HYDROLOGY REPORT

PREPARE FOR:

Paradise Lake, LLC
4300 Edison Ave
Chino, CA 91710

FOR THE PROJECT:

Beyond Foods Mat Perris Service Station

Perris, CA
County of Riverside

PREPARED BY:

BLUE ENGINEERING AND CONSULTING, INC

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August, 2022
Updated December, 2023

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Section

1

INTRODUCTION

1.1 PURPOSE OF STUDY

The project is located within the City of Perris, California due east of Interstate 215 at APN: 329-240-021, -022 off the northeast corner of Trumble Rd and Ethanac Rd, Perris CA 92585. The purpose of this study is to hydrologically model the project's onsite tributary area watersheds and to determine the pre-development peak runoffs in order to analyze stormwater mitigation. The hydrologic analysis was prepared using the Rational Method as specified in the Riverside County Hydrology Manual. The flows were used to estimate the proposed above and below ground drainage facilities to support the project.

1.2 PROJECT DESCRIPTION

The project is comprised of approximately 2.15 acres and is located approximately 1,300 feet east of the intersection of I-215 and Trumble Road, on the north side of Ethanac Road in the City of Perris, Riverside County, California. The project site is located approximately 1,300 feet east of Interstate 15 and 2,600 feet southwest of Highway 74. The project site is currently undeveloped with an estimate elevation difference of roughly 2 feet flowing from south to north. The proposed development will alter the natural drainage course and change flow to be from north to south.The project hydrology and storm drain system will be designed in accordance with recent City of Perris and Riverside County design requirements. The onsite storm drain, and inlet and outlet structures are to be privately maintained by the proposed Property Owners. Other drainage facilities offsite of the project site will be publicly maintained by the City of Perris. **Appendix A** contains the Vicinity Map.

1.3 FLOODPLAIN MAPPING

The National Flood Insurance Act (1968) established the National Flood Insurance Program, which is based on the minimal requirements for floodplain management and is designed to minimize flood damage within Special Flood Hazard Areas. The Federal Emergency Management Agency (FEMA) is the agency which administrates the National Flood Insurance Program. Special Flood Hazard Areas (SFHA) are defined as areas that have a 1% chance of flooding within a given year. This is also referred to as the 100-year flood. Flood Insurance Rate Maps

(FIRMs) were developed to identify areas of flood hazards within a community. According to the Flood Insurance Rate Map (FIRM) catalog, there are FIRMs produced by FEMA for the project site:

MAP Number: 06065C2060H
MAP Revised: August 18, 2014.

Appendix I contains the FIRM panels which identifies the flood zones designated for the project area. The project site is located on a Zone D area.

1.4 DESIGN CRITERIA

The following are design criteria for this project, based on the Riverside County Hydrology Manual.

Protection Levels

1. The 100-year flood shall be contained with the street R/W limits.

2. The 10-year flood shall be contained within the Top of Curbs.

3. Initiate a storm drain or channel when either condition is exceeded.

Section

2

HYDROLOGIC DATA AND MODEL DEVELOPMENT

2.1 PRE-DEVELOPMENT MODEL

The project site is one drainage area that drains from South to North with an approximate elevation difference of approximately 2 feet. Refer to the Pre-Development Hydrology Key Map in **Appendix C** for locations of the drainage area, and peak flows at the drainage area. The San Bernardino County Rational Method Hydrologic calculations (as described in the San Bernardino Hydrology Manual) were performed using the CivilDesign Hydrology / Hydraulics computer program. The existing condition watershed boundaries were delineated using surveyed topography. The soil type in this area is Type "D". Soil type "D" was used for calculating the rational method hydrology analysis. Refer to **Appendix B** for the NRCS Custom Soil Resource**.** Results of the pre-development hydrologic analysis are summarized in this section **Table 1 below**.

TABLE 1 - PRE-DEVELOPMENT CONDITION PEAK FLOW

Sub-Drainage Area	Node	Area (acres)	Q10 (cfs)	Q100 (cfs)
1	101	1.99	3.145	4.881

2.2 POST-DEVELOPMENT MODEL

The site will be developed into a commercial development including a gas station, a store with a drive thru, and a carwash facility. The project site will alter the existing drainage patten in the post-development condition to now flow from northeast to southwest. Refer to the Post-Development Hydrology Key Map in **Appendix E** for locations of the drainage area, and peak flows at the drainage area. The soil type in this area is Type "D". Soil type "D" was used for calculating the rational method hydrology analysis. Results of the post-development hydrologic analysis are summarized in this section **Table 2 below**.

TABLE 2 - POST-DEVELOPMENT CONDITION PEAK FLOW

Sub-Drainage Area	Node	Area (acres)	Q10 (cfs)	Q100 (cfs)
1	202	0.10	0.234	0.339
2	203	0.11	0.257	0.373
3	207	0.09	0.210	0.305
4	210	0.21	0.460	0.668
5	212	0.59	0.122	0.177
6	215	0.05	0.117	0.170
7	218	0.68	1.388	2.016
8	221	0.16	0.374	0.542
Total	222	1.99	3.012	4.351

TABLE 3 - PEAK FLOW COMPARISON

Sub-Drainage Area	Pre-Dev Q10 (cfs)	Post-Dev Q10 (cfs)	Difference Q10 (cfs)	Pre-Dev Q100 (cfs)	Post-Dev Q100 (cfs)	Difference Q100 (cfs)
1	3.145	3.012	0.133	4.881	4.351	0.530

2.3 UNIT HYDROGRAPH MODEL

The rational method analysis provided Q100 on the post-development condition that is slightly higher than the pre-development condition for the drainage area, therefore, unit hydrographs are required since detention is required onsite for the Q100 storm event. The 10, and 100 year storm events were run for the 24 Hour storm event to determine the amount of runoff volume needed to be detained onsite. A summary of the results for the unit hydrographs are shown on **Table 4 below**. The unit hydrograph figures and calculations are shown on **Appendix G** for reference.

TABLE 4 – UNIT HYDROGRAPH COMPARISON

		Existing Condition		Proposed Condition	
Storm Frequency	Duration (hours)	Peak Flow (cfs)	Peak Runoff Vol (ac-ft)	Peak Flow (cfs)	Peak Runoff Vol (ac-ft)
10	24	0.684	0.2342	0.782	0.4307
100	24	1.360	0.6696	1.381	0.7633

Table 4 above show increase in peak flowrate for the project. As a result, detention basins will be included to detain the difference in runoff volume.

2.4 BASIN ANALYSIS

As shown in section **2.3 Unit Hydrograph Model Table 4**, the greatest difference in runoff is generated in the 10-yr 24-hr storm event and roughly 0.1965 acre-feet or 8,560 cubic feet of volume. Drainage area "1" proposes three 8-foot underground infiltration basin with 0.5 feet of gravel on the top and bottom for additional storage (see Appendix E for detail) that has the capacity to detain roughly 16,394 cubic feet of volume while out letting through a bubbler system that has a 6" by 4" parkway culvert overflow system. A summary of the results for the basin routing are shown on **Table 5 below**. The basin routing and calculations are shown on **Appendix H** for reference.

TABLE 5 – BASIN ROUTING COMPARISON

Storm Frequency	Duration (hours)	Pre-Peak Flow (cfs)	Post-Peak Flow (cfs)	Decrease	Percent Change
10	24	0.684	0.099	0.585	85.53 %
100	24	1.360	1.043	0.317	23.31 %

2.5 ONSITE STORM DRAIN SYSTEM

The onsite runoff will be sheet flowing from north to south and directed into a underground infiltration basin using the general grading of the driveway and pad with gutters directing flow. The gutters will help direct the flow around the gas pumps to the underground infiltration basin. The basin will be able to infiltrate and retain the added flow and runoff and will overtop the remaining amount which will outlet through a bubbler system to Ethanac Road. The onsite storm drain system will be sized to take the 100 Year Peak Flowrate and will be privately owned and maintained by the Property Owners.

Section

3

CONCLUSIONS

This final drainage report has evaluated the potential effects of runoff for the proposed project. In addition, this report has addressed the methodology used to analyze the existing and proposed conditions, which was based on the riverside County Hydrology Manual. This section provides a summary discussion that evaluates the potential effects of the proposed project.

- The proposed project will not significantly alter drainage patterns on the site.
- The Rational Method results illustrates that there is an increase in peak flowrate for project site. And increase runoff mitigation is proposed in the form of infiltration basins.
- The proposed onsite storm drain mainlines will be privately owned and maintained by the Property Owners Association.
- Proposed storm drain alignment, inlets, and discharge points are shown on the hydrology key maps.

The computed 10-year storm event is contained below the top of curb and the computed 100-year storm event is contained within the street right-of-way.

Section

4

REFERENCES

Riverside County Flood Control and Water Conservation District. *Hydrology Manual*. September 2011.

Appendix

A

VICINITY MAP

VICINITY MAP

N.T.S.

BLUE Engineering & Consulting, Inc

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Appendix

B

HYDROLOGIC CLASSIFICATION OF SOILS & PRECIPITATION MAPS

NOAA Atlas 14, Volume 6, Version 2
Location name: Menifee, California, USA*
Latitude: 33.7432°, Longitude: -117.1845°
Elevation: 1429.48 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	0.086 (0.072-0.104)	0.124 (0.104-0.150)	0.176 (0.147-0.213)	0.220 (0.182-0.269)	0.283 (0.226-0.359)	0.334 (0.261-0.433)	0.389 (0.296-0.516)	0.447 (0.330-0.611)	0.530 (0.375-0.758)	0.599 (0.408-0.886)
10-min	0.123 (0.103-0.149)	0.178 (0.148-0.215)	0.252 (0.210-0.305)	0.315 (0.261-0.386)	0.406 (0.324-0.514)	0.479 (0.374-0.621)	0.557 (0.424-0.740)	0.641 (0.473-0.876)	0.760 (0.538-1.09)	0.858 (0.585-1.27)
15-min	0.149 (0.125-0.180)	0.215 (0.180-0.259)	0.305 (0.254-0.369)	0.381 (0.315-0.466)	0.491 (0.392-0.622)	0.580 (0.453-0.750)	0.674 (0.513-0.895)	0.775 (0.573-1.06)	0.920 (0.650-1.31)	1.04 (0.708-1.54)
30-min	0.243 (0.203-0.293)	0.349 (0.292-0.422)	0.496 (0.413-0.601)	0.621 (0.513-0.759)	0.799 (0.638-1.01)	0.944 (0.737-1.22)	1.10 (0.834-1.46)	1.26 (0.932-1.73)	1.50 (1.06-2.14)	1.69 (1.15-2.50)
60-min	0.352 (0.295-0.425)	0.506 (0.423-0.612)	0.718 (0.599-0.871)	0.899 (0.743-1.10)	1.16 (0.924-1.47)	1.37 (1.07-1.77)	1.59 (1.21-2.11)	1.83 (1.35-2.50)	2.17 (1.53-3.10)	2.45 (1.67-3.62)
2-hr	0.522 (0.437-0.630)	0.709 (0.593-0.856)	0.961 (0.801-1.17)	1.17 (0.969-1.43)	1.47 (1.17-1.86)	1.70 (1.33-2.20)	1.95 (1.48-2.59)	2.21 (1.63-3.02)	2.57 (1.81-3.66)	2.85 (1.95-4.23)
3-hr	0.640 (0.536-0.772)	0.852 (0.712-1.03)	1.14 (0.947-1.38)	1.37 (1.13-1.68)	1.70 (1.36-2.15)	1.96 (1.53-2.53)	2.23 (1.69-2.96)	2.51 (1.85-3.43)	2.90 (2.05-4.14)	3.20 (2.19-4.74)
6-hr	0.904 (0.756-1.09)	1.18 (0.988-1.43)	1.55 (1.29-1.88)	1.86 (1.54-2.27)	2.28 (1.82-2.88)	2.61 (2.03-3.37)	2.94 (2.24-3.91)	3.30 (2.43-4.51)	3.78 (2.67-5.40)	4.16 (2.84-6.16)
12-hr	1.19 (0.997-1.44)	1.56 (1.30-1.88)	2.05 (1.71-2.48)	2.45 (2.03-2.99)	3.01 (2.40-3.81)	3.45 (2.69-4.46)	3.90 (2.96-5.17)	4.37 (3.23-5.97)	5.02 (3.55-7.17)	5.53 (3.77-8.19)
24-hr	1.55 (1.37-1.78)	2.05 (1.81-2.36)	2.72 (2.40-3.15)	3.28 (2.87-3.83)	4.07 (3.44-4.90)	4.69 (3.89-5.77)	5.33 (4.32-6.71)	6.01 (4.74-7.78)	6.96 (5.27-9.37)	7.71 (5.65-10.7)
2-day	1.82 (1.61-2.10)	2.46 (2.17-2.84)	3.33 (2.93-3.85)	4.06 (3.55-4.74)	5.09 (4.30-6.13)	5.91 (4.90-7.27)	6.77 (5.48-8.52)	7.68 (6.06-9.94)	8.97 (6.80-12.1)	10.0 (7.33-13.9)
3-day	1.94 (1.72-2.24)	2.66 (2.35-3.07)	3.64 (3.21-4.21)	4.47 (3.91-5.22)	5.65 (4.78-6.81)	6.60 (5.48-8.12)	7.60 (6.16-9.57)	8.67 (6.84-11.2)	10.2 (7.72-13.7)	11.4 (8.37-15.9)
4-day	2.08 (1.84-2.40)	2.88 (2.55-3.33)	3.99 (3.51-4.62)	4.93 (4.30-5.75)	6.26 (5.30-7.55)	7.34 (6.09-9.03)	8.49 (6.88-10.7)	9.72 (7.66-12.6)	11.5 (8.69-15.4)	12.9 (9.45-18.0)
7-day	2.34 (2.07-2.70)	3.31 (2.93-3.83)	4.66 (4.11-5.40)	5.82 (5.09-6.79)	7.48 (6.34-9.02)	8.84 (7.33-10.9)	10.3 (8.34-13.0)	11.9 (9.35-15.3)	14.1 (10.7-19.0)	16.0 (11.7-22.2)
10-day	2.46 (2.18-2.84)	3.53 (3.12-4.08)	5.02 (4.42-5.81)	6.30 (5.51-7.36)	8.16 (6.91-9.84)	9.69 (8.04-11.9)	11.3 (9.18-14.3)	13.1 (10.3-17.0)	15.7 (11.9-21.1)	17.8 (13.1-24.8)
20-day	2.89 (2.56-3.33)	4.21 (3.72-4.86)	6.08 (5.36-7.04)	7.72 (6.75-9.02)	10.1 (8.58-12.2)	12.1 (10.1-14.9)	14.3 (11.6-18.0)	16.7 (13.2-21.6)	20.2 (15.3-27.2)	23.2 (17.0-32.3)
30-day	3.45 (3.05-3.98)	5.02 (4.43-5.80)	7.28 (6.41-8.43)	9.27 (8.10-10.8)	12.2 (10.4-14.7)	14.7 (12.2-18.1)	17.4 (14.1-22.0)	20.5 (16.1-26.5)	24.9 (18.9-33.6)	28.7 (21.1-40.0)
45-day	4.03 (3.57-4.65)	5.81 (5.13-6.71)	8.38 (7.38-9.71)	10.7 (9.33-12.5)	14.1 (12.0-17.0)	17.1 (14.1-21.0)	20.3 (16.4-25.6)	23.9 (18.9-31.0)	29.4 (22.2-39.5)	34.0 (24.9-47.4)
60-day	4.70 (4.16-5.42)	6.65 (5.88-7.69)	9.52 (8.38-11.0)	12.1 (10.6-14.1)	16.0 (13.5-19.3)	19.3 (16.0-23.8)	23.1 (18.7-29.0)	27.3 (21.5-35.3)	33.6 (25.5-45.3)	39.1 (28.6-54.4)

