UNIT VOLUME =   0.9204       B =   354.36      P60 = 1.8300
     AREA =     0.000069 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=93   CODE=1

                                       HYDROGRAPH FROM AREA   930.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0704 ACRE-FEET
    PEAK DISCHARGE RATE =       1.90 CFS  AT   1.530 HOURS   BASIN AREA =  0.0007 SQ. MI.



*S--------------------------------------------------------------------
*S PARTIAL BASIN 102A - DISCHARGE OF 92 THAT DISCHARGES DOWN SAGAN
COMPUTE NM HYD      ID=85 HYD NO=850  DA=0.000685 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.4340    CFS   UNIT VOLUME =   0.9947       B =   526.28      P60 = 1.8300
     AREA =     0.000617 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.18210    CFS   UNIT VOLUME =   0.9204       B =   354.36      P60 = 1.8300
     AREA =     0.000069 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=85   CODE=1

                                       HYDROGRAPH FROM AREA   850.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0704 ACRE-FEET
    PEAK DISCHARGE RATE =       1.90 CFS  AT   1.530 HOURS   BASIN AREA =  0.0007 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 102B - DISCHARGE TO DIEBENKORN
COMPUTE NM HYD      ID=94 HYD NO=940  DA=0.0020 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   7.1065    CFS   UNIT VOLUME =   0.9982       B =   526.28      P60 = 1.8300
     AREA =     0.001800 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.53167    CFS   UNIT VOLUME =   0.9727       B =   354.36      P60 = 1.8300
     AREA =     0.000200 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=94   CODE=1
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                                    HYDROGRAPH FROM AREA   940.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.2056 ACRE-FEET
    PEAK DISCHARGE RATE =       5.51 CFS  AT   1.530 HOURS   BASIN AREA =  0.0020 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 103A - DISCHARGE CONTINUE ON BOBBY FOSTER
COMPUTE NM HYD      ID=95 HYD NO=950  DA=0.0008 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.8426    CFS   UNIT VOLUME =   0.9955       B =   526.28      P60 = 1.8300
     AREA =     0.000720 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.21267    CFS   UNIT VOLUME =   0.9318       B =   354.36      P60 = 1.8300
     AREA =     0.000080 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=95   CODE=1

                                    HYDROGRAPH FROM AREA   950.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0823 ACRE-FEET
    PEAK DISCHARGE RATE =       2.22 CFS  AT   1.530 HOURS   BASIN AREA =  0.0008 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 103B - DISCHARGE TO NEWHALL DR
COMPUTE NM HYD      ID=96 HYD NO=960  DA=0.0008 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.8426    CFS   UNIT VOLUME =   0.9955       B =   526.28      P60 = 1.8300
     AREA =     0.000720 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.21267    CFS   UNIT VOLUME =   0.9318       B =   354.36      P60 = 1.8300
     AREA =     0.000080 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=96   CODE=1

                                    HYDROGRAPH FROM AREA   960.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0823 ACRE-FEET
    PEAK DISCHARGE RATE =       2.22 CFS  AT   1.530 HOURS   BASIN AREA =  0.0008 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 104 - DISCHARGE TO SAGAN LOOP
COMPUTE NM HYD      ID=97 HYD NO=970  DA=0.0018 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   6.3958    CFS   UNIT VOLUME =   0.9980       B =   526.28      P60 = 1.8300
     AREA =     0.001620 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.47851    CFS   UNIT VOLUME =   0.9698       B =   354.36      P60 = 1.8300
     AREA =     0.000180 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
```

```
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=97   CODE=1

                                        HYDROGRAPH FROM AREA   970.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.1851 ACRE-FEET
    PEAK DISCHARGE RATE =       4.96 CFS  AT   1.530 HOURS   BASIN AREA =  0.0018 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN NEWHALL1 - DISCHARGE FROM NORTH HALF OF NEWHALL
COMPUTE NM HYD      ID=98 HYD NO=980  DA=0.0008 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.8426    CFS   UNIT VOLUME =   0.9955       B =   526.28      P60 = 1.8300
     AREA =     0.000720 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.21267    CFS   UNIT VOLUME =   0.9318       B =   354.36      P60 = 1.8300
     AREA =     0.000080 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=98   CODE=1

                                        HYDROGRAPH FROM AREA   980.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0823 ACRE-FEET
    PEAK DISCHARGE RATE =       2.22 CFS  AT   1.530 HOURS   BASIN AREA =  0.0008 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN NEWHALL2 - DISCHARGE FROM SOUTH HALF OF NEWHALL, TO POND 1 INLET
COMPUTE NM HYD      ID=99 HYD NO=990  DA=0.0004 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.4213    CFS   UNIT VOLUME =   0.9909       B =   526.28      P60 = 1.8300
     AREA =     0.000360 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.10633    CFS   UNIT VOLUME =   0.8642       B =   354.36      P60 = 1.8300
     AREA =     0.000040 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=99   CODE=1

                                        HYDROGRAPH FROM AREA   990.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0411 ACRE-FEET
    PEAK DISCHARGE RATE =       1.12 CFS  AT   1.530 HOURS   BASIN AREA =  0.0004 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN SAGAN1 - DISCHARGE FROM NORTH HALF OF SAGAN
COMPUTE NM HYD      ID=81 HYD NO=810  DA=0.0009 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.1979    CFS   UNIT VOLUME =   0.9959       B =   526.28      P60 = 1.8300
     AREA =     0.000810 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000
```

```
     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.23925    CFS   UNIT VOLUME =   0.9399       B =   354.36      P60 = 1.8300
     AREA =     0.000090 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=81   CODE=1

                                       HYDROGRAPH FROM AREA   810.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0925 ACRE-FEET
    PEAK DISCHARGE RATE =       2.49 CFS  AT   1.530 HOURS   BASIN AREA =  0.0009 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN SAGAN2 - DISCHARGE FROM SOUTH HALF OF SAGAN
COMPUTE NM HYD      ID=82 HYD NO=820  DA=0.0010 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.5532    CFS   UNIT VOLUME =   0.9964       B =   526.28      P60 = 1.8300
     AREA =     0.000900 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.26584    CFS   UNIT VOLUME =   0.9456       B =   354.36      P60 = 1.8300
     AREA =     0.000100 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=82   CODE=1

                                       HYDROGRAPH FROM AREA   820.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.1028 ACRE-FEET
    PEAK DISCHARGE RATE =       2.76 CFS  AT   1.530 HOURS   BASIN AREA =  0.0010 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN STIEGLITZ1 - DISCHARGE FROM EAST HALF OF STIEGLITZ
COMPUTE NM HYD      ID=83 HYD NO=830  DA=0.0005 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.7766    CFS   UNIT VOLUME =   0.9926       B =   526.28      P60 = 1.8300
     AREA =     0.000450 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.13292    CFS   UNIT VOLUME =   0.8916       B =   354.36      P60 = 1.8300
     AREA =     0.000050 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=83   CODE=1

                                       HYDROGRAPH FROM AREA   830.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0514 ACRE-FEET
    PEAK DISCHARGE RATE =       1.39 CFS  AT   1.530 HOURS   BASIN AREA =  0.0005 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN STIEGLITZ2 - DISCHARGE FROM WEST HALF OF STIEGLITZ
COMPUTE NM HYD      ID=84 HYD NO=840  DA=0.0002 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =  0.71065    CFS   UNIT VOLUME =   0.9815       B =   526.28      P60 = 1.8300
     AREA =     0.000180 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
```

```
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118556HR    TP =  0.133300HR    K/TP RATIO =  0.889390     SHAPE CONSTANT, N =  3.987797
     UNIT PEAK =  0.53167E-01CFS   UNIT VOLUME =   0.8642       B =   354.36      P60 = 1.8300
     AREA =     0.000020 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=84   CODE=1

                                       HYDROGRAPH FROM AREA   840.00


    RUNOFF VOLUME =     1.92788 INCHES     =       0.0206 ACRE-FEET
    PEAK DISCHARGE RATE =       0.56 CFS  AT   1.530 HOURS   BASIN AREA =  0.0002 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS 100, 200 - AP HOPPER ALLEY
ADD HYD                           ID=75 HYD=SUM IDi=10 IDii=20
PRINT HYD                   ID=75 CODE=1

                                       HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.74177 INCHES     =       0.2787 ACRE-FEET
    PEAK DISCHARGE RATE =       7.72 CFS  AT   1.530 HOURS   BASIN AREA =  0.0030 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS 500, 600 - AP WOOD ALLEY
ADD HYD                           ID=65 HYD=SUM IDi=60 IDii=50
PRINT HYD                   ID=65 CODE=1

                                       HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.77867 INCHES     =       0.1992 ACRE-FEET
    PEAK DISCHARGE RATE =       5.49 CFS  AT   1.530 HOURS   BASIN AREA =  0.0021 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS 102A/2(93), 103B(96), NH1(98), 100, 200, 300, 500, 600 - AP NEWHAL
ADD HYD                           ID=75 HYD=SUM IDi=96 IDii=98
ADD HYD                           ID=75 HYD=SUM IDi=75 IDii=10
ADD HYD                           ID=75 HYD=SUM IDi=75 IDii=20
ADD HYD                           ID=75 HYD=SUM IDi=75 IDii=30
ADD HYD                           ID=75 HYD=SUM IDi=75 IDii=65
ADD HYD                           ID=75 HYD=SUM IDi=75 IDii=93
PRINT HYD                   ID=75 CODE=1

                                       HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.80031 INCHES     =       0.8051 ACRE-FEET
    PEAK DISCHARGE RATE =      22.12 CFS  AT   1.530 HOURS   BASIN AREA =  0.0084 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS 700, NH2(99) - AP NEWHALL
ADD HYD                           ID=75 HYD=SUM IDi=70 IDii=99
PRINT HYD                   ID=75 CODE=1

                                       HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.76931 INCHES     =       0.0849 ACRE-FEET
    PEAK DISCHARGE RATE =       2.37 CFS  AT   1.530 HOURS   BASIN AREA =  0.0009 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS 102A/2(93), 103A(95), 104(97) - AP SAGAN AND BOBBY FOSTER
ADD HYD                           ID=75 HYD=SUM IDi=97 IDii=95
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```
ADD HYD                          ID=75 HYD=SUM IDi=75 IDii=85
PRINT HYD                 ID=75 CODE=1

                                  HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.92763 INCHES     =       0.3377 ACRE-FEET
    PEAK DISCHARGE RATE =       9.08 CFS  AT   1.530 HOURS   BASIN AREA =  0.0033 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS 400, SG1(81) - AP SAGAN LOOP
ADD HYD                          ID=75 HYD=SUM IDi=40 IDii=81
PRINT HYD                 ID=75 CODE=1

                                  HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.82423 INCHES     =       0.2140 ACRE-FEET
    PEAK DISCHARGE RATE =       5.85 CFS  AT   1.530 HOURS   BASIN AREA =  0.0022 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS 900, SG2(82) - AP SAGAN LOOP
ADD HYD                          ID=74 HYD=SUM IDi=90 IDii=82
PRINT HYD                 ID=74 CODE=1

                                  HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.85109 INCHES     =       0.2369 ACRE-FEET
    PEAK DISCHARGE RATE =       6.45 CFS  AT   1.530 HOURS   BASIN AREA =  0.0024 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS (900, SG2(82)), ST1(81), 0.70*101(85) - AP STIEGLITZ
DIVIDE HYD                ID=91   PER=-75         IDi=85  HYD NO=75.PER
                                                          IDii=86 HYD NO=25.PER
ADD HYD                          ID=75 HYD=SUM IDi=85 IDii=74
ADD HYD                          ID=75 HYD=SUM IDi=75 IDii=81
PRINT HYD                 ID=75 CODE=1

                                  HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.88054 INCHES     =       0.4438 ACRE-FEET
    PEAK DISCHARGE RATE =      12.01 CFS  AT   1.530 HOURS   BASIN AREA =  0.0044 SQ. MI.



*S--------------------------------------------------------------------
*S ADD BASINS (900, SG2, ST1, 0.70*101), 0.30*101(86), ST2(84) - AP WEST END OF
ADD HYD                          ID=75 HYD=SUM   IDi=74  IDii=84
ADD HYD                          ID=75 HYD=SUM   IDi=75  IDii=86
PRINT HYD                 ID=75 CODE=1

                                  HYDROGRAPH FROM AREA SUM


    RUNOFF VOLUME =     1.86300 INCHES     =       0.2956 ACRE-FEET
    PEAK DISCHARGE RATE =       8.04 CFS  AT   1.530 HOURS   BASIN AREA =  0.0030 SQ. MI.



*S--------------------------------------------------------------------
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 15:00:56
```

APPENDIX D

Street Capacity Analysis

Worksheet for Wood Road

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.5 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+15	0.38
0+27	0.13
0+29	0.00
0+29	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+29, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	20.83 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.5 ft
Flow Area	8.1 ft²
Wetted Perimeter	30.3 ft
Hydraulic Radius	0.3 ft
Top Width	29.25 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.697 %
Velocity	2.57 ft/s
Velocity Head	0.10 ft
Specific Energy	0.60 ft
Froude Number	0.860
Flow Type	Subcritical

Worksheet for Wood Road

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.697 %

Worksheet for Steiglitz Ave. down stream

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.5 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+14	0.29
0+26	0.08
0+28	0.00
0+28	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+28, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	26.08 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.5 ft
Flow Area	9.1 ft²
Wetted Perimeter	28.8 ft
Hydraulic Radius	0.3 ft
Top Width	27.80 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.657 %
Velocity	2.87 ft/s
Velocity Head	0.13 ft
Specific Energy	0.63 ft
Froude Number	0.883
Flow Type	Subcritical

Worksheet for Steiglitz Ave. down stream

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.657 %

Worksheet for Steiglitz Ave. up stream

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.5 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+10	0.29
0+18	0.13
0+20	0.00
0+20	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+20, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	18.64 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.5 ft
Flow Area	6.6 ft²
Wetted Perimeter	21.3 ft
Hydraulic Radius	0.3 ft
Top Width	20.29 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.671 %
Velocity	2.83 ft/s
Velocity Head	0.12 ft
Specific Energy	0.62 ft
Froude Number	0.875
Flow Type	Subcritical

Worksheet for Steiglitz Ave. up stream

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.671 %

Worksheet for Sidewalk Culvert - Rose

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.017
Channel Slope	2.000 %
Normal Depth	0.7 ft
Bottom Width	2.00 ft

Results	
Discharge	9.58 cfs
Flow Area	1.4 ft²
Wetted Perimeter	3.4 ft
Hydraulic Radius	0.4 ft
Top Width	2.00 ft
Critical Depth	0.9 ft
Critical Slope	1.024 %
Velocity	6.84 ft/s
Velocity Head	0.73 ft
Specific Energy	1.43 ft
Froude Number	1.442
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.7 ft
Critical Depth	0.9 ft
Channel Slope	2.000 %
Critical Slope	1.024 %

Worksheet for Sidewalk Culvert - Hopper

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.017
Channel Slope	2.000 %
Normal Depth	0.7 ft
Bottom Width	4.00 ft

Results	
Discharge	22.34 cfs
Flow Area	2.8 ft²
Wetted Perimeter	5.4 ft
Hydraulic Radius	0.5 ft
Top Width	4.00 ft
Critical Depth	1.0 ft
Critical Slope	0.722 %
Velocity	7.98 ft/s
Velocity Head	0.99 ft
Specific Energy	1.69 ft
Froude Number	1.681
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.7 ft
Critical Depth	1.0 ft
Channel Slope	2.000 %
Critical Slope	0.722 %

Worksheet for Rose Alley Weir

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	0.70 ft
Crest Elevation	0.00 ft
Tailwater Elevation	0.00 ft
Weir Coefficient	3.33 ft^(1/2)/s
Crest Length	2.0 ft
Number Of Contractions	0

Results	
Discharge	3.90 cfs
Headwater Height Above Crest	0.70 ft
Tailwater Height Above Crest	0.00 ft
Flow Area	1.4 ft²
Velocity	2.79 ft/s
Wetted Perimeter	3.4 ft
Top Width	2.00 ft

Worksheet for Hopper Alley Weir

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	0.70 ft
Crest Elevation	0.00 ft
Tailwater Elevation	0.00 ft
Weir Coefficient	3.33 ft^(1/2)/s
Crest Length	4.0 ft
Number Of Contractions	0

Results	
Discharge	7.80 cfs
Headwater Height Above Crest	0.70 ft
Tailwater Height Above Crest	0.00 ft
Flow Area	2.8 ft²
Velocity	2.79 ft/s
Wetted Perimeter	5.4 ft
Top Width	4.00 ft

Worksheet for Sagan Loop

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.7 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+17	0.42
0+31	0.13
0+33	0.00
0+33	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+33, 0.67)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	48.36 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.7 ft
Flow Area	14.2 ft²
Wetted Perimeter	34.6 ft
Hydraulic Radius	0.4 ft
Top Width	33.25 ft
Normal Depth	0.7 ft
Critical Depth	0.6 ft
Critical Slope	0.600 %
Velocity	3.41 ft/s
Velocity Head	0.18 ft
Specific Energy	0.85 ft
Froude Number	0.921
Flow Type	Subcritical

Worksheet for Sagan Loop

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.7 ft
Critical Depth	0.6 ft
Channel Slope	0.500 %
Critical Slope	0.600 %

Worksheet for Parcel J - Alley w/VG

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.6 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.73