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

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
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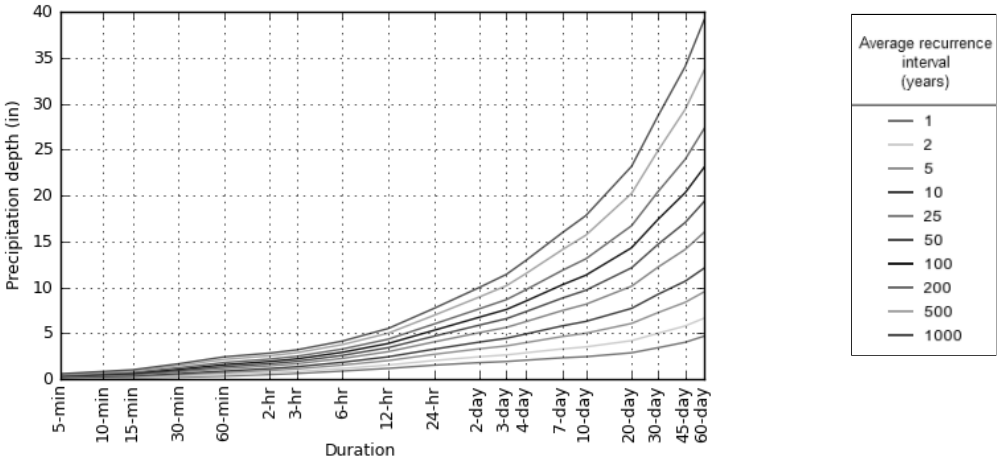

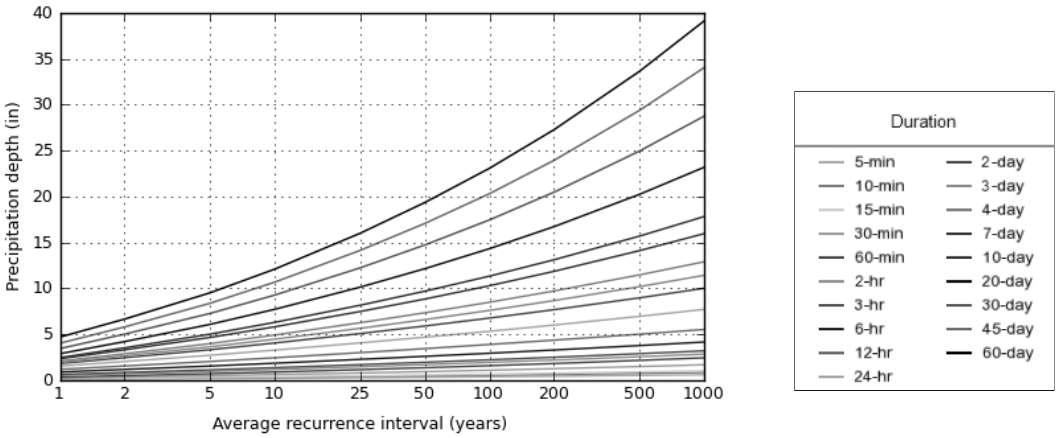

NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Aug 2 19:19:21 2022

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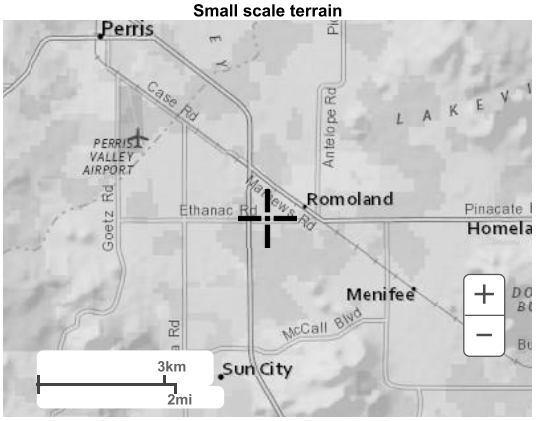
Maps & aerials

Small scale terrain



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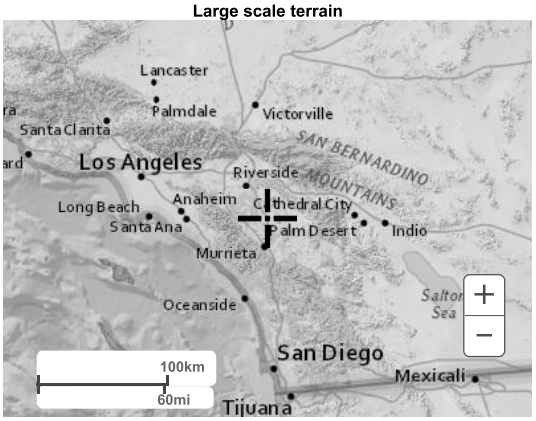
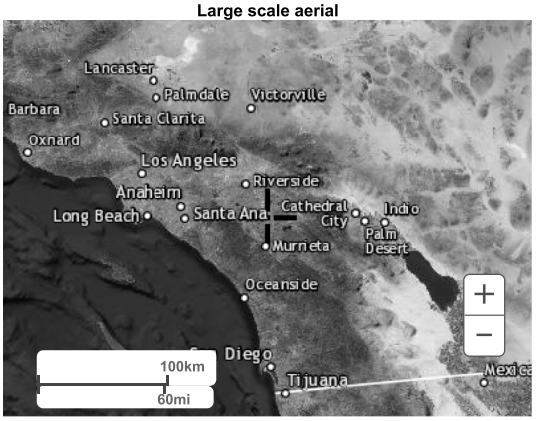


Large scale map

Large scale aerial



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Disclaimer

September 14, 2022

Project No. 22424

Mr. Michael Ramirez
Beyond Food Mart
27278 Ethanac Road
Perris, CA

Subject: Preliminary Geotechnical Engineering Report
Proposed Carwash and Gas Station
27278 Ethanac Road, Perris, California

Dear Mr. Ramirez:

In accordance with your request and authorization, we are presenting the results of our geotechnical investigation for the proposed subject carwash and gas station development project located in the City of Perris, California. The purpose of this investigation has been to evaluate the subsurface conditions at the site and to provide geotechnical engineering recommendations for the proposed construction.

Based on our findings, the proposed project is geotechnically feasible, provided that the recommendations in this report are incorporated into the design and are implemented during construction of the project. This report was prepared in accordance with the requirements of the 2019 California Building Code and the City of Perris requirements.

We appreciate the opportunity to be of service on this project. Should you have any questions regarding this report or if we can be of further service, please do not hesitate to contact the undersigned at (657) 888-4608 or info@ntsgeo.com.

Respectfully submitted,
NTS GEOTECHNICAL, INC.

Nadim Sunna, M.Sc., Q.S.P, P.E., G.E. 3172
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STATE OF CALIFORNIA

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Plate 1 – Location Map
Plate 2 – Geotechnical Map

Appendix A – Field Exploration
Appendix B – Geotechnical Laboratory Test Result
Appendix C – Infiltration Test Result

INTRODUCTION

This report presents the results of our geotechnical engineering evaluation performed for the proposed Single Family Residences project located at 27278 Ethanac Road, in the City of Perris, California. See (Plate 1, Location Map). The purpose of this study has been to evaluate the subsurface conditions at the site and to provide geotechnical recommendations related to the design and construction of the proposed improvements.

SITE AND PROJECT DESCRIPTION

The subject site is located on at 27278 Ethanac Road in the City of Perris, California. The relatively flat vacant lot is bound by vacant land on the north and east by Trumble Road on the west, and Ethanac Road on the south.

It is our understanding that the subject project consists of construction of a Beyond Foods Mart service station consists of a 1-story C-store, gas pumps with overhead canopy, and a carwash tunnel. Additionally, site improvements such as new pavement, curbs and gutters, and trash enclosures are planned.

SCOPE OF WORK

As part of the preparation of this report, we have performed the following tasks:

Background Review

We reviewed readily available background data including in-house geologic maps and topographic maps relevant to the subject site in preparation of this report.

Field Exploration

The subsurface conditions were evaluated on August 24, 2022 by advancing four (4) hollow-stem-auger borings at various locations within the subject lot. The borings were advanced to a maximum depth of 30 feet below the existing grade. The approximate locations of the borings are shown on Plate 2, Geotechnical Map. Detailed exploration information of soils borings is presented in Appendix A, Field Exploration.

Geotechnical Laboratory Testing

Laboratory tests were performed on selected samples obtained from the boring in order to aid in the soil classification and to evaluate the engineering properties

of the foundation soils. The following tests were performed in general accordance with ASTM standards:

- In-situ moisture and density;
- No. 200 sieve wash;
- Consolidation;
- Direct shear;
- Sieve analysis; and
- Corrosion.

A summary of the laboratory test results are presented in Appendix B of this report.

SUBSURFACE CONDITIONS

Subsurface Materials

Earth materials encountered during our subsurface investigation consisted of a thin layer of artificial fill overlaying the alluvium to the total depth of the exploration. In general, the fill consists of dark gray, damp, loose, silty sands.

The alluvium consists of orange brown to tan, moist to damp, medium dense to very dense, silty sands and sands.

Groundwater

Groundwater was not observed during our exploration to a maximum depth of 30 feet below the existing grade.

No groundwater data was found during a literature search pertaining to the subject property. There are no known shallow groundwater bearing soil or rock formations beneath the subject property. No evidence of onsite springs was found during the field study. Based on anticipated lot grading and the inferred groundwater depths, groundwater should not be a factor for project design or long-term performance.
Surface water was not observed on the subject site at the time the field study was performed for this report.