0+00	0.23
0+05	0.10
0+07	0.00
0+09	0.13
0+14	0.23
0+14	0.73

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.73)	(0+00, 0.23)	0.013
(0+00, 0.23)	(0+05, 0.10)	0.050
(0+05, 0.10)	(0+09, 0.13)	0.013
(0+09, 0.13)	(0+14, 0.23)	0.050
(0+14, 0.23)	(0+14, 0.73)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	10.86 cfs
Roughness Coefficient	0.042
Elevation Range	0.0 to 0.7 ft
Flow Area	7.1 ft²
Wetted Perimeter	15.1 ft
Hydraulic Radius	0.5 ft
Top Width	14.24 ft
Normal Depth	0.6 ft
Critical Depth	0.4 ft
Critical Slope	4.134 %
Velocity	1.52 ft/s

Worksheet for Parcel J - Alley w/VG

Results	
Velocity Head	0.04 ft
Specific Energy	0.68 ft
Froude Number	0.379
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.6 ft
Critical Depth	0.4 ft
Channel Slope	0.500 %
Critical Slope	4.134 %

Worksheet for Newhall Dr.

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.5 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.08
0+15	0.38
0+27	0.08
0+29	0.00
0+29	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+29, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	23.61 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.5 ft
Flow Area	8.7 ft²
Wetted Perimeter	30.0 ft
Hydraulic Radius	0.3 ft
Top Width	29.25 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.670 %
Velocity	2.71 ft/s
Velocity Head	0.11 ft
Specific Energy	0.61 ft
Froude Number	0.876
Flow Type	Subcritical

Worksheet for Newhall Dr.

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.670 %

Worksheet for Bobby Foster - West Bound

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.5 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+18	0.44
0+34	0.13
0+36	0.00
0+36	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+36, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	20.63 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.5 ft
Flow Area	8.7 ft²
Wetted Perimeter	36.8 ft
Hydraulic Radius	0.2 ft
Top Width	35.79 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.725 %
Velocity	2.37 ft/s
Velocity Head	0.09 ft
Specific Energy	0.59 ft
Froude Number	0.845
Flow Type	Subcritical

Worksheet for Bobby Foster - West Bound

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.725 %

Worksheet for Bobby Foster - East Bound

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.5 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+15	0.39
0+28	0.13
0+30	0.00
0+30	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+30, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	20.91 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.5 ft
Flow Area	8.2 ft²
Wetted Perimeter	31.3 ft
Hydraulic Radius	0.3 ft
Top Width	30.29 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.701 %
Velocity	2.54 ft/s
Velocity Head	0.10 ft
Specific Energy	0.60 ft
Froude Number	0.858
Flow Type	Subcritical

Worksheet for Bobby Foster - East Bound

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.701 %

Worksheet for Alley A,B,C,D - 0.5% w 4" Curbs

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	0.3 ft

Section Definitions

Station (ft)	Elevation (ft)
0+03	0.33
0+04	0.00
0+05	0.08
0+15	0.18
0+25	0.08
0+26	0.00
0+27	0.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+03, 0.33)	(0+27, 0.33)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	10.24 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.3 ft
Flow Area	4.8 ft²
Wetted Perimeter	24.1 ft
Hydraulic Radius	0.2 ft
Top Width	23.98 ft
Normal Depth	0.3 ft
Critical Depth	0.3 ft
Critical Slope	0.751 %
Velocity	2.12 ft/s
Velocity Head	0.07 ft
Specific Energy	0.40 ft
Froude Number	0.832
Flow Type	Subcritical

Worksheet for Alley A,B,C,D - 0.5% w 4" Curbs

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.3 ft
Critical Depth	0.3 ft
Channel Slope	0.500 %
Critical Slope	0.751 %

Worksheet for Discharge Height Wood Alley

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	5.50 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+03	0.33
0+04	0.00
0+05	0.08
0+15	0.18
0+25	0.08
0+26	0.00
0+27	0.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+03, 0.33)	(0+27, 0.33)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	0.3 ft
Roughness Coefficient	0.017
Elevation	0.27 ft
Elevation Range	0.0 to 0.3 ft
Flow Area	3.3 ft²
Wetted Perimeter	23.7 ft
Hydraulic Radius	0.1 ft
Top Width	23.57 ft
Normal Depth	0.3 ft
Critical Depth	0.2 ft
Critical Slope	0.859 %
Velocity	1.67 ft/s
Velocity Head	0.04 ft
Specific Energy	0.31 ft
Froude Number	0.784

Worksheet for Discharge Height Wood Alley

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.3 ft
Critical Depth	0.2 ft
Channel Slope	0.500 %
Critical Slope	0.859 %

Worksheet for Discharge Height Steiglitz 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.500	%
Discharge	6.10	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+14	0.29
0+26	0.08
0+28	0.00
0+28	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+28, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results		
Normal Depth	0.3	ft
Roughness Coefficient	0.017	
Elevation	0.31	ft
Elevation Range	0.0 to 0.5	ft
Flow Area	3.8	ft²
Wetted Perimeter	28.4	ft
Hydraulic Radius	0.1	ft
Top Width	27.80	ft
Normal Depth	0.3	ft
Critical Depth	0.3	ft
Critical Slope	0.892	%
Velocity	1.61	ft/s
Velocity Head	0.04	ft
Specific Energy	0.35	ft
Froude Number	0.770	

Worksheet for Discharge Height Steiglitz 2

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.3 ft
Critical Depth	0.3 ft
Channel Slope	0.500 %
Critical Slope	0.892 %

Worksheet for Discharge Height Steiglitz 1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.500	%
Discharge	1.40	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+10	0.29
0+18	0.13
0+20	0.00
0+20	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+20, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results		
Normal Depth	0.2	ft
Roughness Coefficient	0.017	
Elevation	0.23	ft
Elevation Range	0.0 to 0.5	ft
Flow Area	1.2	ft²
Wetted Perimeter	14.8	ft
Hydraulic Radius	0.1	ft
Top Width	14.37	ft
Normal Depth	0.2	ft
Critical Depth	0.2	ft
Critical Slope	1.045	%
Velocity	1.16	ft/s
Velocity Head	0.02	ft
Specific Energy	0.25	ft
Froude Number	0.707	

Worksheet for Discharge Height Steiglitz 1

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.2 ft
Critical Depth	0.2 ft
Channel Slope	0.500 %
Critical Slope	1.045 %

Worksheet for Discharge Height Steiglitz 1

Messages:

Flow is divided.

Worksheet for Discharge Height Sagan 2 Loop

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	6.70 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+17	0.42
0+31	0.13
0+33	0.00
0+33	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+33, 0.67)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	0.4 ft
Roughness Coefficient	0.017
Elevation	0.36 ft
Elevation Range	0.0 to 0.7 ft
Flow Area	4.0 ft²
Wetted Perimeter	28.4 ft
Hydraulic Radius	0.1 ft
Top Width	27.65 ft
Normal Depth	0.4 ft
Critical Depth	0.3 ft
Critical Slope	0.859 %
Velocity	1.68 ft/s
Velocity Head	0.04 ft
Specific Energy	0.40 ft
Froude Number	0.777

Worksheet for Discharge Height Sagan 2 Loop

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.4 ft
Critical Depth	0.3 ft
Channel Slope	0.500 %
Critical Slope	0.859 %

Worksheet for Discharge Height Sagan 2 Loop

Messages:

Flow is divided.

Worksheet for Discharge Height Sagan 1 Loop

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	9.30 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+17	0.42
0+31	0.13
0+33	0.00
0+33	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+33, 0.67)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	0.4 ft
Roughness Coefficient	0.017
Elevation	0.40 ft
Elevation Range	0.0 to 0.7 ft
Flow Area	5.1 ft²
Wetted Perimeter	32.3 ft
Hydraulic Radius	0.2 ft
Top Width	31.48 ft
Normal Depth	0.4 ft
Critical Depth	0.4 ft
Critical Slope	0.822 %
Velocity	1.81 ft/s
Velocity Head	0.05 ft
Specific Energy	0.45 ft
Froude Number	0.791

Worksheet for Discharge Height Sagan 1 Loop

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.4 ft
Critical Depth	0.4 ft
Channel Slope	0.500 %
Critical Slope	0.822 %

Worksheet for Discharge Height Sagan 1 Loop

Messages:

Flow is divided.

Worksheet for Discharge Height Rose Alley

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.500	%
Discharge	2.60	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+03	0.33
0+04	0.00
0+05	0.08
0+15	0.18
0+25	0.08
0+26	0.00
0+27	0.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+03, 0.33)	(0+27, 0.33)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results		
Normal Depth	0.2	ft
Roughness Coefficient	0.017	
Elevation	0.21	ft
Elevation Range	0.0 to 0.3	ft
Flow Area	2.1	ft²
Wetted Perimeter	23.3	ft
Hydraulic Radius	0.1	ft
Top Width	23.24	ft
Normal Depth	0.2	ft
Critical Depth	0.2	ft
Critical Slope	1.010	%
Velocity	1.24	ft/s
Velocity Head	0.02	ft
Specific Energy	0.24	ft
Froude Number	0.730	

Worksheet for Discharge Height Rose Alley

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.2 ft
Critical Depth	0.2 ft
Channel Slope	0.500 %
Critical Slope	1.010 %

Worksheet for Discharge Height Parcel J - Alley w/VG

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	2.70 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.73
0+00	0.23
0+05	0.10
0+07	0.00
0+09	0.13
0+14	0.23
0+14	0.73

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.73)	(0+00, 0.23)	0.013
(0+00, 0.23)	(0+05, 0.10)	0.050
(0+05, 0.10)	(0+09, 0.13)	0.013
(0+09, 0.13)	(0+14, 0.23)	0.050
(0+14, 0.23)	(0+14, 0.73)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	0.4 ft
Roughness Coefficient	0.043
Elevation	0.36 ft
Elevation Range	0.0 to 0.7 ft
Flow Area	3.1 ft²
Wetted Perimeter	14.5 ft
Hydraulic Radius	0.2 ft
Top Width	14.24 ft
Normal Depth	0.4 ft
Critical Depth	0.2 ft
Critical Slope	5.662 %

Worksheet for Discharge Height Parcel J - Alley w/VG

Results	
Velocity	0.88 ft/s
Velocity Head	0.01 ft
Specific Energy	0.37 ft
Froude Number	0.333
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.4 ft
Critical Depth	0.2 ft
Channel Slope	0.500 %
Critical Slope	5.662 %

Worksheet for Discharge Height of Wood Road

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.500	%
Discharge	5.50	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+15	0.38
0+27	0.13
0+29	0.00
0+29	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+29, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results		
Normal Depth	0.3	ft
Roughness Coefficient	0.017	
Elevation	0.34	ft
Elevation Range	0.0 to 0.5	ft
Flow Area	3.5	ft²
Wetted Perimeter	26.3	ft
Hydraulic Radius	0.1	ft
Top Width	25.60	ft
Normal Depth	0.3	ft
Critical Depth	0.3	ft
Critical Slope	0.881	%
Velocity	1.59	ft/s
Velocity Head	0.04	ft
Specific Energy	0.38	ft
Froude Number	0.765	

Worksheet for Discharge Height of Wood Road

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.3 ft
Critical Depth	0.3 ft
Channel Slope	0.500 %
Critical Slope	0.881 %

Worksheet for Discharge Height of Wood Road

Messages:

Flow is divided.

Worksheet for Discharge Height of Newhall Dr.

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	22.70 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.08
0+15	0.38
0+27	0.08
0+29	0.00
0+29	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+29, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	0.5 ft