Based on results of our subsurface exploration and experience, variations in the continuity and nature of surface and subsurface conditions should be anticipated. Due to uncertainty involved in the nature and depositional characteristics of earth materials at the site, care should be exercised in extrapolating or interpolating subsurface conditions between and beyond the exploratory excavation locations.

Groundwater conditions may vary across the site due to stratigraphic and hydrologic conditions and may change over time as a consequence of seasonal and meteorological fluctuations, or activities by humans at this site and nearby sites. However, based on the above findings, groundwater is unlikely to impact the proposed development.

GEOLOGIC HAZARDS

Faulting and Seismicity

The site is not located within an Alquist-Priolo Earthquake Fault Zone, and no known active faults are shown on the reviewed geologic maps crossing the site, however, the site is located in the seismically active region of Southern California. The nearest known active fault is the Elsinore fault system, which is located approximately 9.6 miles from the site, and capable of generating a maximum earthquake magnitude of 7.3.

Liquefaction and Seismic Settlement

Liquefaction occurs when the pore pressures generated within a soil mass approach the effective overburden pressure. Liquefaction of soils may be caused by cyclic loading such as that imposed by ground shaking during earthquakes. The increase in pore pressure results in a loss of strength, and the soil then can undergo both horizontal and vertical movements, depending on the site conditions. Other phenomena associated with soil liquefaction include sand boils, ground oscillation, and loss of foundation bearing capacity. Liquefaction is generally known to occur in loose, saturated, relatively clean, fine-grained cohesionless soils at depths shallower than approximately 50 feet. Factors to consider in the evaluation of soil liquefaction potential include groundwater conditions, soil type, grain size distribution, relative density, degree of saturation, and both the intensity and duration of ground motion.

Based on our review of the County of Riverside Map My County website, the site is generalized to be within a low liquefaction susceptibility zone. Additionally, based on the lack of shallow groundwater, the dense nature of the subsurface soil, the relatively uniform soil stratum across the site, it is our professional opinion that the liquefaction potential at the site is low.

Landslides

Based on our review of the referenced geologic maps, literature, topographic maps, and our subsurface evaluation, no landslides or related features underlie or are adjacent to the subject site. Due to the relatively level nature of the site and surrounding areas, the potential for landslides at the project site is considered negligible.

Flooding

The Federal Emergency Management Agency (FEMA) has prepared flood insurance rate maps (FIRMs) for use in administering the National Flood Insurance Program. Based on our review of the FEMA flood map, the site is located within an Area of Minimal Flood Hazard (Zone X).

Tsunami and Seiches

Tsunamis are waves generated by massive landslides near or under sea water. The site is not located on any State of California – County of Riverside Tsunami Inundation Map for Emergency Planning. The potential for the site to be adversely impacted by earthquake-induced tsunamis is considered to be negligible because the site is located several miles inland from the Pacific Ocean shore, at an elevation exceeding the maximum height of potential tsunami inundation.

Seiches are standing wave oscillations of an enclosed water body after the original driving force has dissipated. The potential for the site to be adversely impacted by earthquake-induced seiches is considered to be negligible due to the lack of any significant enclosed bodies of water located in the vicinity of the site.

GEOTECHNICAL ENGINEERING FINDINGS

Expansive Soil

Based on our evaluation and experience with similar material types, and laboratory testing, the soils encountered near the ground surface at the site exhibit a very low expansion potential.

Soil Corrosion

The potential for the on-site materials to corrode buried steel and concrete improvements was evaluated. Laboratory testing was performed on representative soil samples to evaluate pH, minimum resistivity, and soluble chloride and sulfate contents. The results of our corrosivity testing is presented within Appendix B of this report. General recommendations to address the corrosion potential of the on-site soils are provided below. Imported fill materials, if used, should be tested to evaluate whether their corrosion potential is more severe than those assumed.

Structural Concrete

Laboratory tests indicate that the potential of sulfate attack on concrete in contact with the on-site soils is “negligible” or “S0” exposure in accordance with ACI 318, Table 19.3.1.1. Therefore, restriction on the type of cement, water to cement ratio, and compressive strength is not required.

Ferrous Metal

The results of the laboratory chemical tests performed on a sample of soil collected within the site indicate that the on-site soils are corrosive to ferrous metals. Consequently, metal structures which will be in direct contact with the soil (i.e., underground metal conduits, pipelines, metal sign posts, etc.) and/or in close proximity to the soil (wrought iron fencing, etc.) may be subject to corrosion. The use of special coatings or cathodic protection around buried metal structures has been shown to be beneficial in reducing corrosion potential. Additional provisions will be required to address high chloride contents of the soil per the 2019 CBC to protect the concrete reinforcement. The laboratory testing program performed for this project does not address the potential for corrosion to copper piping. In this regard, a corrosion engineer should be consulted to perform more detailed testing and develop appropriate mitigation measures (if necessary).

The above discussion is provided for general guidance in regards to the corrosiveness of the on-site soils to typical metal structures used for construction. Detailed corrosion testing and recommendations for protecting buried ferrous metal and/or copper elements are beyond our purview. If detailed testing is required, a corrosion engineer should be consulted to perform the testing and develop appropriate mitigation measures.

Preliminary Infiltration Testing

Two (2) infiltration tests were performed in general conformance with the County of Riverside requirements. The borings were excavated to a depth of 5 and 10 feet below the existing grade using a hollow-stem-auger drill rig. Following the drilling, the borings were set up, presoaked, and testing was performed in general accordance with the County Riverside manual. The result of our infiltration testing is summarized in the table below, which includes a factor of safety of 2. Our infiltration testing calculations are presented in Appendix C of this report.

Preliminary Infiltration Rates Summary

Boring No.	Depth Below Existing Grade (feet)	Factored Infiltration Rate (inches/hour)
P-1	5	0.71
P-2	10	1.91

The infiltration test locations are shown on the attached Plate 2 –Geotechnical Map. Based on our infiltration testing, infiltration within the upper 10 feet of the site soils is deemed feasible from a geotechnical standpoint. Infiltration recommendations are presented in the Conclusion and Recommendations section of this report.

Hydroconsolidation

Based on our laboratory test results and dense nature of the underlying soils, the potential for hydrocollapse settlement to affect the proposed structures should be considered low.

Excavation Characteristics

The majority of the soil materials underlying the site can be excavated with excavators and other conventional grading equipment.

GEOTECHNICAL ENGINEERING CONLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the results of our field exploration and engineering analyses, it is our opinion that the proposed development is feasible from a geotechnical standpoint, provided that the recommendations in this report are incorporated into the design plans and are implemented during construction.

Based on the geotechnical findings, the following is a summary of our conclusions:

- The proposed structure may be supported on a shallow spread/continuous footing foundation system underlain by engineered fill.
- Groundwater is not anticipated to directly impact the planned precise grading or during the installation of shallow underground utilities.

- The site is not located within a fault zone, however, the site will experience strong ground shaking due to it's proximity to the Elsinore fault.
- Based on the lack of shallow groundwater and relatively dense nature of the subsurface soil, the liquefaction potential is considered low.
- The magnitude of total static settlements beneath the structure is expected to be less than 1.0 inch, with differential settlement on the order of ½ -inch over a span of 30 feet.
- The on-site soils has a negligible sulfate exposure to concrete (i.e., as defined by the CBC) and reinforcement, however is severely corrosive to ferrous metals.

Our geotechnical engineering analyses performed for this report were based on the earth materials encountered during the subsurface exploration for the site. If the design substantially changes, then our geotechnical engineering recommendations would be subject to revision based on our evaluation of the changes. The following sections present our conclusions and recommendations pertaining to the engineering design for this project.

Site Preparation

Site preparation should begin with the removal of utility lines, asphalt, concrete, vegetation, and other deleterious debris from areas to be graded. Tree stumps and roots should be removed to such a depth that organic material is generally not present. Clearing and grubbing should extend to the outside edges of the proposed excavation and fill areas. We recommend that unsuitable materials such as organic matter or oversized material be selectively removed and disposed offsite. The debris and unsuitable material generated during clearing and grubbing should be removed from areas to be graded and disposed at a legal dump site away from the project area.

Corrective Grading

Due to the dry / loose nature of the near surface soils, we recommend that the upper 3 feet of site soils be removed and recompacted to achieve a uniform blanket of properly moisture conditioned and compacted fill material.

It should be noted that the recommendations provided herein are based on our subsurface exploration and knowledge of the on-site geology. Actual removals may vary in configuration and volume based on observations of geologic materials and conditions encountered during grading. The bottom of all corrective grading removals should be observed by a representative of NTS to verify the suitability of in-place soil prior to performing scarification and recompaction. Corrective grading recommendations are outlined below.

Building Pads

In order to create a firm and stable platform on which to construct the new building pads, we recommend the following:

- The proposed building pads should be excavated to a depth of at least 3 feet from existing grade.
- The excavation should extend laterally a minimum of 3 feet from the edge of the proposed building.
- The bottom of the over excavation should then be scarified to a depth of at least 8 inches, thoroughly flooded to raise the moisture content of the underlying soils to at least 2 percent above optimum moisture content, and should be recompacted using heavy vibratory compaction equipment prior to placement of any fill.
- Following the approval of the over-excavation bottom by a representative of NTS, the onsite material may be used as fill material to achieve the planned pad grade.
- The fill material should then be placed in 6- to- 8-inch-thick lifts, moisture conditioned to near optimum moisture content and compacted to achieve 90 percent relative compaction.

New Streets / Pavements / Hardscape

In order to create a firm and stable platform on which to construct the new vehicular pavement and non-vehicular pavement/hardscape, we recommend the following:

- The proposed pavement should be excavated to the planned subgrade (i.e., bottom of aggregate base for vehicular pavement).
- The bottom of the excavation should then be excavated to a depth of 18 inches below the planned subgrade.
- The bottom of the over excavation should then be scarified to a depth of at least 6 inches, moisture conditioned to 2 percent above optimum moisture content and recompacted to at least 90 percent relative compaction as determined in accordance with ASTM D1557.
- Following the approval of the over-excavation bottom by a representative of NTS, the onsite material may be used as fill material to achieve the planned pad grade.
- The fill material should then be placed in 6- to- 8-inch-thick lifts, moisture conditioned to near optimum moisture content and compacted to achieve 90 percent relative compaction.

If the existing loose fill materials are found to be disturbed to depths greater than the proposed remedial grading, then the depth of over-excavation and re-

compaction should be increased accordingly in local areas as recommended by a representative of NTS.

Materials for Fill

On-site soils with an organic content of less than 3 percent by volume (or 1 percent by weight) are suitable for use as fill. Soil material to be used as fill should not contain contaminated materials, rocks, or lumps over 6 inches in largest dimension, and not more than 40 percent larger than ¾ inch. Utility trench backfill material should not contain rocks or lumps over 3 inches in largest dimension. Larger chunks, if generated during excavation, may be broken into acceptably sized pieces or may be disposed offsite.

Any imported fill material should consist of granular soil having a “very low” expansion potential (that is, expansion index of 20 or less). Import material should also have low corrosion potential (that is, chloride content less than 500 parts per million [ppm], soluble sulfate content of less than 0.1 percent, and pH of 5.5 or higher). Materials to be used as fill should be evaluated by a representative of NTS prior to importing or filling.

Compacted Fill

Prior to placement of compacted fill, the contractor should request an evaluation of the exposed excavation bottom by NTS. Unless otherwise recommended, the exposed ground surface should then be scarified to a depth of at least 8 inches and watered or dried, as needed, to achieve generally consistent moisture contents 2 percent above optimum moisture content. The scarified materials should then be compacted to 90 percent relative compaction in accordance with the latest version of ASTM Test Method D1557.

Compacted fill should be placed in horizontal lifts of approximately 6 to 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as needed to achieve near optimum moisture condition, mixed, and then compacted by mechanical methods, using sheepsfoot rollers, multiple-wheel pneumatic-tired rollers, or other appropriate compacting rollers, to a relative compaction of 90 percent as evaluated by ASTM D1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved. Within pavement areas, the upper 12 inches of subgrade soil should be compacted to 95 percent relative compaction evaluated by ASTM D1557.

Personnel from NTS should observe the excavations so that any necessary modifications based on variations in the encountered soil conditions can be made. All applicable safety requirements and regulations, including CalOSHA requirements, should be met.

Temporary Excavations

Temporary excavations for the demolishing, earthwork, footing and utility trench are expected. We anticipate that unsurcharged excavations with vertical side slopes less than 4 feet high will generally be stable; however, sloughing of cohesionless sandy materials encountered at the site should be expected.