Roughness Coefficient	0.017
Elevation	0.49 ft
Elevation Range	0.0 to 0.5 ft
Flow Area	8.5 ft²
Wetted Perimeter	30.0 ft
Hydraulic Radius	0.3 ft
Top Width	29.25 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.675 %
Velocity	2.67 ft/s
Velocity Head	0.11 ft
Specific Energy	0.60 ft
Froude Number	0.873

Worksheet for Discharge Height of Newhall Dr.

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.675 %

Worksheet for Discharge Height of Newhall 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.500	%
Discharge	7.30	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.08
0+15	0.38
0+27	0.08
0+29	0.00
0+29	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+29, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results		
Normal Depth	0.3	ft
Roughness Coefficient	0.017	
Elevation	0.34	ft
Elevation Range	0.0 to 0.5	ft
Flow Area	4.1	ft²
Wetted Perimeter	26.8	ft
Hydraulic Radius	0.2	ft
Top Width	26.28	ft
Normal Depth	0.3	ft
Critical Depth	0.3	ft
Critical Slope	0.826	%
Velocity	1.77	ft/s
Velocity Head	0.05	ft
Specific Energy	0.39	ft
Froude Number	0.789	

Worksheet for Discharge Height of Newhall 2

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.3 ft
Critical Depth	0.3 ft
Channel Slope	0.500 %
Critical Slope	0.826 %

Worksheet for Discharge Height of Newhall 2

Messages:

Flow is divided.

Worksheet for Discharge Height Hopper Alley

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	7.72 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+03	0.33
0+04	0.00
0+05	0.08
0+15	0.18
0+25	0.08
0+26	0.00
0+27	0.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+03, 0.33)	(0+27, 0.33)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	0.3 ft
Roughness Coefficient	0.017
Elevation	0.30 ft
Elevation Range	0.0 to 0.3 ft
Flow Area	4.1 ft²
Wetted Perimeter	23.9 ft
Hydraulic Radius	0.2 ft
Top Width	23.77 ft
Normal Depth	0.3 ft
Critical Depth	0.3 ft
Critical Slope	0.798 %
Velocity	1.90 ft/s
Velocity Head	0.06 ft
Specific Energy	0.35 ft
Froude Number	0.810

Worksheet for Discharge Height Hopper Alley

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.3 ft
Critical Depth	0.3 ft
Channel Slope	0.500 %
Critical Slope	0.798 %

Worksheet for Discharge Height Bobby Foster

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.500	%
Discharge	9.30	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+02	0.13
0+15	0.39
0+28	0.13
0+30	0.00
0+30	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+30, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results		
Normal Depth	0.4	ft
Roughness Coefficient	0.017	
Elevation	0.39	ft
Elevation Range	0.0 to 0.5	ft
Flow Area	5.0	ft²
Wetted Perimeter	31.1	ft
Hydraulic Radius	0.2	ft
Top Width	30.29	ft
Normal Depth	0.4	ft
Critical Depth	0.4	ft
Critical Slope	0.823	%
Velocity	1.84	ft/s
Velocity Head	0.05	ft
Specific Energy	0.45	ft
Froude Number	0.795	

Worksheet for Discharge Height Bobby Foster

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.4 ft
Critical Depth	0.4 ft
Channel Slope	0.500 %
Critical Slope	0.823 %

Worksheet for Discharge Height Aaron Alley

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	2.70 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+03	0.33
0+04	0.00
0+05	0.08
0+15	0.18
0+25	0.08
0+26	0.00
0+27	0.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+03, 0.33)	(0+27, 0.33)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

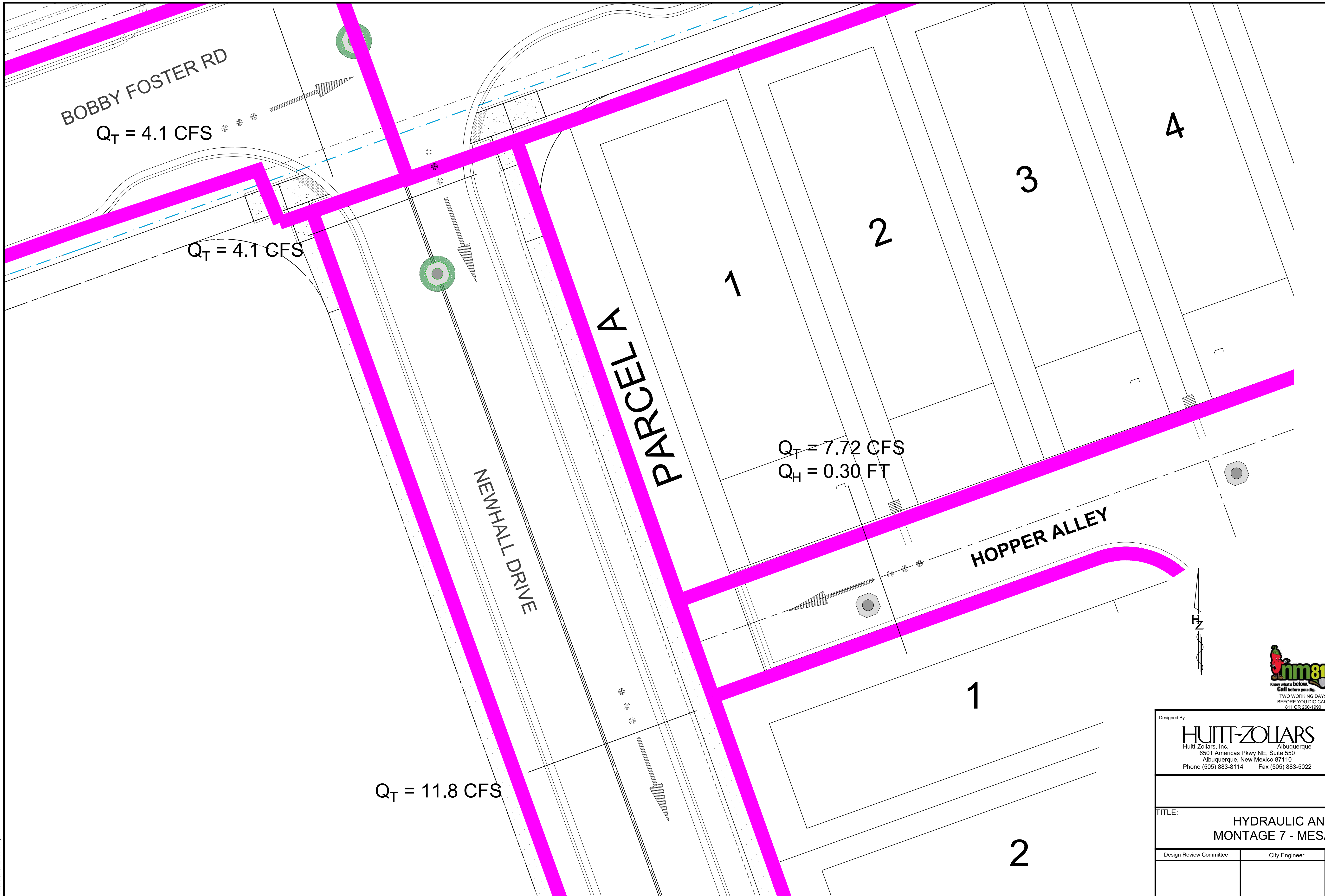
Results	
Normal Depth	0.2 ft
Roughness Coefficient	0.017
Elevation	0.22 ft
Elevation Range	0.0 to 0.3 ft
Flow Area	2.1 ft²
Wetted Perimeter	23.3 ft
Hydraulic Radius	0.1 ft
Top Width	23.25 ft
Normal Depth	0.2 ft
Critical Depth	0.2 ft
Critical Slope	1.002 %
Velocity	1.26 ft/s
Velocity Head	0.02 ft
Specific Energy	0.24 ft
Froude Number	0.732

Worksheet for Discharge Height Aaron Alley

Results	
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.2 ft
Critical Depth	0.2 ft
Channel Slope	0.500 %
Critical Slope	1.002 %



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FIELD NOTES
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ENGINEER'S SEAL
NINA LEUNG-VILLA, NEW MEXICO, 25970, REGISTERED PROFESSIONAL ENGINEER

NO. | DATE | REMARKS | BY
REVISIONS
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Albuquerque, New Mexico 87110
Phone (505) 883-8114 Fax (505) 883-5022

TITLE:
HYDRAULIC ANALYSIS
MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Last Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No. | Zone Map No. | Sheet Of
EXHIBIT 2

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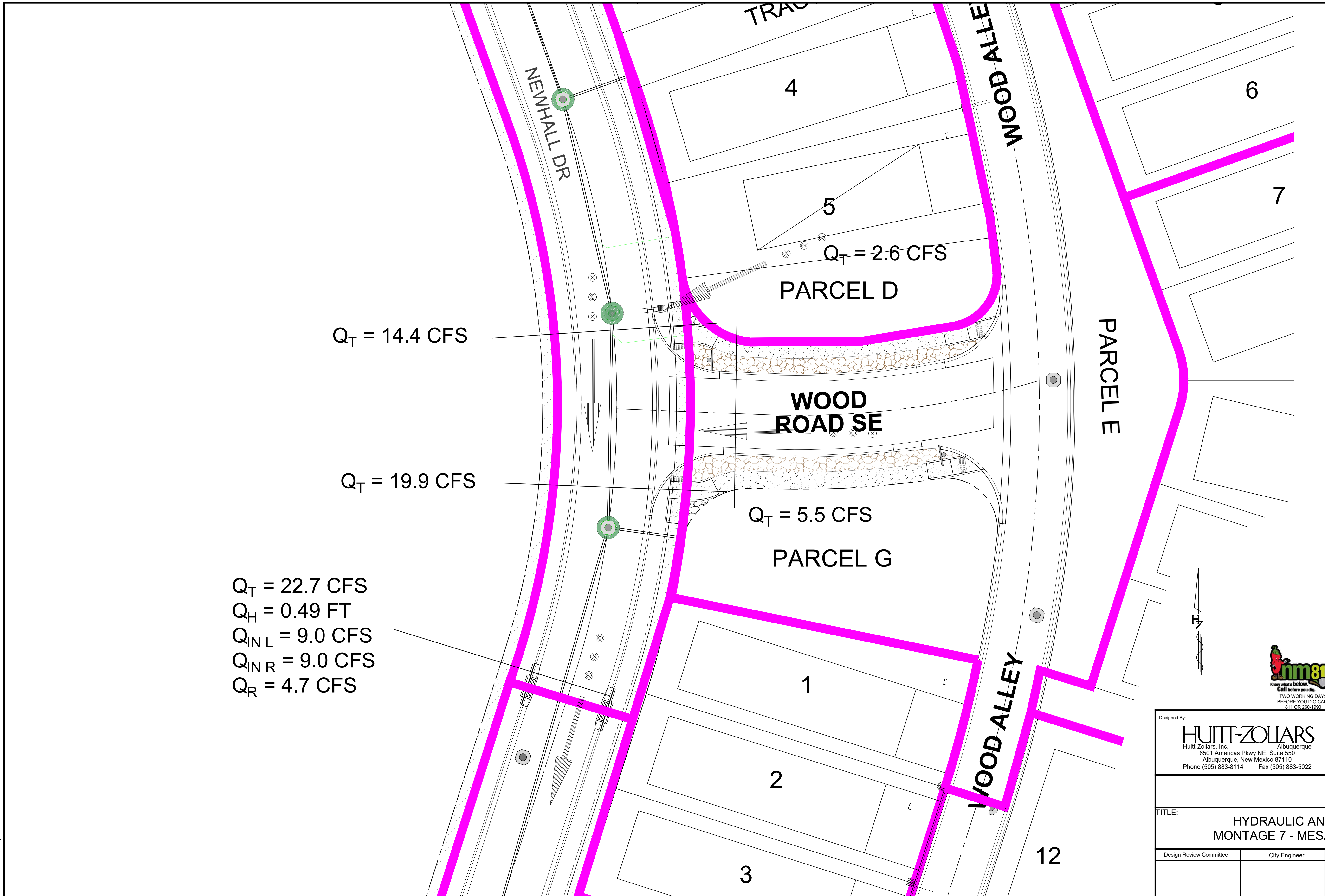

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CONTRACTOR | DATE
WORK STAKED BY | DATE
INSPECTOR'S ACCEPTANCE BY | DATE
FIELD VERIFICATION BY | DATE
DRAWINGS CORRECTED BY | DATE
MICRO-FILM INFORMATION
RECORDED BY | DATE
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ENGINEER'S SEAL

NINA LEUNG-VILLA, NEW MEXICO, 25970, REGISTERED PROFESSIONAL ENGINEER

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MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Last Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No. | Zone Map No. | Sheet Of
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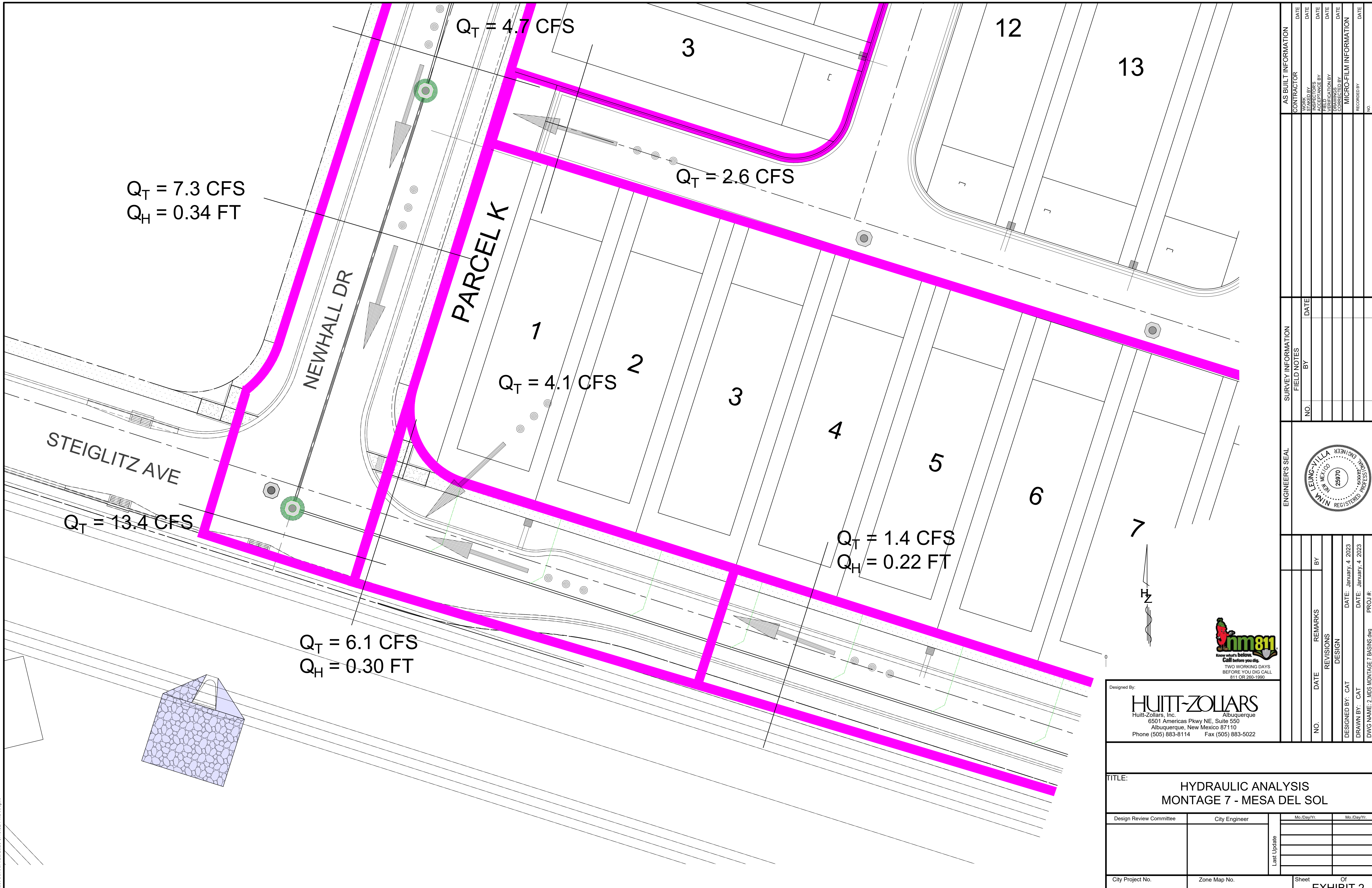

Q_T = 4.7 CFS
Q_T = 7.3 CFS
Q_H = 0.34 FT
Q_T = 2.6 CFS
Q_T = 4.1 CFS
Q_T = 13.4 CFS
Q_T = 1.4 CFS
Q_H = 0.22 FT
Q_T = 6.1 CFS
Q_H = 0.30 FT
NEWHALL DR
PARCEL K
STEIGLITZ AVE
3
12
13
1
2
3
4
5
6
7
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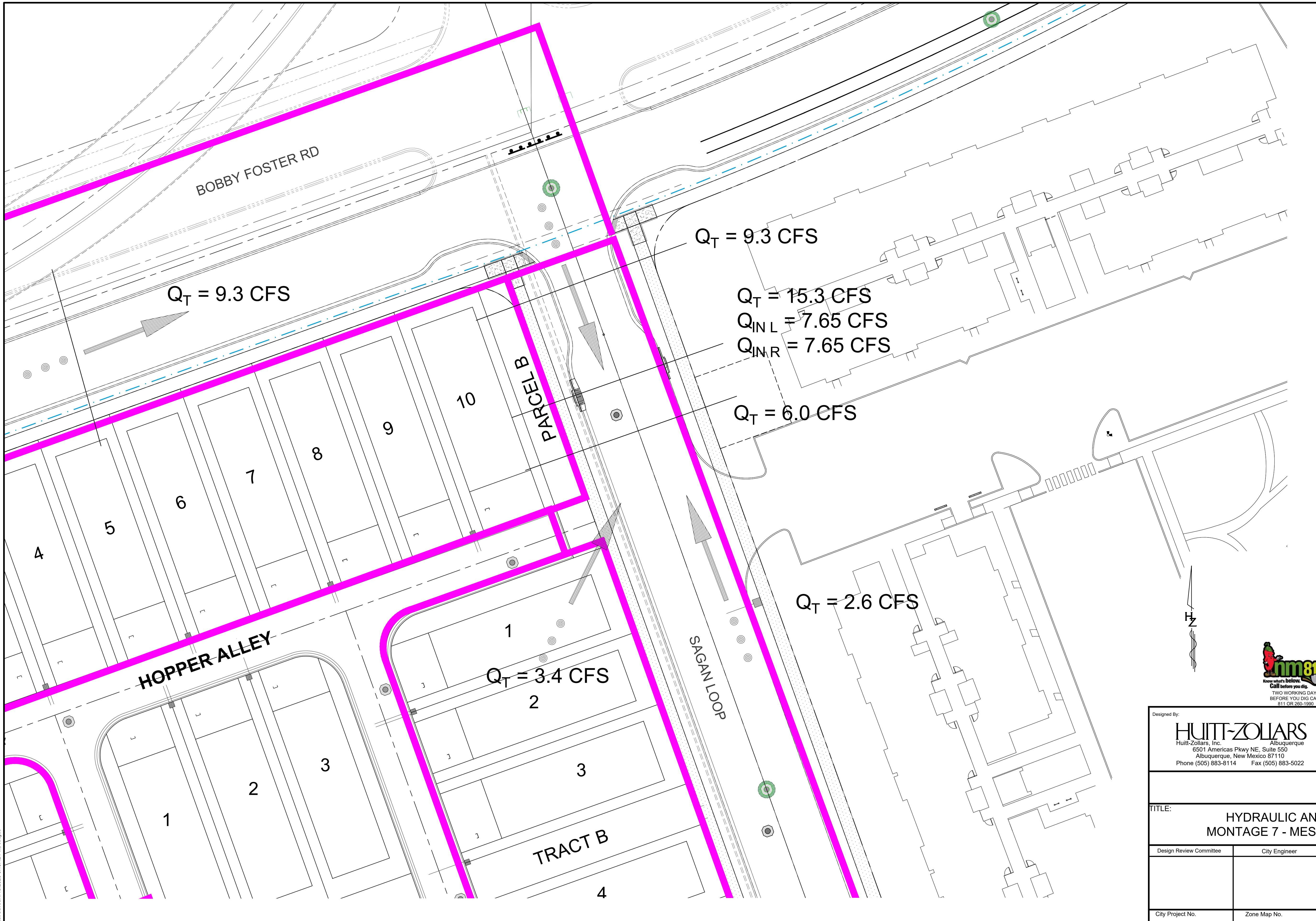

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DRAWINGS CORRECTED BY	DATE

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ENGINEER'S SEAL

NINA LEUNG-VILLA NEW MEXICO 25970 REGISTERED PROFESSIONAL ENGINEER 6/30/22

NO.	DATE	REMARKS	BY

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TITLE:
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MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Last Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No. | Zone Map No. | Sheet Of

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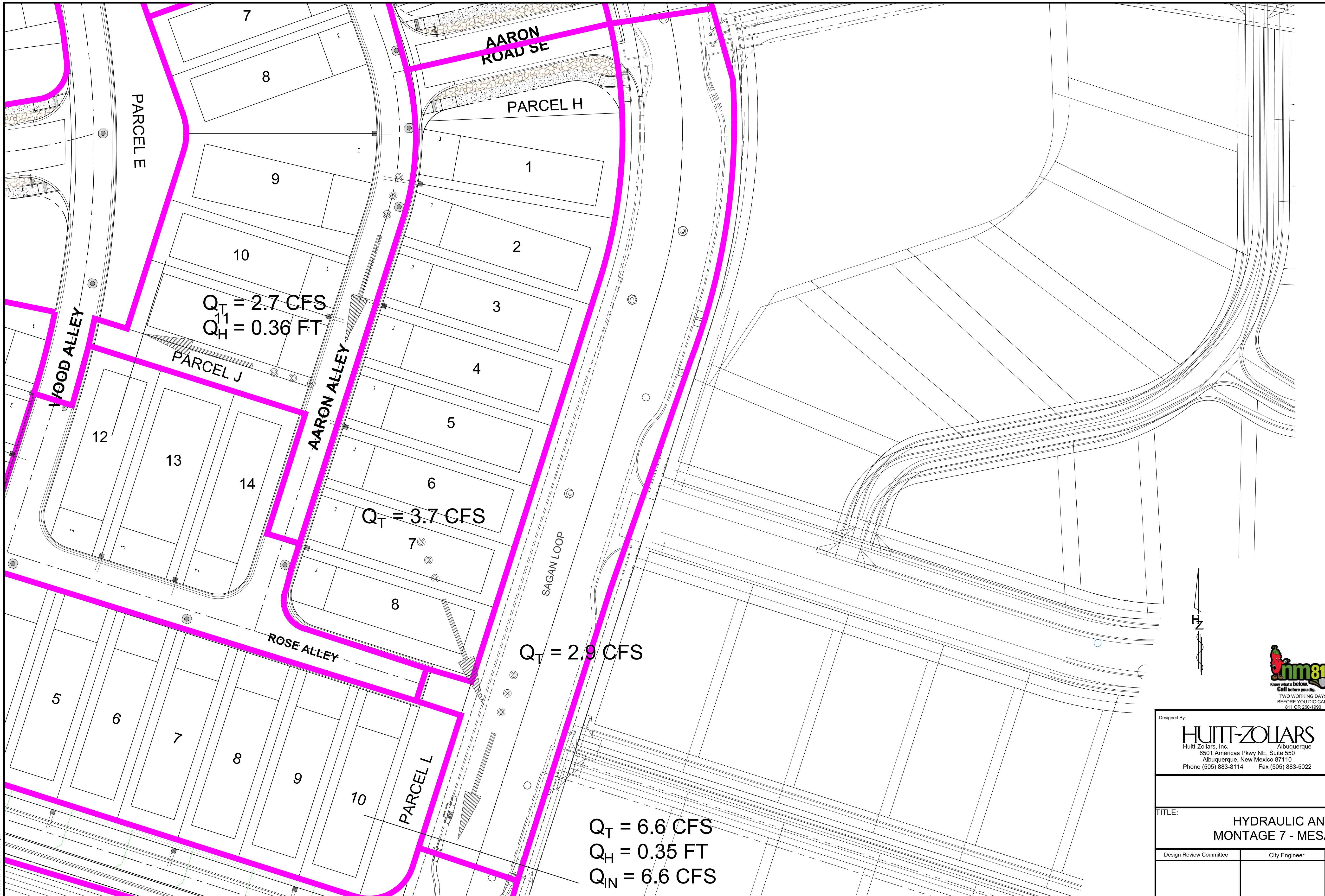

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FIELD NOTES
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ENGINEER'S SEAL
NINA LEUNG-VILLA, NEW MEXICO, 25970, REGISTERED PROFESSIONAL ENGINEER

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MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Mo./Day/Yr.	Mo./Day/Yr.

Last Update

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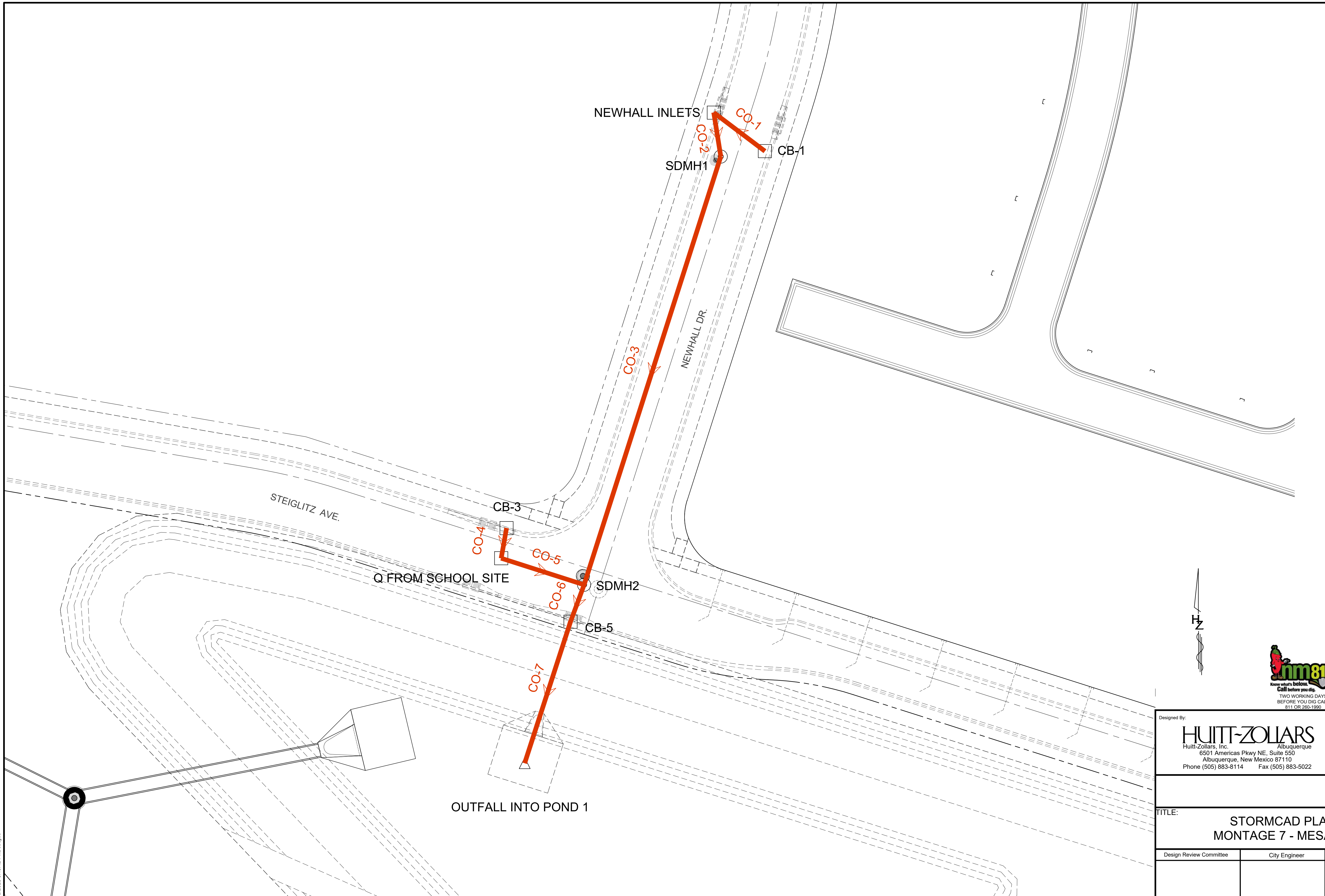
APPENDIX E

StormCAD - FlexTable

FlexTable: Conduit Table

Label	Start Node	Stop Node	Diameter (in)	Length (3D) (ft)	Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
CO-1	CB-1	NEWHALL INLETS	18.0	28.9	9.00	5.09	5,298.50	5,298.20	5,309.20	5,309.20	5,300.87	5,300.72
CO-2	NEWHALL INLETS	SDMH1	24.0	20.1	18.00	5.73	5,298.20	5,298.00	5,309.20	5,309.34	5,300.23	5,300.12
CO-3	SDMH1	SDMH2	30.0	203.5	18.00	9.25	5,298.00	5,295.90	5,309.34	5,309.23	5,300.11	5,299.88
CO-4	CB-3	Q FROM SCHOOL SITE	18.0	13.9	21.30	12.05	5,297.60	5,297.00	5,307.00	5,304.86	5,300.24	5,299.76
CO-5	Q FROM SCHOOL SITE	SDMH2	24.0	39.4	21.30	6.78	5,297.00	5,295.90	5,304.86	5,309.23	5,299.94	5,299.58
CO-6	SDMH2	CB-5	30.0	17.8	39.30	13.52	5,295.90	5,295.60	5,309.23	5,309.12	5,298.01	5,297.38
CO-7	CB-5	OUTFALL INTO POND 1	48.0	67.3	52.20	12.21	5,295.60	5,295.00	5,309.12	5,308.88	5,297.77	5,296.69
CO-8	CB-6	SMH1	24.0	20.6	7.65	17.49	5,300.00	5,296.77	5,306.00	5,306.77	5,300.98	5,298.62
CO-9	CB-7	SMH1	24.0	31.6	7.65	14.99	5,300.00	5,296.77	5,306.00	5,306.77	5,300.98	5,298.62
CO-10	SMH1	SMH2	36.0	383.0	15.30	6.02	5,296.77	5,294.80	5,306.77	5,304.80	5,298.02	5,296.30
CO-11	SMH2	SMH3	48.0	117.3	15.30	5.87	5,294.80	5,294.20	5,304.80	5,304.20	5,295.95	5,295.75
CO-12	SMH3	SMH4	48.0	422.5	15.30	5.82	5,294.20	5,292.09	5,304.20	5,302.09	5,295.35	5,294.02
CO-13	CB-8	SMH4	24.0	58.6	3.30	10.06	5,296.00	5,292.09	5,302.00	5,302.09	5,296.63	5,294.07
CO-14	CB-9	SMH4	24.0	59.9	3.30	9.98	5,296.00	5,292.09	5,302.00	5,302.09	5,296.63	5,294.07
CO-15	SMH4	SMH5	48.0	162.4	21.90	6.44	5,292.09	5,291.28	5,302.09	5,301.28	5,293.47	5,293.40
CO-16	SMH5	O-3	48.0	93.0	21.90	12.92	5,291.28	5,288.00	5,301.28	5,298.00	5,292.66	5,288.79



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WORK STAKED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE
MICRO-FILM INFORMATION
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FIELD NOTES
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ENGINEER'S SEAL
NINA LEUNG-VILLA
NEW MEXICO
25970
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY

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TITLE:
STORMCAD PLAN VIEW
MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Last Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No. | Zone Map No. | Sheet Of

EXHIBIT 3

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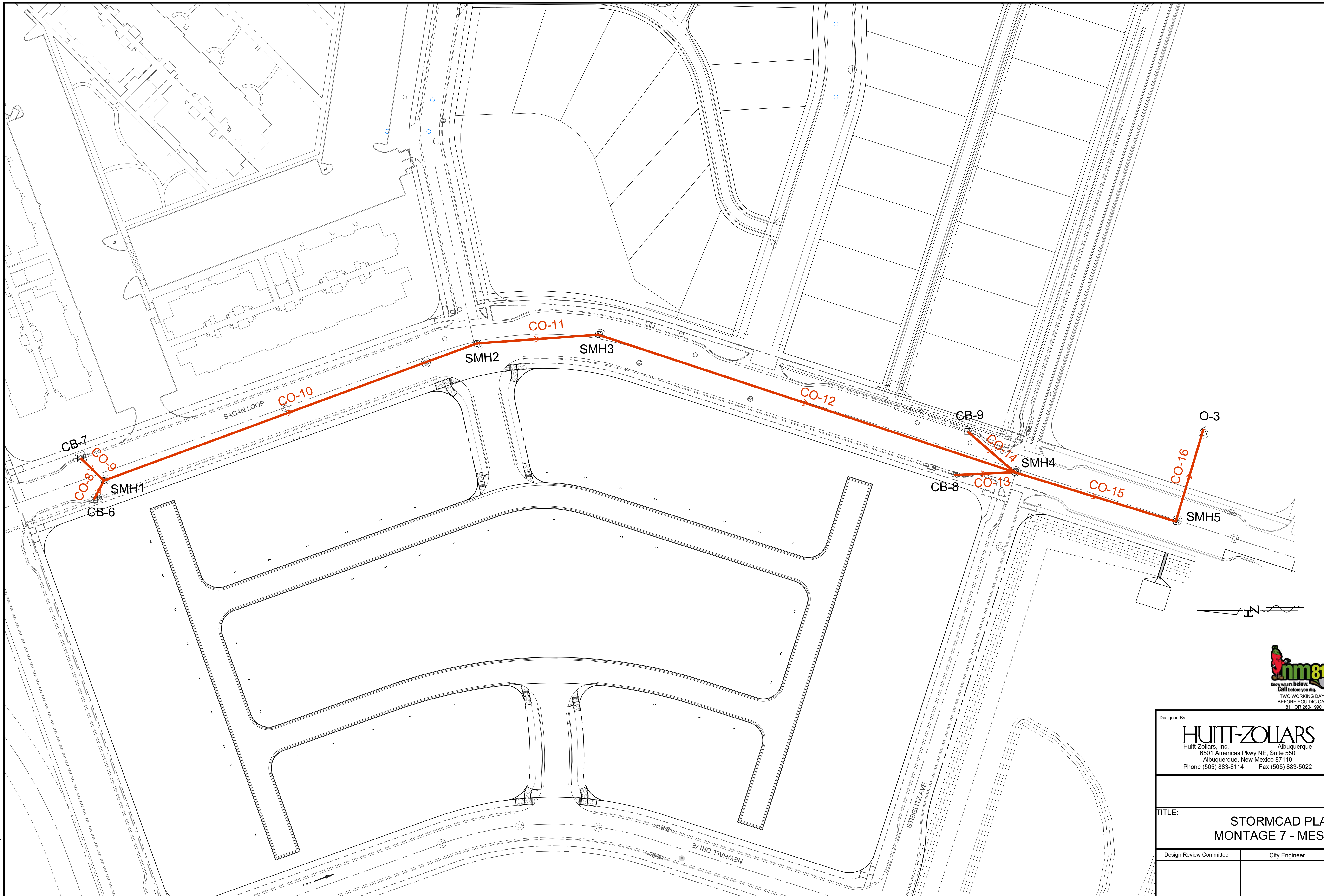

AS BUILT INFORMATION

CONTRACTOR	DATE
WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NINA LEUNG-VILLA NEW MEXICO 25970 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY

REVISIONS

DESIGN

DESIGNED BY: CAT DATE: January, 4 2023
DRAWN BY: CAT DATE: January, 4 2023
DWG NAME: 2_MDS MONTAGE 7 BASINS.dwg PROJ #:
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STORMCAD PLAN VIEW
MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Last Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No.	Zone Map No.	Sheet	Of
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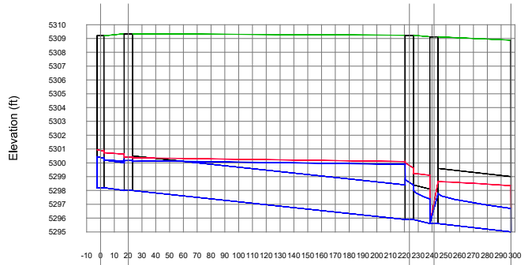
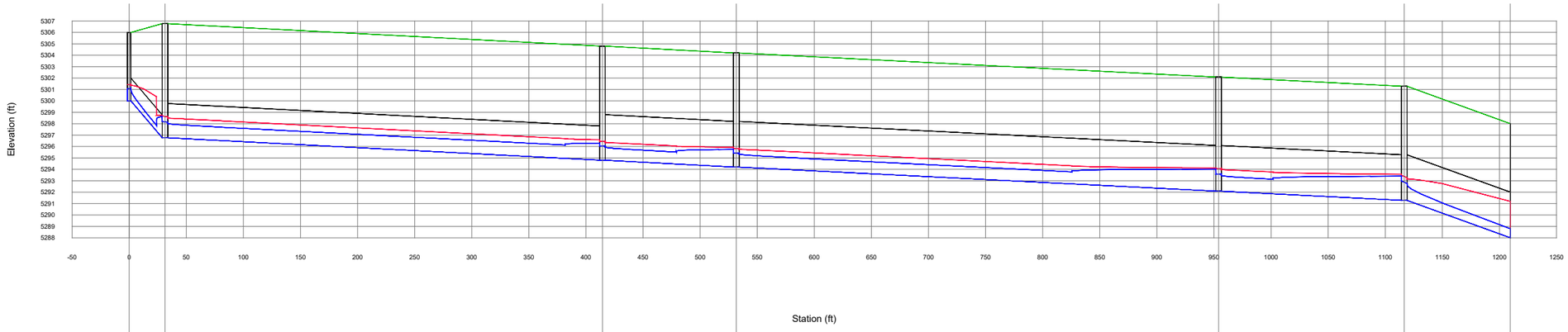
NEWHALL DRIVE PROFILE - Base



ID\Label	61 \ CO-2	106 \ CO-3	64 \ CO-6	66 \ CO-7	
Link Length (ft)	20.1	203.5	17.8	55.7	
Rise (in)\Material	24.0 \ PVC	30.0 \	30.0 \ PVC	48.0 \ PVC	
Flow (cfs)	18.00	18.00	39.30	52.20	
Slope (ft/ft)	0.010	0.010	0.017	0.011	
ID\Label	54 \ NEWHALL INLETS	59 \ SDMH1	60 \ SDMH2	56 \ CB-5	65 \ OUTFALL INTO POND 1
Ground (ft)	5309.20	5309.34	5309.23	5309.12	5309.88
Invert (ft)	5298.20	5298.00	5299.90	5299.60	5299.00
Station (ft)	0.0	20.1	223.6	241.4	297.1

SAGAN LOOP - Base



ID\Label	130 \ CO-9	135 \ CO-10	133 \ CO-11	134 \ CO-12	122 \ CO-15	124 \ CO-16	
Link Length (ft)	31.4	383.0	117.3	422.5	162.4	92.9	
Rise (in)\Material	24.0 \	36.0 \	48.0 \	48.0 \	48.0 \	48.0 \	
Flow (cfs)	7.65	15.30	15.30	15.30	21.90	21.90	
Slope (ft/ft)	0.103	0.005	0.005	0.005	0.005	0.035	
ID\Label	113 \ CB-7	125 \ SMH1	127 \ SMH2	128 \ SMH3	118 \ SMH4	119 \ SMH5	123 \ O-3
Ground (ft)	5309.00	5309.77	5304.80	5304.20	5302.09	5301.28	5299.00
Invert (ft)	5300.00	5299.77	5294.80	5294.20	5292.09	5291.28	5289.00
Station (ft)	0.0	31.4	414.4	531.7	954.2	1116.6	1209.5

AS BUILT INFORMATION
CONTRACTOR — DATE
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CORRECTED BY
MICRO-FILM INFORMATION — DATE
RECORDED BY
NO.

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
NINA LEUNG-VILLA NEW MEXICO 25970 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
		DESIGNED BY: CAT	DATE: January, 4 2023
		DRAWN BY: CAT	DATE: January, 4 2023
		DWG NAME: 2_MDS MONTAGE 7 BASINS.dwg	PROJ #:
		CHECKED BY: SAE	DATE: January, 4 2023