Where the space is available, temporary, unsurcharged excavation sides over 4 feet in height should be sloped no steeper than an inclination of 1.5H:1V (horizontal:vertical). Where sloped excavations are created, the tops of the slopes should be barricaded so that vehicles and storage loads do not encroach within 10 feet of the top of the excavated slopes. A greater setback may be necessary when considering heavy vehicles, such as concrete trucks and cranes. NTS should be advised of such heavy vehicle loadings so that specific setback requirements can be established. If the temporary construction slopes are to be maintained during the rainy season, berms are recommended to be graded along the tops of the slopes in order to prevent runoff water from entering the excavation and eroding the slope faces.

Where space for sloped excavations is not available, temporary shoring may be utilized. Recommendations for temporary shoring can be provided as requested. Personnel from NTS should observe the excavation so that any necessary modifications based on variations in the encountered soil conditions can be made. All applicable safety requirements and regulations, including CalOSHA requirements, should be met.

Excavations shall not undermine the existing adjacent building / wall footings. Where space for sloped excavations is not available, temporary shoring may be utilized.

Seismic Design

Based on subsurface investigation, the site is designated as Site Class D ("stiff" soil profile). The seismic design parameters based on ASCE 7-16 and 2019 CBC are listed in the following table.

2019 CBC and ASCE 7-16 Seismic Design Parameters

Seismic Item	Design Value	2016 ASCE 7-16 or 2019 CBC Reference
Site Class based on soil profile (ASCE 7-16 Table 20.3-1)	D[(a)]	ASCE 7-16 Table 20.3-1
Short Period Spectral Acceleration S_s	1.419 [(a)]	CBC Figures 1613.2.1 (1-8)
1-sec. Period Spectral Acceleration S_1	0.526[(a)]	CBC Figures 1613.2.1 (1-8)
Site Coefficient F_a (2019 CBC Table 1613.2.3(1))	1.000[(a)]	CBC Table 1613.2.3 (1)
Site Coefficient F_v (2019 CBC Table 1613.2.3(2))	1.800[(b)]	CBC Table 1613.2.3 (2)
Short Period MCE* Spectral Acceleration S_{MS} $S_{MS} = F_a S_s$	1.419[(a)]	CBC Equation 16-36
1-sec. Period MCE Spectral Acceleration S_{M1} $S_{M1} = F_v S_1$	0.947[(b)]	CBC Equation 16-37
Short Period Design Spectral Acceleration S_{DS} $S_{DS} = 2/3S_{Ms}$	0.946[(a)]	CBC Equation 16-38
1-sec. Period Design Spectral Acceleration S_{D1} $S_{D1} = 2/3S_{M1}$	0.631[(b)]	CBC Equation 16-39
Short Period Transition Period T_S (sec) $T_S = S_{D1}/S_{DS}$	0.667[(b)]	ASCE 7-16 Section 11.4.6
Long Period Transition Period Tl (sec)	8[(b)]	ASCE 7-16 Figures 22-14 to 22-17
MCE[(c)] Peak Ground Acceleration (PGA)	0.50[(a)]	ASCE 7-16 Figures 22-9 to 22-13
Site Coefficient F_{PGA} (ASCE 7-16 Table 11.8-1)	1.100[(a)]	ASCE 7-16 Table 11.8-1
Modified MCE[(c)] Peak Ground Acceleration (PGA_M)	0.55[(a)]	ASCE 7-16 Equation 11.8-1

[(a)] Design Values Obtained from USGS Earthquake Hazards Program website that are based on the ASCE-7-16 and 2019 CBC and site coordinates of N33.743455° and W117.184533°.
[(b)] Design Values Determined per ASCE Table 11.4-2 and CBC Equations 16-36 through 16-39.
[(c)] MCE: Maximum Considered Earthquake.

Since the Site Class is designated as D and the S1 value is greater than or equal to 0.2, the 2019 CBC requires either a site-specific seismic hazard analysis per Section 21.2 of ASCE 7-16 or the application of Exception 2 of Section 11.4.8 of ASCE 7-16. The project structural engineer should apply all requirements of Section 11.4.8 of ASCE 7-16 to determine if increases to the seismic response coefficient (i.e. increases to the loading of the structure) are required.

It should be recognized that much of southern California is subject to some level of damaging ground shaking as a result of movement along the major active (and potentially active) fault zones that characterize this region. Design utilizing the 2019 CBC is not meant to completely protect against damage or loss of function. Therefore, the preceding parameters should be considered as minimum design criteria.

Foundation Design and Construction

A shallow foundation system may be used for support of the proposed buildings, provided that all the footings are placed on engineered fill prepared as described

in the "**Corrective Grading**" section of this report. Our geotechnical foundation design parameters are presented in the table below:

Foundation Design Parameters

Bearing Material	▪ Engineered Fill
Minimum Footing Size	▪ Width: 12 inches ▪ Depth: 18 inches below the lowest adjacent soil grade
Minimum Footing Reinforcement	▪ Footings reinforcement should consist of at least four No. 4 bars (two on top and two on bottom). ▪ Final reinforcement should be determined by the project structural engineer.
Allowable Bearing Capacity	▪ 2,500 psf for the minimum footing size given above. ▪ The above value may be increased by 1/3 for temporary loads such as wind or earthquake.
Static Settlement	▪ Total static settlement of 1 inch with differential settlement estimated to be approximately ½ inch over a span of 40 feet
Allowable Lateral Passive Resistance	• 300 pcf (equivalent fluid pressure)
Allowable Coefficient of Friction	• 0.35

Slab-On-Grade Design and Construction

The slab-on-grade should be designed and constructed with the minimum recommendations presented below, however, final design of the slab should be determined by the project structural engineer.

Minimum Thickness: The minimum slab thickness should be 5 inches.

Minimum Slab Reinforcement: Minimum slab reinforcement shall not be less than No. 4 bars placed at 18 inches on center. Welded wire mesh is not recommended. Care should be taken to position the reinforcement bars in the center of the slab.

Slab Subgrade:

- The upper 24 inches of the slab subgrade should be moisture conditioned to 2 percent above optimum moisture content and compacted to a minimum relative compaction of compacted to 90 percent relative compaction in accordance with the latest version of ASTM D1557 prior to placement of Moisture Vapor Retarder.

- A moisture vapor retarder should be placed in accordance with the "Moisture Vapor Retarder" section below.

Pole Foundations

It is expected that the canopy structures and light poles will be supported on pole foundations. As a minimum, the pole foundations should be at least 18 inches in diameter and at least 4 feet deep; however, the actual dimensions should be determined by the project structural engineer based on the following design parameters.

Bearing Materials: The pole foundations may bear into competent native soils approved by a representative from NTS.

Bearing Values: End-bearing capacity may be combined to determine the allowable bearing capacities of the pole foundations. An allowable bearing pressure of 3,000 pounds per square foot (psf) may be used for pole foundations at least 18 inches in diameter and embedded a minimum of 4 feet below the lowest adjacent grade.

Lateral Load Design: Lateral loads may be resisted by passive resistance within the adjacent earth materials. For passive resistance, an allowable passive earth pressure of 300 pounds per foot of pile diameter per foot of depth into competent bearing material may be used; however, passive resistance should be disregarded within the upper foot due to possible disturbance during drilling. The passive resistance value may be applied over an area equivalent to two pile diameters.

Moisture Vapor Retarder

A vapor retarder, such as a 15-mil-thick moisture vapor retarder that meets the requirements of ASTM E1745 Class C (Stego Wrap or equivalent) should be placed directly over the prepared soil subgrade to provide protection against vapor transmission through concrete floor slabs thatare anticipated to receive carpet, tile or other moisture sensitive coverings. The use of moisture vapor retarder should be determined by the project architect. At minimum, the vapor retarder should be installed as follows:

- Per the manufacture's specifications as well as with the applicable recognized installation procedures such as ASTM E1643;
- Joints between the sheets and the openings for utility piping should be lapped and taped. If the barrier is not continuously placed across footings/ribs, the barrier should at minimum be lapped into the side of the footing/rib trenches down to the bottom of the trench; and,

- Punctures in the vapor retarder should be repaired prior to concrete placement.

It should be noted that the moisture retarder is intended only to reduce moisture vapor transmissions from the soil beneath the concrete and is consistent with the current standard of the industry in the building construction in Southern California. It is not intended to provide a “waterproof” or “vapor proof” barrier or reduce vapor transmission from sources above the retarder (i.e., concrete). The evaluation of water vapor from any source and its effect on any aspect of the proposed building space above the slab (i.e., floor covering applicability, mold growth, etc.) is beyond our purview and the scope of this report.

Structural Concrete

Based on laboratory test results for the site vicinity, the potential of sulfate attack on concrete in contact with the on-site soils is “negligible” based on ACI 318, Table 19.3.1.1.

The aforementioned recommendations in regards to concrete are made from a soils perspective only. Final concrete mix design is beyond our purview. All applicable codes, ordinances, regulations, and guidelines should be followed in regard to the designing a durable concrete with respect to the potential for sulfate exposure from the on-site soils and/or changes in the environment.

Drainage Control

The control of surface water is essential to the satisfactory performance of the building and site improvements. Surface water should be controlled so that conditions of uniform moisture are maintained beneath the improvements, even during periods of heavy rainfall. The following recommendations are considered minimal:

- Ponding and areas of low flow gradients should be avoided.
- If bare soil within 5 feet of the structure is not avoidable, then a gradient of 5 percent or more should be provided sloping away from the improvement. Corresponding paved surfaces should be provided with a gradient of at least 2 percent.
- The remainder of the unpaved areas should be provided with a drainage gradient of at least 2 percent.
- Positive drainage devices, such as graded swales, paved ditches, and/or catch basins should be employed to accumulate and to convey water to appropriate discharge points.
- Concrete walks and flatwork should not obstruct the free flow of surface water.
- Brick flatwork should be sealed by mortar or be placed over an impermeable membrane.

- Area drains should be recessed below grade to allow free flow of water into the basin.
- Enclosed raised planters should be sealed at the bottom and provided with an ample flow gradient to a drainage device. Recessed planters and landscaped areas should be provided with area inlet and subsurface drain pipes.
- Planters should not be located adjacent to the structures wherever possible. If planters are to be located adjacent to the structures, the planters should be positively sealed, should incorporate a subdrain, and should be provided with free discharge capacity to a drainage device.
- Planting areas at grade should be provided with positive drainage. Wherever possible, the grade of exposed soil areas should be established above adjacent paved grades. Drainage devices and curbing should be provided to prevent runoff from adjacent pavement or walks into planted areas.
- Gutter and downspout systems should be provided to capture discharge from roof areas. The accumulated roof water should be conveyed to off-site disposal areas by a pipe or concrete swale system.
- Landscape watering should be performed judiciously to preclude either soaking or desiccation of soils. The watering should be such that it just sustains plant growth without excessive watering. Sprinkler systems should be checked.

Preliminary Infiltration Design and Construction Recommendations

Infiltration Design

Based on our preliminary infiltration testing and our evaluation, we note that the installation of infiltration system within the subject property is feasible from a geotechnical standpoint provided that the recommendations presented in this section is considered during design and implemented during construction. On this basis we recommend the following:

- We recommend that a design infiltration rate of 0.71 inches and 1.91 inches per hour be used for design of the proposed infiltration system that is located within the upper 5 feet and at a depth of 10 feet of the site soils, respectively.

- The selected infiltration BMP should be designed and constructed in accordance with the minimum requirements presented below, the requirements of the City of Perris.

Minimum Setback Requirements

Any foundation	• A minimum of 10 feet setback or within 1:1 plane drawn up from the bottom of foundation, whichever is greater.
Water wells used for drinking water	• A minimum of 100 feet setback.

The final design and specification should be reviewed by the Geotechnical Engineer of Record prior to construction to verify compliance with the recommendations of this report and/or provide additional recommendations/revisions, if needed.

Utility Trench Backfill Considerations

New utility line pipeline trenches should be backfilled with select bedding materials beneath and around the pipes (pipe zone) and compacted soil above the pipe bedding. Recommendations for the types of the materials to be used and the proper placement of these materials are provided in the following sections.

Pipe Zone (Bedding and Shading)

The pipe bedding and shading materials should extend from at least 6 inches below the pipes to at least 12 inches above the crown of the pipes. Pipe bedding and shading should consist of either clean sand with a sand equivalent (SE) of at least 30, or crushed rock. If crushed rock is used, it should consist of ¾-inch crushed rock that conforms to Table 200-1.2.1 (A) of the 2018 “Greenbook.” Pipe bedding and shading should also meet the minimum requirements of the City of Los Angeles. If the requirements of the City are more stringent, they should take precedence over the geotechnical recommendations. Sufficient laboratory testing should be performed to verify the bedding and shading meets the minimum requirements of the Greenbook and City of Perris grading codes.

Granular pipe bedding and shading material should be properly placed in thicknesses not exceeding 3 feet, and then sufficiently flooded or jetted in place. Crushed rock, if used, should be capped with filter fabric (Mirafi 160N, or equivalent; Mirafi 140N filter fabric is suitable if available) to prevent the migration of fines into the rock.

Trench Backfill

All existing soil material within the limits of the site are considered suitable for use as trench backfill above the pipe bedding and shading zone if care is taken

to remove all significant organic and other decomposable debris, moisture condition the soil materials as necessary, and separate and selectively place and/or stockpile any inert materials larger than 6 inches in maximum diameter.

Imported soils are not anticipated for backfill since the on-site soils are suitable. However, if imported soils are used, the soils should consist of clean, granular materials with physical and chemical characteristics similar to or better than those described herein for on-site soils. Any imported soils to be used as backfill should be evaluated and approved by NTS prior to placement.

Soils to be used as trench backfill should be moistened, dried, or blended as necessary to achieve near optimum moisture content, placed in lifts which, prior to compaction shall not exceed the thickness specified in Section 306-12.3 of the 2018 "Greenbook" for various types of equipment, and mechanically compacted/densified to at least 90 percent relative compaction as determined by ASTM Test Method D 1557. Jetting is not permitted in this trench zone.

No rock or broken concrete greater than 6 inches in maximum diameter should be utilized in the trench backfills.

Asphalt Concrete Pavement Design

In accordance with Chapter 600 of the Caltrans Highway Design Manual, we have performed pavement structural design utilizing assumed traffic indices (TI) of 5.0, 6.0 and 7.0 and assumed R-value of 20. Based on our analysis, we have developed the pavement structural sections presented in the following table. We note that the assumed TI's should be reviewed by a traffic engineer to confirm their applicability to the project. The assumed R-value should be confirmed by testing at the completion of rough grading.

Asphalt Concrete Pavement Structural Sections

Location	Traffic Index	Asphalt Concrete (in.)	Aggregate Base (in.)*
Driveways	5.0	4.0	5.0
Private Streets	6.0	4.0	9.0
Fire lane	7.0	4.0	12.0

The planned pavement structural sections should consist of the following:

- Aggregate Base materials (AB) consisted of either Crushed Aggregate Base (CAB) or Crushed Miscellaneous Base (CMB).
- Asphalt Concrete (AC) material of a type meeting the minimum City of Menifee standards.
- The subgrade soils should be moisture conditioned to 2 percent above optimum moisture content to a depth of at least 18 inches and compacted to 90 percent relative compaction.
- The AB and AC should be compacted to at least 95 percent relative compaction.

Exterior Flatwork/Hardscape Design Considerations

For exterior flatwork and hardscape planned as part of the proposed development, the following design may be considered by the project civil engineer. These recommendations may be considered as minimal design based on the soils conditions encountered during our investigation. Final design of the proposed flatwork and hardscape area should be provided by the project civil engineer. Based on the conditions encountered, we recommend that the subgrade for the subject concrete flatwork and hardscape be moisture conditioned to near optimum to a depth of 18 inches below finish subgrade elevation and compacted to 90 percent relative compaction. A Type II/V cement may be used from a geotechnical perspective. Our flatwork and hardscape design considerations are presented in the table below.

Concrete Flatwork Table

Description	Subgrade Preparation (1)	Minimum Concrete Thickness	Cut-Off Barrier Or Edge Thickness	Joint Spacing (Maximum)	Concrete(3)
Concrete Sidewalks and Walkways (4)	1) 2 percent above optimum to 18"(1), 2) 2" of sand or well graded rock (i.e., Class II base or equiv.) above moisture conditioned subgrade.	4 inches	Not Required	5 feet	Type II/V
Concrete Driveways(4)	1) 2 percent above optimum to 18"(1), 2) 2" of sand or well graded rock (i.e., Class II base or equiv.) above moisture conditioned subgrade.	6 inches	Where adjacent to landscape areas – 12" from adjacent finish grade. Min. 8" width	10 feet	Type II/V

(1) The moisture content of the subgrade must be verified by the geotechnical consultant prior to sand/rock placement.
(2) Reinforcement to be placed at or above the mid-point of the slab (i.e., a minimum of 2.0 to 2.5 inches above the prepared subgrade).
(3) The site has negligible levels of sulfates as defined by the CBC. Concrete mix design is outside the geotechnical engineer's purview.
(4) Where flatwork is adjacent a stucco surface, a ¼" to ½" foam separation/expansion joint should be used.
(5) If dowels are placed in cored holes, the core holes shall be placed at alternating in-plane angles (i.e., not cored straight into slab).

Planters and Trees

Where new trees or large shrubs are to be located in close proximity to new concrete flatwork, rigid moisture/root barriers should be placed around the perimeter of the flatwork to at least 12 inches in depth in order to offer protection to the adjacent flatwork against potential root and moisture damage. Existing mature trees near flatwork areas should also incorporate a rigid moisture/root barrier placed at least 2 feet in depth below the top of the flatwork.

Plans and Specifications Review

The recommendations presented in this report are contingent upon review of final plans and specifications for the project by NTS. NTS Geotechnical, Inc. should review and verify in writing the compliance of the final grading plan and the final foundation plans with the recommendations presented in this report.

Construction Observation and Testing

It is recommended that NTS be retained to provide Geotechnical Consulting services during the earthwork operations and foundation installation process. This is to observe compliance with the design concepts, specifications and recommendations and to allow for design changes in the event that subsurface conditions differ from those anticipated during our subsurface investigation.

It is the responsibility of the owner and their representative to bring any deviations or unexpected conditions observed during construction to the attention of NTS Geotechnical, in order for supplemental recommendations can be made with a minimum delay to the project. Construction should be observed and/or testing at the following stages by NTS Geotechnical, Inc.:

- During all phases of precise grading, including over-excavation, temporary excavations, removals, scarification, ground preparation, moisture condition, proof-rolling, and placement and compaction of all fill material.
- All foundation excavation prior to placement of steel
- During backfill of underground utilities
- During placement of pavement structural section, including verifying the subgrade prior to placement of aggregate base, testing of aggregate base, and testing of asphalt concrete pavement.
- When unusual conditions are encountered.

If any of these inspections to verify site geotechnical conditions are not performed by NTS Geotechnical, liability for the safety and stability of the project is limited only to the actual portions of the project that is observed and approved by NTS Geotechnical.

LIMITATIONS

All parties reviewing or utilizing this report should recognize that the findings, conclusions, and recommendations presented represent the results of our professional geological and geotechnical engineering efforts and judgments. Due to the inexact nature of the state of the art of these professions and the possible occurrence of undetected variables in subsurface conditions, we cannot guarantee that the conditions actually encountered during grading and site construction will be identical to those observed, sampled, and interpreted during our study, or that there are no unknown subsurface conditions which could have an adverse effect on the use of the property. We have exercised a degree of care comparable to the standard of practice presently maintained by other professionals in the fields of geotechnical engineering and engineering geology, and believe that our findings present a reasonably representative description of

geotechnical conditions and their probable influence on the grading and use of the property.

Our conclusions and recommendations are based on the assumption that our firm will act as the geotechnical engineer of record during construction and grading of the project to observe the actual conditions exposed, to verify our design concepts and the grading contractor's general compliance with the project geotechnical specifications, and to provide our revised conclusions and recommendations should subsurface conditions differ significantly from those used as the basis for our conclusions and recommendations presented in this report. Since our conclusions and recommendations are based on a limited amount of current and previous geotechnical exploration and analysis, all parties should recognize the need for possible revisions to our conclusions and recommendations during grading of the project.

It should be further noted that the recommendations presented herein are intended solely to minimize the effects of post-construction soil movements. Consequently, minor cracking and/or distortion of all on-site improvements should be anticipated.

This report has not been prepared for the use by other parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

REFERENCES

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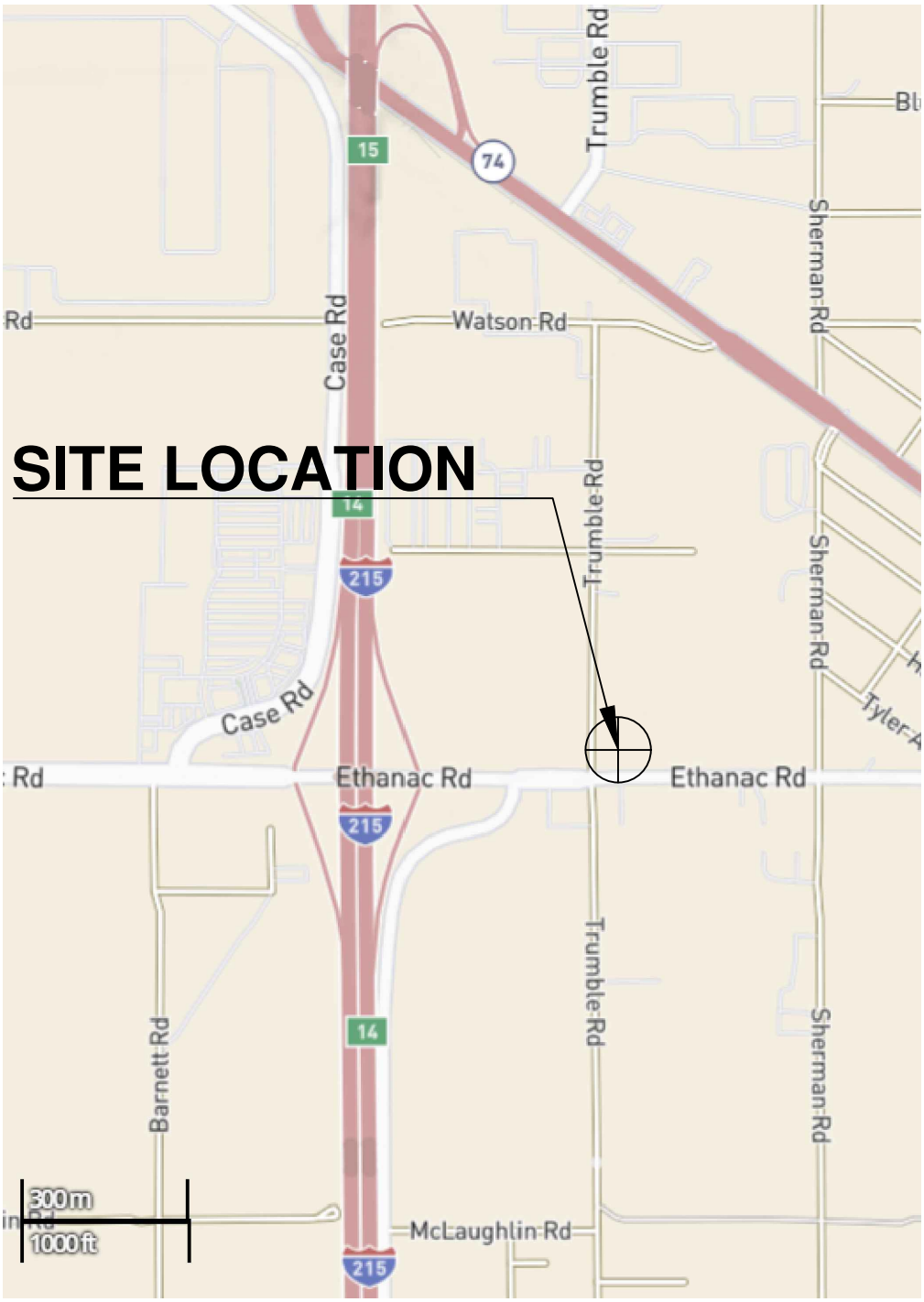