811 NM811 Know what's below. Call before you dig.
TWO WORKING DAYS BEFORE YOU DIG CALL 811 OR 260-1990

Designed By:
HUITT-ZOLLARS
Huitt-Zollars, Inc. Albuquerque
6501 Americas Pkwy NE, Suite 550
Albuquerque, New Mexico 87110
Phone (505) 883-8114 Fax (505) 883-5022

TITLE:
STORMCAD PROFILES
MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Last Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No. | Zone Map No. | Sheet Of

EXHIBIT 4

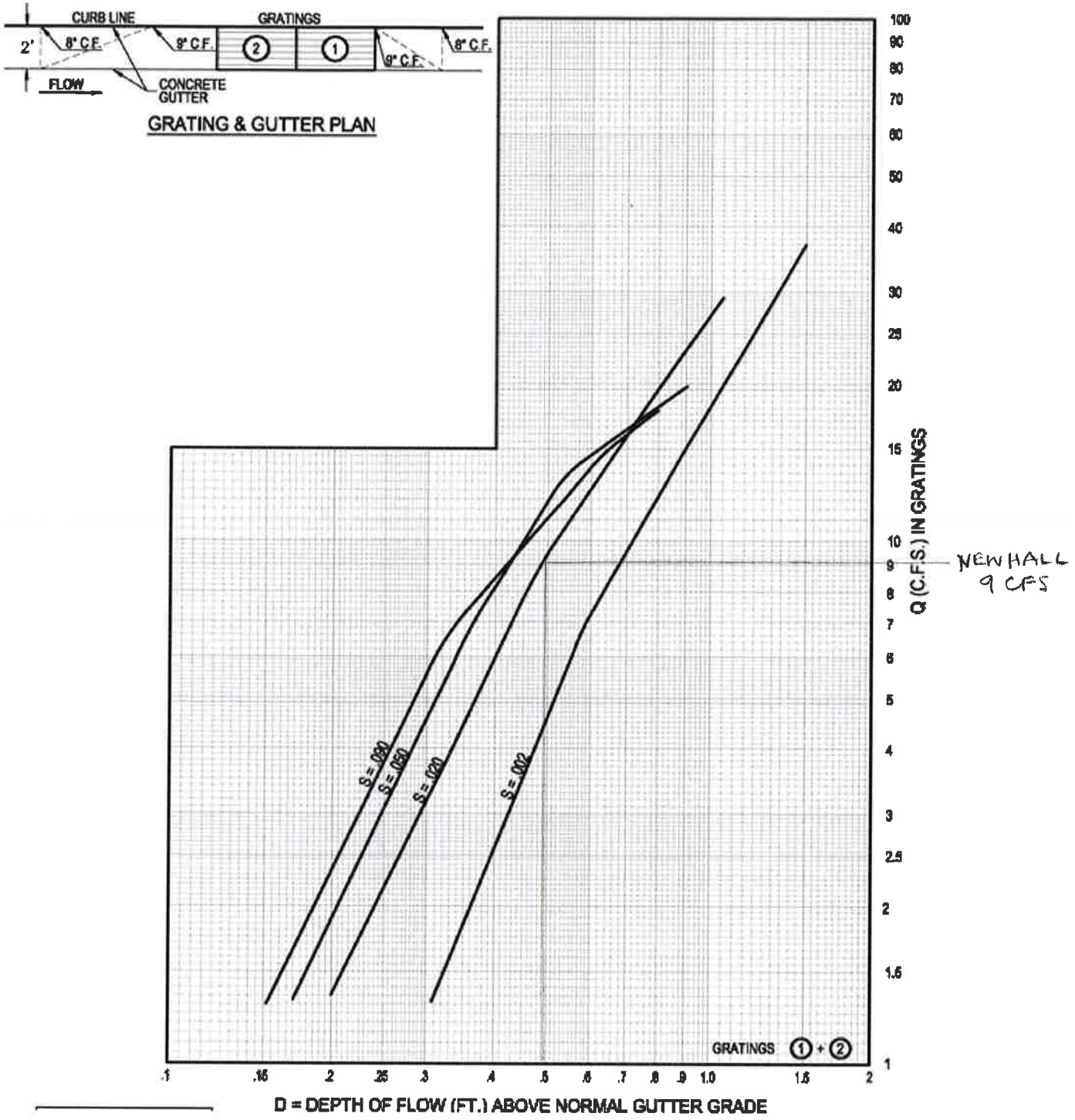
Plotted: 1/19/2023 5:20:35 PM, By:Trujillo, Corie
H:\Projects\053501.01 - Montage Unit 7 - Mesa del Sol\05 Design\05.13 Drainage\Hydrology\2_MDS MONTAGE 7 BASINS.dwg
Last Saved:1/19/2023 5:18:42 PM, ctrujillo

APPENDIX F

Grate Capacities

Newhall Q in Gratings - 9 CFS

FIGURE 6.9.10 **Grate Capacities for Types "Double A," "Double C," and "Double D"**



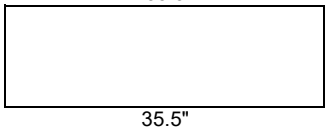
Huitt~Zollars, Inc.

Inlet Worksheet (Sump Condition)

Objective : Design a Type C or Type D Inlet in Sump Condition for a 100-year flow

1 Inlet to collect peak flow amount before overtopping headwall.

2 Grate Dimensions



18.5

**Net dimensions of open area of a single grate. (Total Area less Area of Bars)

Weir Perimeter = 9.0 ft
Area of Orifice = 4.6 sf

3 Calculate Orifice and Weir Flow into Grate at Design Depth (Top of Curb)

Orifice Equation			Weir Equation		
Q = 0.6 x A x (2 x g x h)^1/2			Q=2.65 x P x H^1/2		
Where			Where		
A =	4.6	sq. ft.	P=	9.0	ft
g =	32.2	ft ^2/sec	H=	0.8	ft
h =	0.5	ft			
Therefore			Therefore		
Q =	15.5	cfs	Q =	21.3	cfs

Orifice Equation controls

Grate Capacity = 15.5 cfs

4 Apply 25% Clogging Factor to determine allowable design flow into inlet

15.5 x 0.75 **12 cfs**

Therefore Capacity of Single C/D Inlet in Sump Condition = 12 cfs

Capacity of Double C/D Inlet in Sump Condition = 23 cfs

Capacity of Triple C/D Inlet in Sump Condition = 35 cfs

*Grate Capacities do not account for curb opening inflow. Therefore, inlet capacities are the same for Type C and Type D inlets.

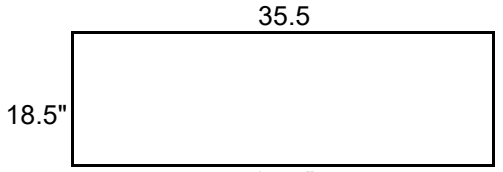
Huitt~Zollars, Inc.

Inlet Worksheet (Sump Condition)

Objective : Design a Type C or Type D Inlet in Sump Condition for a 100-year flow

1 Inlet to collect peak flow amount before overtopping headwall.

2 Grate Dimensions



18.5

**Net dimensions of open area of a single grate. (Total Area less Area of Bars)

Weir Perimeter =	9.0	ft
Area of Orifice =	4.6	sf

3 Calculate Orifice and Weir Flow into Grate at Design Depth (Top of Curb)

Orifice Equation			Weir Equation		
Q = 0.6 x A x (2 x g x h)^1/2			Q=2.65 x P x H^1/2		
Where			Where		
A =	4.6	sq. ft.	P=	9.0	ft
g =	32.2	ft ^2/sec	H=	0.8	ft
h =	0.7	ft			
Therefore			Therefore		
Q =	18.0	cfs	Q =	21.3	cfs

Orifice Equation controls

Grate Capacity = 18.0 cfs

4 Apply 25% Clogging Factor to determine allowable design flow into inlet

18.0 x 0.75 **13 cfs**

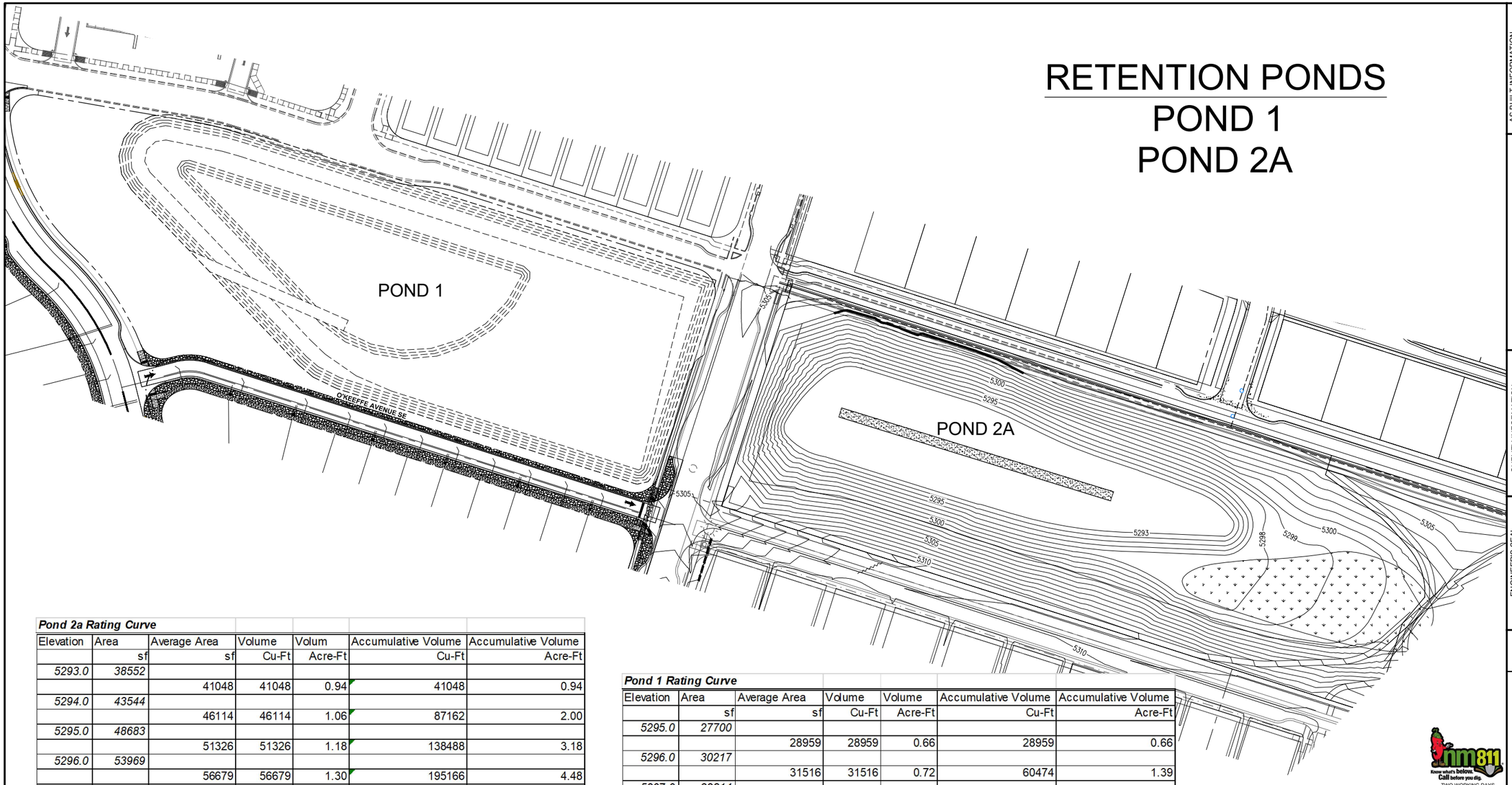
Therefore Capacity of Single C/D Inlet in Sump Condition =	***13 cfs***
Capacity of Double C/D Inlet in Sump Condition =	***27 cfs***
Capacity of Triple C/D Inlet in Sump Condition =	***40 cfs***

*Grate Capacities do not account for curb opening inflow. Therefore, inlet capacities are the same for Type C and Type D inlets.

APPENDIX G

Pond Rating Curves & Calculations

RETENTION PONDS
POND 1
POND 2A



Pond 2a Rating Curve

Elevation	Area	Average Area	Volume	Volum	Accumulative Volume	Accumulative Volume
	sf	sf	Cu-Ft	Acre-Ft	Cu-Ft	Acre-Ft
5293.0	*38552*					
		41048	41048	0.94	41048	0.94
5294.0	*43544*					
		46114	46114	1.06	87162	2.00
5295.0	*48683*					
		51326	51326	1.18	138488	3.18
5296.0	*53969*					
		56679	56679	1.30	195166	4.48
5297.0	*59388*					
		65141	65141	1.50	260307	5.98
5298.0	*70894*					
		76983	76983	1.77	337290	7.74
5299.0	*83072*					
		89967	89967	2.07	427257	9.81
5300.0	*96861*					
		102128	102128	2.34	529384	12.15
5301.0	*107394*					
		112037	112037	2.57	641421	14.72
5302.0	*116679*					
		121174	121174	2.78	762594	17.51
5303.0	*125668*					
		130325	130325	2.99	**892919**	20.50
5304.0	*134982*					

Pond 1 Rating Curve

Elevation	Area	Average Area	Volume	Volume	Accumulative Volume	Accumulative Volume
	sf	sf	Cu-Ft	Acre-Ft	Cu-Ft	Acre-Ft
5295.0	*27700*					
		28959	28959	0.66	28959	0.66
5296.0	*30217*					
		31516	31516	0.72	60474	1.39
5297.0	*32814*					
		34136	34136	0.78	94610	2.17
5298.0	*35457*					
		62793	62793	1.44	157402	3.61
5299.0	*90128*					
		98630	98630	2.26	256032	5.88
5300.0	*107131*					
		109407	109407	2.51	365438	8.39
5301.0	*111682*					
		113987	113987	2.62	479425	11.01
5302.0	*116291*					
		118625	118625	2.72	598049	13.73
5303.0	*120958*					
		123322	123322	2.83	**721371**	16.56
5304.0	*125686*					

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

SURVEY INFORMATION
FIELD NOTES
NO. — BY — DATE

ENGINEER'S SEAL
NIMA I. ELUNG-VILLA
NEW MEXICO
25970
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
		DESIGNED BY: CAT	DATE: March 3, 2023
		DRAWN BY: CAT	DATE: March 3, 2023
		DWG NAME: Pond 1 & 2a Exhibit.dwg	PROJ #:
		CHECKED BY: SAE	DATE: March 3, 2023

nm811 Know what's below. Call before you dig.
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Designed By:
HUITT-ZOLLARS
Huitt-Zollars, Inc. Albuquerque
6501 Americas Pkwy NE, Suite 550
Albuquerque, New Mexico 87110
Phone (505) 883-8114 Fax (505) 883-5022

MARCH 3, 2023

TITLE:
POND 1 & 2A DESIGN
MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Last Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No. | Zone Map No. | Sheet | Of

EXHIBIT 5

Plotted: 3/3/2023 5:40:25 PM, By:Trujillo, Corie