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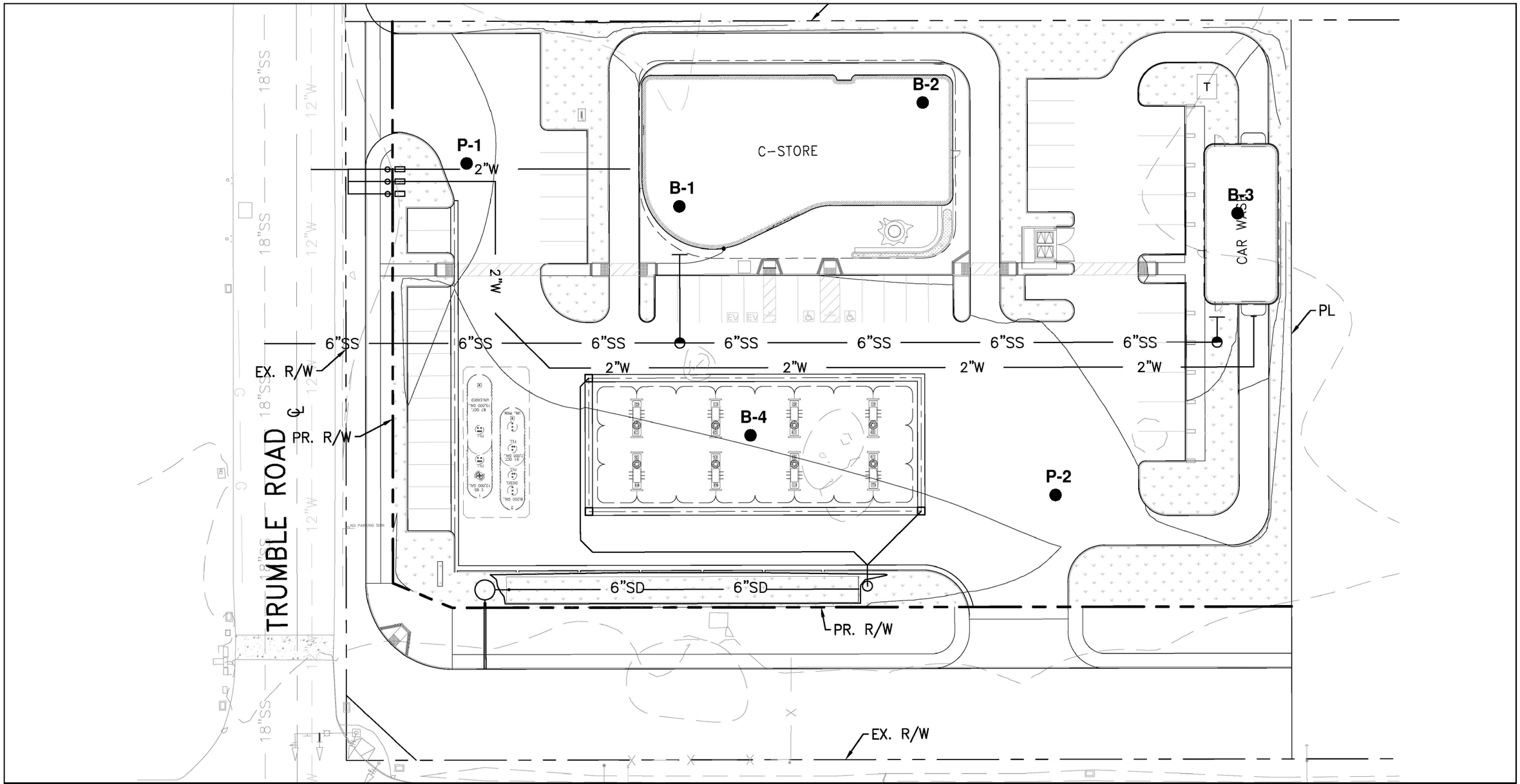
LOCATION MAP

NTS GEOTECHNICAL	Date: September 14, 2022	Plate 1
	Project No.: 22424	



NTS GEOTECHNICAL

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GEOTECHNICAL LEGEND

B-1 ● APPROXIMATE LOCATION OF BORING

GEOTECHNICAL MAP

Date: 09/14/2022	Project No.: 22424	Plate: 2

APPENDIX A

Field Investigation

Appendix A
Field Exploration

The subsurface exploration program for the proposed project consisted of advancing six (6) 8-inch-diameter, hollow-stem-auger drill rig. The borings were advanced to depths ranging from 5 to 30 feet below the existing grade.

The Boring Logs are presented as Figures A-2 to A-3. The Boring Logs describe the earth materials encountered, samples obtained, and show the field and laboratory tests performed. The log also shows the boring number, drilling date, and the name of the logger and drilling subcontractor. The borings were logged by an engineer using the Unified Soil Classification System. The boundaries between soil types shown on the logs are approximate because the transition between different soil layers may be gradual. Drive samples of representative earth materials were obtained from the borings.

Disturbed samples were obtained using a Standard Penetration Sampler (SPT). This sampler consists of a 2-inch O.D., 1.4-inch I.D. split barrel shaft that is advanced into the soil at the bottom of the drilled hole a total of 18 inches. The number of blows required to drive the upper 12 inches of the sampler is presented on the boring logs. Soil samples obtained by the SPT were retained in plastic bags. A California modified sampler was used to obtain drive samples of the soil encountered. This sampler consists of a 3-inch outside diameter (O.D.), 2.4-inch inside diameter (I.D.) split barrel shaft that was driven a total of 18-inches into the soil at the bottom of the boring. The soil was retained in brass rings for laboratory testing. Additional soil from each drive remaining in the cutting shoe was usually discarded after visually classifying the soil. The number of blows required to drive the upper 12 inches of the sampler is presented on the boring logs.

Upon completion of the borings, the boreholes were backfilled with soil from the cuttings.

Project: **27278 Ethanac Rd** Project Location: **27278 Ethanac Rd, Romoland** Project Number: **22424**	NTS GEOTECHNICAL	Key to Log of Boring **Sheet 1 of 1**

Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9

COLUMN DESCRIPTIONS

1 Depth (feet): Depth in feet below the ground surface.
2 Sample Type: Type of soil sample collected at the depth interval shown.
3 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
4 Material Type: Type of material encountered.
5 Graphic Log: Graphic depiction of the subsurface material encountered.
6 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
7 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
8 Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
9 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

Silty SAND (SM)
Poorly graded SAND with Silt (SP-SM)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Auger sampler
CME Sampler
Pitcher Sample
Bulk Sample
Grab Sample
2-inch-OD unlined split spoon (SPT)
3-inch-OD California w/ brass rings
2.5-inch-OD Modified California w/ brass liners
Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting, AW)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

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Figure A-1

Project: **27278 Ethanac Rd** Project Location: **27278 Ethanac Rd, Romoland** Project Number: **22424**	NTS GEOTECHNICAL	Log of Boring B-1 **Sheet 1 of 1**

Date(s) Drilled **8/24/2022**	Logged By **ERL**	Checked By **NS**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8"**	Total Depth of Borehole **20 feet**
Drill Rig Type **CME 75**	Drilling Contractor **OWD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **Modified California, SPT**	Hammer Data **140-lb autohammer**
Borehole Backfill **Native**	Location **27278 Ethanac Rd, Romoland**	

Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
0			SM		Artificial Fill (Af):			
			SM		SILTY SAND, organics, pieces of debris, damp, dark grey			
					ALLUVIUM (Qa):			
	■	50			SILTY SAND, fine-grained sand, abundance of silt, few organics, moist, dense, light brown	8	106	
5	▨	63	SM		fine to coarse-grained sand, very dense, orangish brown			
10	■	54	SM		coarse-grained sand, moist, dense	7	120	
15	▨	23	SP-SM		SAND to SILTY SAND, few silt, medium dense, tan to orangish brown			
20	■	72	SP-SM		damp to moist, very dense	5	118	
					Total Depth = 20 feet Groundwater not encountered Backfilled with native			
25								
30								

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Figure A-2

Project: **27278 Ethanac Rd** Project Location: **27278 Ethanac Rd, Romoland** Project Number: **22424**	NTS GEOTECHNICAL	Log of Boring B-2 **Sheet 1 of 1**

Date(s) Drilled **8/24/2022**	Logged By **ERL**	Checked By **NS**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8"**	Total Depth of Borehole **15 feet**
Drill Rig Type **CME 75**	Drilling Contractor **OWD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **Modified California, SPT**	Hammer Data **140-lb autohammer**
Borehole Backfill **Native**	Location **27278 Ethanac Rd, Romoland**	

Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
0			SM		Artificial Fill (Af):			
			SM		SILTY SAND, organics, pieces of debris, damp, dark grey			
		43			ALLUVIUM (Qa): SILTY SAND, fine-grained sand, few organics, moist, dense, light brown	7	115	
5		9	SM		some silt, loose, orangish brown			
10		27	SM		numerous silt, fine-grained sand, moist, medium dense	8	122	
15		22	SM		medium dense, tan to orangish brown			
					Total Depth = 15 feet Groundwater not encountered Backfilled with native			
20								
25								
30								

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Figure A-3

Project: **27278 Ethanac Rd** Project Location: **27278 Ethanac Rd, Romoland** Project Number: **22424**	NTS GEOTECHNICAL	Log of Boring B-3 **Sheet 1 of 1**

Date(s) Drilled **8/24/2022**	Logged By **ERL**	Checked By **NS**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8"**	Total Depth of Borehole **15 feet**
Drill Rig Type **CME 75**	Drilling Contractor **OWD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **Modified California, SPT**	Hammer Data **140-lb autohammer**
Borehole Backfill **Native**	Location **27278 Ethanac Rd, Romoland**	

Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
0			SM		Artificial Fill (Af):			
			SM		SILTY SAND, organics, pieces of debris, damp, dark grey			
					ALLUVIUM (Qa):			
		90/10"			SILTY SAND, fine-grained sand, few organics, very moist, very dense, light brown to orangish brown	13	102	
5		34	SM		fine to coarse-grained sand, few silt, dense, orangish brown			
10		50/5"	SM		moist, dense	7	110	
15		18	SM		few silt, few gravel, medium dense			
			SM		Total Depth = 15 feet Groundwater not encountered Backfilled with native			
20								
25								
30								

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Figure A-4

Project: **27278 Ethanac Rd** Project Location: **27278 Ethanac Rd, Romoland** Project Number: **22424**	NTS GEOTECHNICAL	Log of Boring B-4 **Sheet 1 of 2**

Date(s) Drilled **8/24/2022**	Logged By **ERL**	Checked By **NS**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8"**	Total Depth of Borehole **30 feet**
Drill Rig Type **CME 75**	Drilling Contractor **OWD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **Modified California, SPT**	Hammer Data **140-lb autohammer**
Borehole Backfill **Native**	Location **27278 Ethanac Rd, Romoland**	

Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
0			SM		Artificial Fill (Af):			
			SM		SILTY SAND, organics, pieces of debris, damp, dark grey			
		50/6"			ALLUVIUM (Qa): SILTY SAND, coarse-grained sand, some silt, moist, dense, orangish brown	8	117	
5		30	SM		few gravel, some silt, medium dense			
10		85/11"	SM		damp to moist, very dense, tan to orangish brown	5	127	
15		20	SM		fine to coarse-grained sand, medium dense			
20		73	SP-SM		SAND to SILTY SAND, coarse-grained sand, few silt, some gravel, dry to damp, very dense, tan to orangish brown	3	117	
25		47	SP-SM		dense			
30								

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Figure A-5

Project: **27278 Ethanac Rd**

Project Location: **27278 Ethanac Rd, Romoland**

Project Number: **22424**

NTS GEOTECHNICAL

Log of Boring B-4

Sheet 2 of 2

Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
30		50/6"	SP-SM		moist, dense	8	109	
					Total Depth = 30 feet			
					Groundwater not encountered			
					Backfilled with native			
35								
40								
45								
50								
55								
60								
65								

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Figure A-5

APPENDIX B

Geotechnical Laboratory Testing

Appendix B
Geotechnical Laboratory Testing

Laboratory Moisture Content and Density Tests

The moisture content and dry densities of selected driven samples obtained from the exploratory boring was evaluated in general accordance with the latest version of ASTM D 2937. The test results are presented on the log of the exploratory boring in Appendix A.

Wash Sieve

The number of fines passing the No. 200 sieve was evaluated by the wash sieve. The test procedure was in general accordance with ASTM D 1140. The results are attached to this Appendix B.

Corrosion Suite

The corrosion potential of typical on-site materials under long-term contact with both metal and concrete was determined by chemical and electrical resistance tests. The soluble sulfate test for potential concrete corrosion was performed in general accordance with ASTM D4327, the minimum resistivity test for potential metal corrosion was performed in general accordance with ASTM G187, and the concentration of soluble chlorides was determined in general accordance with ASTM D4327. The test results are attached to this Appendix B.

Direct Shear Tests

Direct shear tests were performed on selected remolded and relatively undisturbed soil samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of the materials. The samples were inundated during shearing to represent adverse field conditions. Direct shear test results are attached to this Appendix B.

Consolidation Test

Consolidation tests was performed on a selected driven soil sample in general accordance with the latest version of ASTM D2435. The sample was inundated during testing to represent adverse field conditions. The percent consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. Consolidation testing results are attached to this Appendix B.