Horizontal: 50.00 ft / in, Vertical: 10.00 ft / in, Mesa del Sol/05 Design\05.13 Drainage\Hydraulics\Pond 1 & 2a Exhibit.dwg
Last Saved:3/3/2023 5:38:19 PM, ctrujillo

Reference from Bobby Foster Road and University Blvd. Amendment Drainage Report
Retention Pond 2a

Basin	V100-10day (CF)
J	99429
H	24960
X	53512
Y	53512
G	29926
BOBBY FOSTER (PAR	42392
W (PARTIAL)	17837
REQUIRED VOLUME	**321568**
ACTUAL VOLUME	**892919**

AHYMO Pond 2A Summary - Only Need Capacity Analysis			
Description	Unit	2011 Report Results	2020 Report Results
Total Drainage Area	SQ MI	0.1	0.1
Maximum Storage Volume	AC-FT	4.5	7.6
Maximum Storage Capacity	AC-FT	17.7	20.5
Reservoir Invert Elevation	FT	5293.0	5294.0
Top of Embankment Elevation	FT	5302.0	5304.0
Maximum Water Surface Elevation	FT	5300.0	5299.4
Maximum Water Depth	FT	7.0	5.4

DRAINAGE ZONE 2 PRECIPITATION:			
360	=	2.35	in.
1440	=	2.75	in.
10day	=	3.95	in.

Basin J

PROPOSED EXCESS PRECIPITATION:

Weighted E = (0.53)x(0)+ 0.78)x(3.321)+(1.13)x(3.321)+(2.12)x(5.658)/ 12.3
= 1.4909 in.
V100-360 = (1.49)x(12.3)/ 12 = 1.528 ac-ft = 66567.1941 cf

V100-10day = (1.53)+(5.66)x(3.95 - 2.35)/ 12 = 2.2825725 ac-ft = **99429** cf

Basin X

PROPOSED EXCESS PRECIPITATION:

Weighted E = (0.53)x(0)+ 0.78)x(0.765)+(1.13)x(0.765)+(2.12)x(3.57)/ 5.1 ac.
= 1.7705 in.
V100-360 = (1.77)x(5.1)/ 12 = 0.752 ac-ft = 32777.2665 cf

V100-10day = (0.75)+(3.57)x(3.95 - 2.35)/ 12 = 1.2284625 ac-ft = **53512** cf

Basin H

PROPOSED EXCESS PRECIPITATION:

Weighted E = (0.53)x(0)+ 0.78)x(3.6)+(1.13)x(3.6)+(2.12)x(0)/ 7.2 ac.
= 0.955 in.
V100-360 = (0.96)x(7.2)/ 12 = 0.573 ac-ft = 24959.88 cf

V100-10day = (0.57)+(0)x(3.95 - 2.35)/ 12 = 0.573 ac-ft = **24960** cf

Basin Y

PROPOSED EXCESS PRECIPITATION:

Weighted E = (0.53)x(0)+ 0.78)x(0.765)+(1.13)x(0.765)+(2.12)x(3.57)/ 5.1 ac.
= 1.7705 in.
V100-360 = (1.77)x(5.1)/ 12 = 0.752 ac-ft = 32777.2665 cf

V100-10day = (0.75)+(3.57)x(3.95 - 2.35)/ 12 = 1.2284625 ac-ft = **53512** cf

Basin G

PROPOSED EXCESS PRECIPITATION:

Weighted E = (0.53)x(0)+ 0.78)x(1.2)+(1.13)x(1.2)+(2.12)x(1.6)/ 4 ac.
= 1.421 in.
V100-360 = (1.42)x(4)/ 12 = 0.474 ac-ft = 20632.92 cf

V100-10day = (0.47)+(1.6)x(3.95 - 2.35)/ 12 = 0.687 ac-ft = **29926** cf

Basin W (Partial)

PROPOSED EXCESS PRECIPITATION:

Weighted E = (0.53)x(0)+ 0.78)x(0.255)+(1.13)x(0.255)+(2.12)x(1.19)/ 1.7 ac.
= 1.7705 in.
V100-360 = (1.77)x(1.7)/ 12 = 0.251 ac-ft = 10925.7555 cf

V100-10day = (0.25)+(1.19)x(3.95 - 2.35)/ 12 = 0.4094875 ac-ft = **17837** cf

Basin Bobby Foster

PROPOSED EXCESS PRECIPITATION:

Weighted E = (0.53)x(0)+ 0.78)x(0.836)+(1.13)x(0)+(2.12)x(2.964)/ 3.8 ac.
= 1.8252 in.
V100-360 = (1.83)x(3.8)/ 12 = 0.578 ac-ft = 25176.8088 cf

V100-10day = (0.58)+(2.96)x(3.95 - 2.35)/ 12 = 0.97318 ac-ft = **42392** cf

Reference from Bobby Foster Road and University Blvd. Amendment Drainage Report
Retention Pond 1

Basin	V100-10day (CF)
PARK	**10021**
U	**134189**
V	**101243**
W-1	**38750**
W-2	**50062**
W-3 (PARTIAL)	**68201**
BOBBY FOSTER (PARTIAL)	**24543**
REQUIRED VOLUME	**427009**
ACTUAL VOLUME	**721371**

AHYMO Pond 1 Summary - Capacity Analysis

Description	Unit	2011 Report Results	2022 Report Results
Total Drainage Area	SQ MI	0.1	0.080
Maximum Storage Volume	AC-FT	3.2	5.7
Maximum Storage Capacity	AC-FT	6.1	16.56
Reservoir Invert Elevation	FT	5295.0	5295
Top of Embankment Elevation	FT	5304.0	5304
Maximum Water Surface Elevation	FT	5301.7	5299.9
Maximum Water Depth	FT	6.7	4.9

DRAINAGE ZONE 2 PRECIPITATION:		
360	= 2.35	in.
1440	= 2.75	in.
10day	= 3.95	in.

0.53)x(0)+(0.78)x(1.1)+(1.13)x(1.128)+(

Basin Park

1.0383)x(2.4)/ 12 = 0.21 ac-ft = 9045.6696

PROPOSED EXCESS PRECIPITATION:

0.20766)+(0.17)x(2.75 - 2.35)/ 12 = 0.21326

0.20766)+(0.17)x(3.95 - 2.35)/ 12 = 0.23006

Weighted E = (2.12)x(0.168)/ 2.4 ac.
= 1.0383 in.
V100-360 = (cf

V100-10day = (ac-ft = **10021.4** cf

1.4909)x(16.6)/ 12 = 2.06 ac-ft = 89838.6522

Basin U

2.062412)+(7.64)x(2.75 - 2.35)/ 12 = 2.316945

PROPOSED EXCESS PRECIPITATION:

2.062412)+(7.64)x(3.95 - 2.35)/ 12 = 3.080545

Weighted E = (2.12)x(7.636)/ 16.6 ac.
= 1.4909 in.
V100-360 = (cf

V100-10day = (ac-ft = **134188.5** cf

1.3744)x(14.3)/ 12 = 1.64 ac-ft = 71343.7296

Basin V

1.637827)+(5.15)x(2.75 - 2.35)/ 12 = 1.809426667

PROPOSED EXCESS PRECIPITATION:

1.637827)+(5.15)x(3.95 - 2.35)/ 12 = 2.324226667

Weighted E = (2.12)x(5.148)/ 14.3 ac.
= 1.3744 in.
V100-360 = (cf

V100-10day = (ac-ft = **101243.3** cf

2.0035)x(3.1)/ 12 = 0.52 ac-ft = 22545.3855

Basin W-1

0.517571)+(2.79)x(2.75 - 2.35)/ 12 = 0.610570833

PROPOSED EXCESS PRECIPITATION:

0.517571)+(2.79)x(3.95 - 2.35)/ 12 = 0.889570833

Weighted E = (2.12)x(2.79)/ 3.1 ac.
= 2.0035 in.
V100-360 = (cf

V100-10day = (ac-ft = **38749.7** cf

1.5375)x(5.9)/ 12 = 0.76 ac-ft = 32928.6375

Basin W-2

0.755938)+(2.95)x(2.75 - 2.35)/ 12 = 0.854270833

PROPOSED EXCESS PRECIPITATION:

0.755938)+(2.95)x(3.95 - 2.35)/ 12 = 1.149270833

Weighted E = (2.12)x(2.95)/ 5.9 ac.
= 1.5375 in.
V100-360 = (cf

V100-10day = (ac-ft = **50062.2** cf

1.7705)x(6.5)/ 12 = 0.96 ac-ft = 41774.9475

Basin W-3 Partial

0.959021)+(4.55)x(2.75 - 2.35)/ 12 = 1.1106875

PROPOSED EXCESS PRECIPITATION:

0.959021)+(4.55)x(3.95 - 2.35)/ 12 = 1.5656875

Weighted E = (2.12)x(4.55)/ 6.5 ac.
= 1.7705 in.
V100-360 = (cf

V100-10day = (ac-ft = **68201.3** cf

1.8252)x(2.2)/ 12 = 0.33 ac-ft = 14576.0472

Basin Bobby Foster Partial

0.33462)+(1.72)x(2.75 - 2.35)/ 12 = 0.39182

PROPOSED EXCESS PRECIPITATION:

0.33462)+(1.72)x(3.95 - 2.35)/ 12 = 0.56342

Weighted E = (2.12)x(1.716)/ 2.2 ac.
= 1.8252 in.
V100-360 = (cf

V100-10day = (ac-ft = **24542.6** cf