PROJECT NO.: 22424

PROJECT ADDRESS: 27278 Ethanac Road

LABORATORY RECAPITULATION 1

Explorations	Depth (ft)	Material	Dry Density (p.c.f.)	Moisture Content (%)
B-1	2.0	Qa	106	8
	10.0	Qa	120	7
	20.0	Qa	118	5
B-2	2.0	Qa	115	7
	10.0	Qa	122	8
B-3	2.0	Qa	102	13
	10.0	Qa	110	7
B-4	2.0	Qa	117	8
	10.0	Qa	127	5
	20.0	Qa	117	3
	30.0	Qa	109	8

LABORATORY RECAPITULATION 2

Explorations	Depth (ft)	pH	As-Is Soil Resistivity (ohm-cm)	Minimum Soil Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)
B-3	5.0	8.22	8,000	2,600	50	60

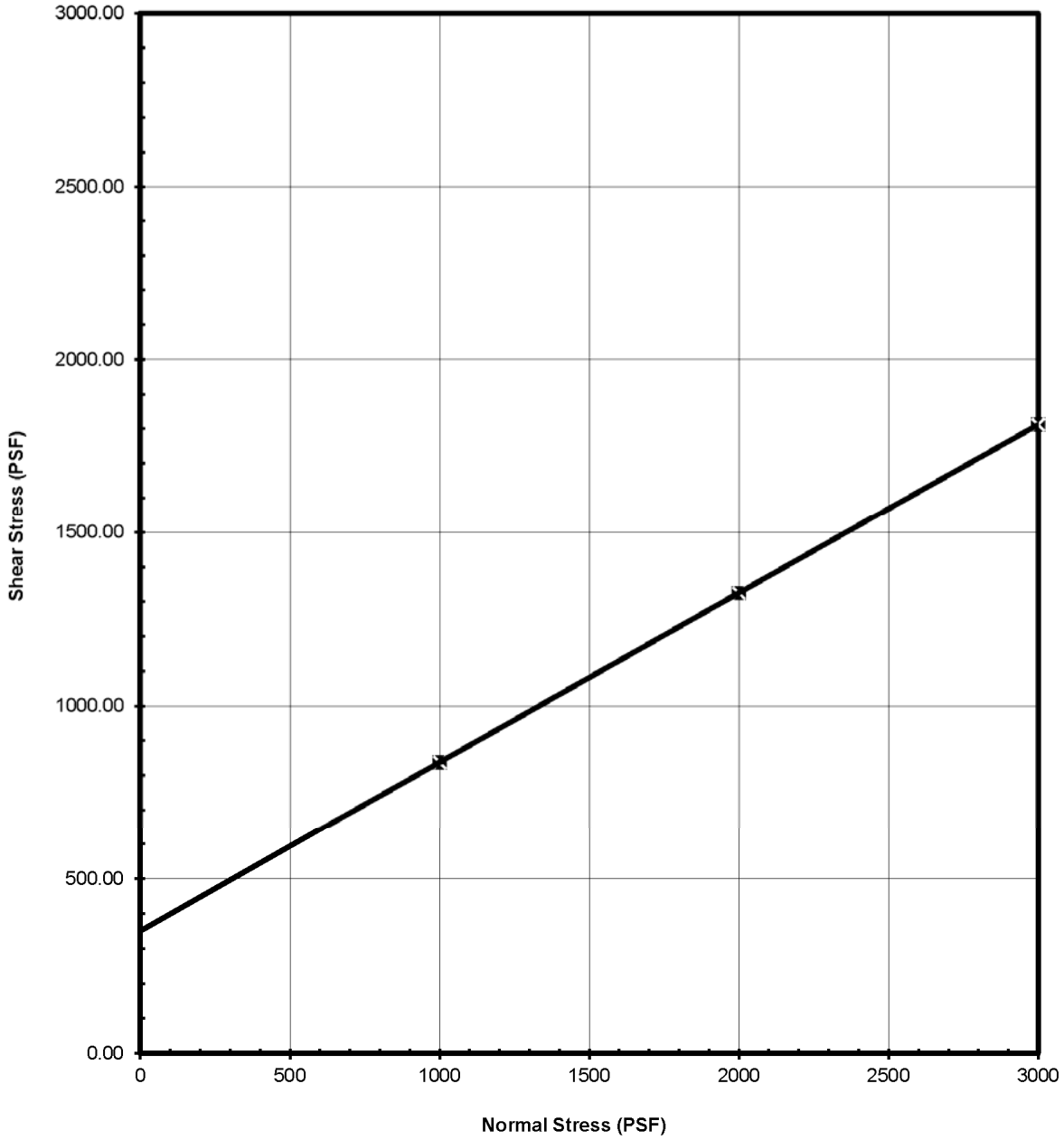
Direct Shear Test Diagram (D-3080)

PLATE: S-1

P.N. 22424

Sample Description	Sample Identification	Test Type	Sample Test State	Number of Passes
Qa	B-1 @ 2.0'	Ultimate	Saturated	1

Soil Dry Density (PCF)	106	Shear Strength Values:	
Soil Moisture Content (%)	21	Phi (Degrees)	26.0
Soil Saturation (%)	99.4	Cohesion (PSF)	350.3



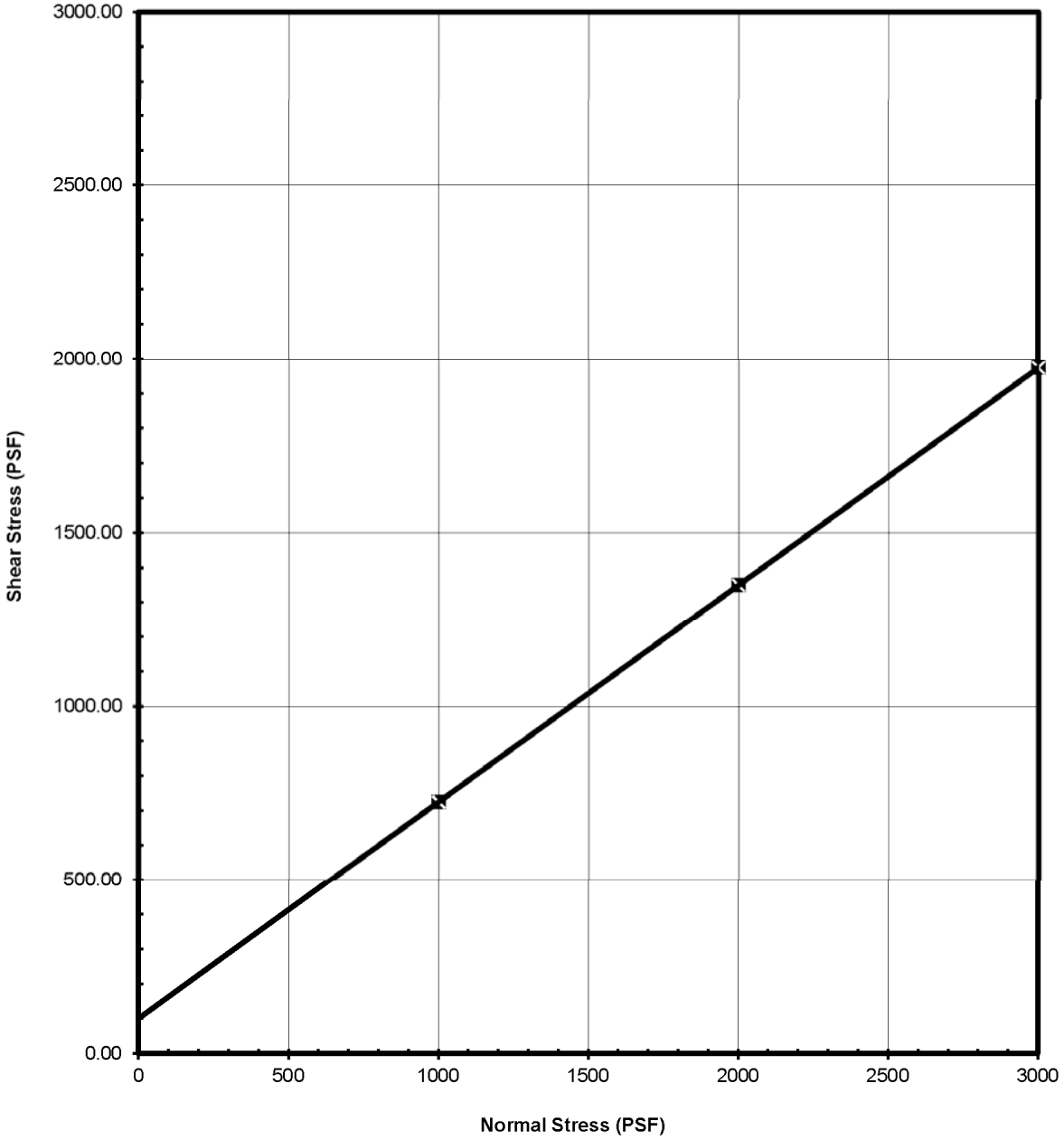
Direct Shear Test Diagram (D-3080)

PLATE: S-2

P.N. 22424

Sample Description	Sample Identification	Test Type	Sample Test State	Number of Passes
Qa	B-4 @ 10.0'	Ultimate	Saturated	1

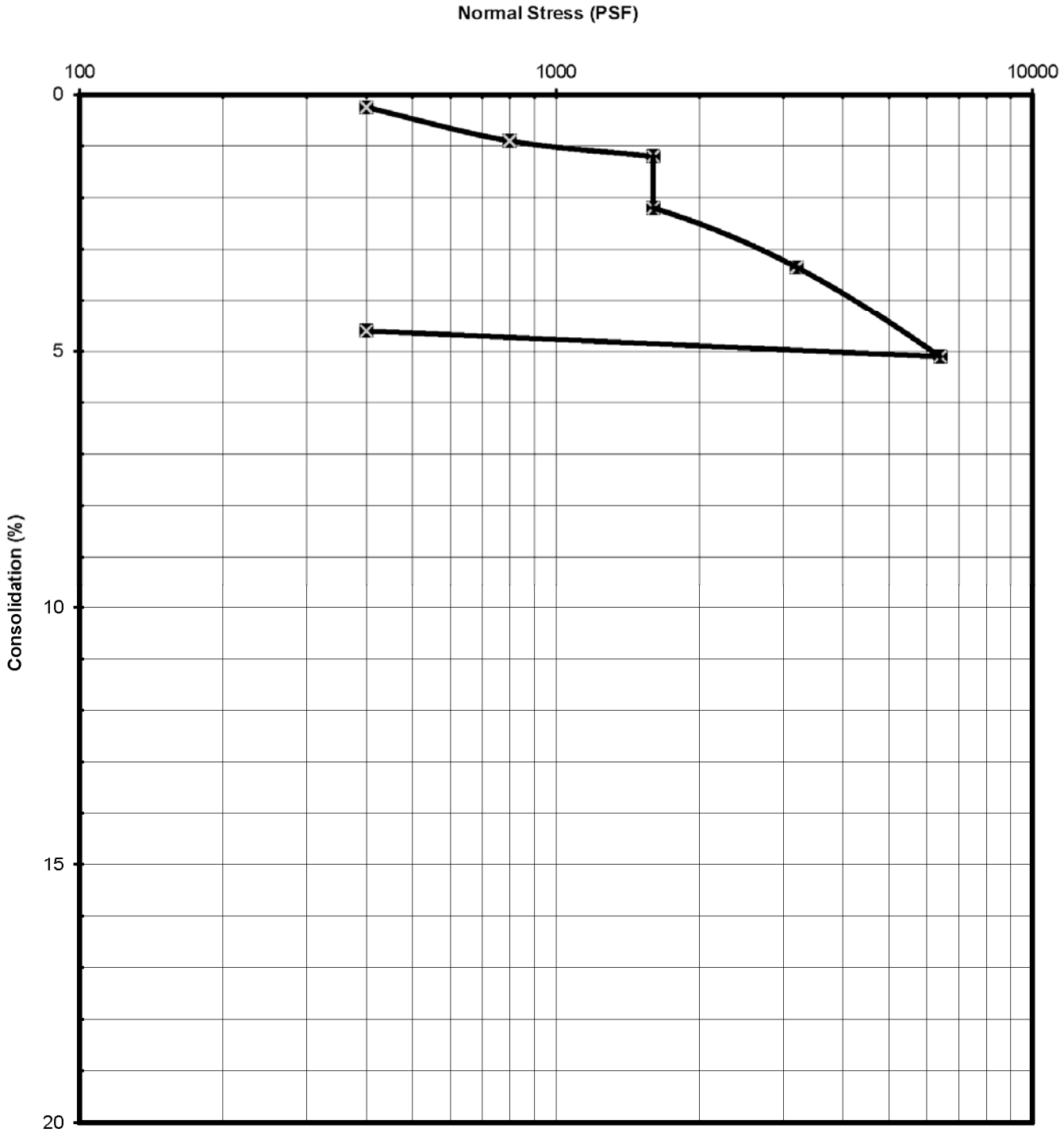
Soil Dry Density (PCF)	127	Shear Strength Values:	
Soil Moisture Content (%)	11.25	Phi (Degrees)	32.0
Soil Saturation (%)	98.7	Cohesion (PSF)	100.0



Consolidation Pressure Curve (D-2435)

Sample Identification	Sample Description
B-1 @ 10.0'	Qa

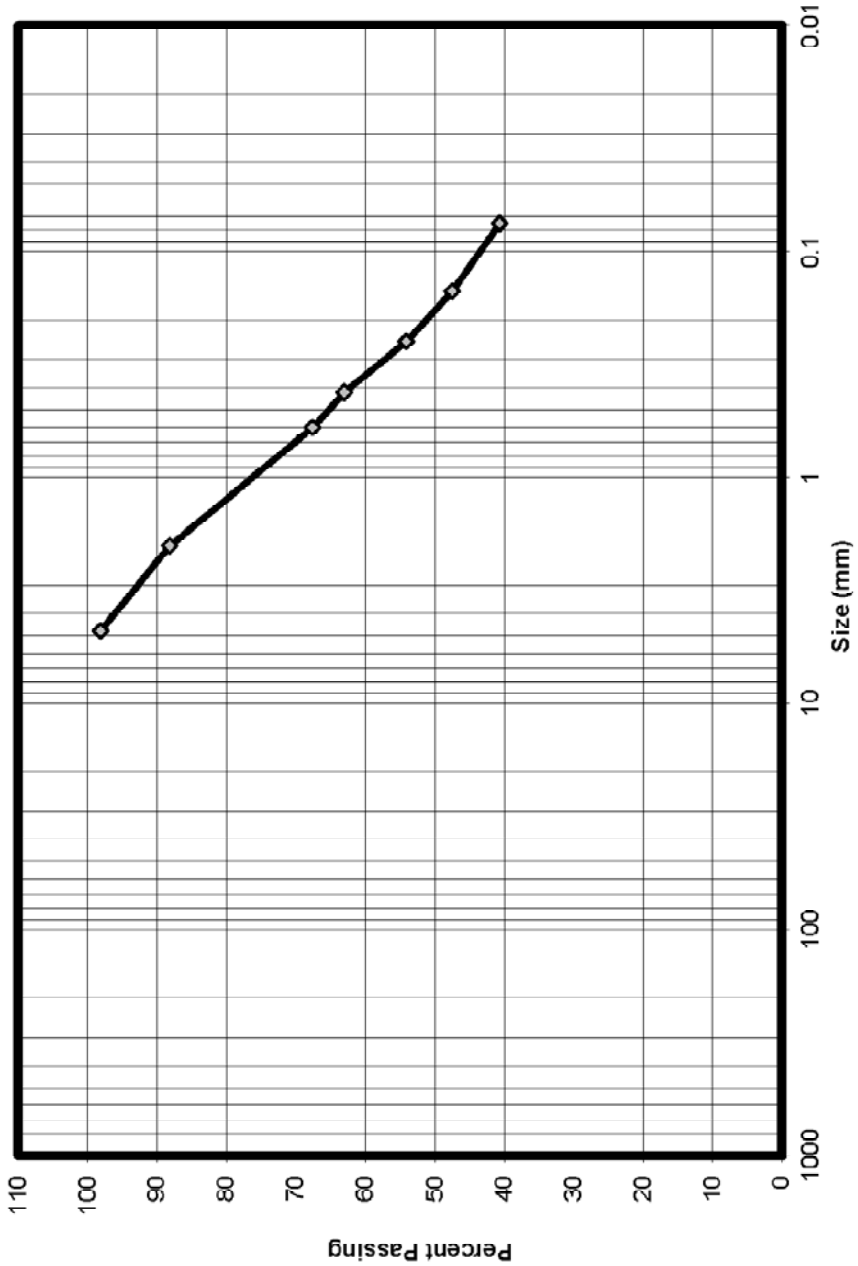
PLATE: C-1
P.N. 22424



Grain Size Analysis (ASTM D422)

PLATE:	**SV-1**
P.N.	**22424**

Explorations	Sample Depth (ft)	Soil Description	% of Fines (-200)
B-1	5	Qa	49
	15	Qa	11
B-2	15	Qa	16
B-4	25	Qa	12

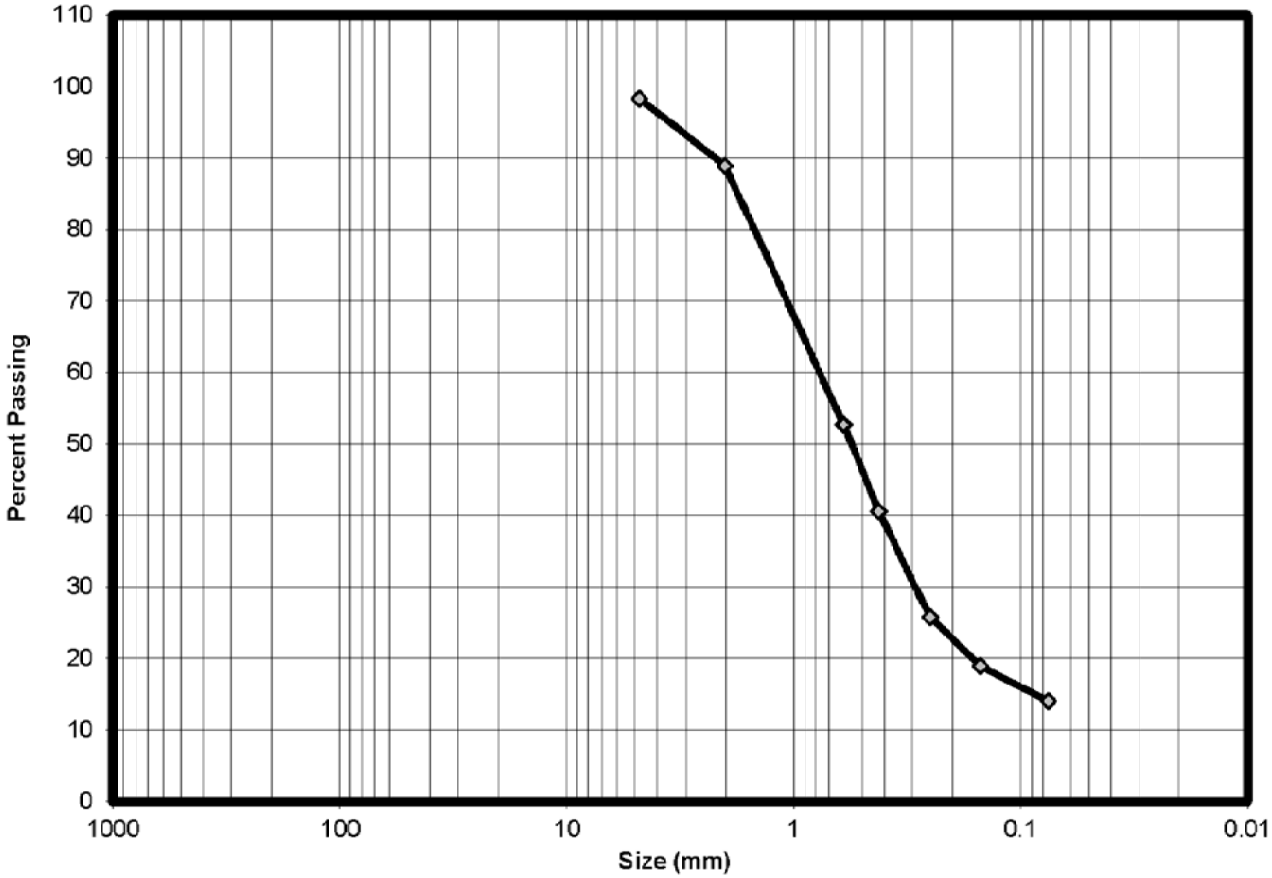


Sieve Size	Percent Passing
No. 4	98.18
No. 10	88.18
No. 30	67.64
No. 40	63.11
No. 60	54.14
No. 100	47.54
No. 200	40.68

Sample Identification	Sample Description	PLATE: G-1 P.N. 22424
P-1 @ 5.0'	Qa	

Grain Size Analysis (ASTM D422)

Sieve Size	Percent Passing
No. 4	98.35
No. 10	88.92
No. 30	52.69
No. 40	40.58
No. 60	25.77
No. 100	18.96
No. 200	14.00



Grain Size Analysis (ASTM D422)

Sample Identification	Sample Description	PLATE: G-1 P.N. 22424
P-2 @ 10.0'	Qa	

APPENDIX C

Infiltration Testing Data

NTS GEOTECHNICAL

Falling Head Borehole Infiltration Test

Project Name:	27278 Ethanac Rd, Romoland				**Date:**	8/24/2022	
Project Number:	22424				**Tested By:**	ERL	
Test Hole Number:	P-1				**USCS Soil Classification:**	SM	
Total Depth :	5.00		feet		**Water Temperature:**	N/A	°F
Test Hole Diameter:	8.00	inches	radius=	4	inches		

Trial	Start Time	End Time	ΔT	Total Time	Initial Depth of Water	Final Depth of Water	H_0	H_f	ΔH	H_{avg}	Unfactored Percolati
			(min)	*(min)*	*(ft)*	*(ft)*	*(in)*	*(in)*	*(in)*	*(in)*	*(in/hour)*
1	10:31	11:01	30.0	30.0	4.00	4.48	12.00	6.24	5.76	9.12	2.07
2	11:02	11:32	30.0	60.0	4.38	4.68	7.50	3.84	3.66	5.67	1.91
3	11:33	12:03	30.0	90.0	4.58	4.80	5.04	2.40	2.64	3.72	1.85
4	12:04	12:34	30.0	120.0	4.80	4.93	2.40	0.84	1.56	1.62	1.72
5	12:35	1:05	30.0	150.0	4.00	4.41	12.00	7.08	4.92	9.54	1.71
6	1:06	1:36	30.0	180.0	4.41	4.67	7.08	3.96	3.12	5.52	1.66
7	1:37	2:07	30.0	210.0	4.67	4.84	3.96	1.92	2.04	2.94	1.65
8	2:08	2:38	30.0	240.0	4.84	4.95	1.92	0.60	1.32	1.26	1.62
9	2:39	3:09	30.0	270.0	4.00	4.37	12.00	7.56	4.44	9.78	1.51
10	3:10	3:40	30.0	300.0	4.37	4.63	7.56	4.44	3.12	6.00	1.56
11	3:41	4:11	30.0	330.0	4.63	4.80	4.44	2.40	2.04	3.42	1.51
12	4:12	4:42	30.0	360.0	4.80	4.91	2.40	1.08	1.32	1.74	1.41

SAFETY FACTOR*:	2
UNFACTORED INFILTRATION RATE (IN/HR):	1.41
FACTORED INFILTRATION RATE (IN/HR):	0.71

Factor Category	Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) = w x v
Suitability Assessment	Soil assessment methods	0.25	3	0.75
	Predominant soil texture	0.25	2	0.5
	Site soil variablity	0.25	1	0.25
	Depth to groundwater	0.25	2	0.5
			Geotechnical Factor of Safety (SA):	2

Concern Level	Factor Value (v)
Low	1
Medium	2
High	3

***Factor of safety should not be less than 2. Additional factor of safety in accordance with Table D-7 of the South Orange County Technical Guidance Document should be applied by the project civil engineer.**

NTS GEOTECHNICAL

Falling Head Borehole Infiltration Test

Project Name:	27278 Ethanac Rd, Romoland				**Date:**	8/24/2022	
Project Number:	22424				**Tested By:**	ERL	
Test Hole Number:	P-2				**USCS Soil Classification:**	SM	
Total Depth :	10.00		feet		**Water Temperature:**	N/A	°F
Test Hole Diameter:	8.00	inches	radius=	4	inches		

Trial	Start Time	End Time	ΔT	Total Time	Initial Depth of Water	Final Depth of Water	H_0	H_f	ΔH	H_{avg}	Unfactored Percolati
			(min)	*(min)*	*(ft)*	*(ft)*	*(in)*	*(in)*	*(in)*	*(in)*	*(in/hour)*
1	9:24	9:34	10.0	35.0	8.08	8.66	23.04	16.08	6.96	19.56	3.87
2	9:34	9:44	10.0	45.0	8.66	9.07	16.08	11.16	4.92	13.62	3.78
3	9:54	10:04	10.0	55.0	9.07	9.36	11.16	7.68	3.48	9.42	3.66
4	10:04	10:14	10.0	65.0	9.36	9.53	7.68	5.69	1.99	6.68	2.75
5	10:14	10:24	10.0	75.0	9.53	9.66	5.64	4.14	1.50	4.89	2.61
6	10:24	10:34	10.0	85.0	9.66	9.78	4.14	2.64	1.50	3.39	3.34

SAFETY FACTOR*:	1.75
UNFACTORED INFILTRATION RATE (IN/HR):	3.34
FACTORED INFILTRATION RATE (IN/HR):	1.91

Factor Category	Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) = w x v
Suitability Assessment	Soil assessment methods	0.25	3	0.75
	Predominant soil texture	0.25	2	0.5
	Site soil variablity	0.25	1	0.25
	Depth to groundwater	0.25	1	0.25
			Geotechnical Factor of Safety (SA):	1.75

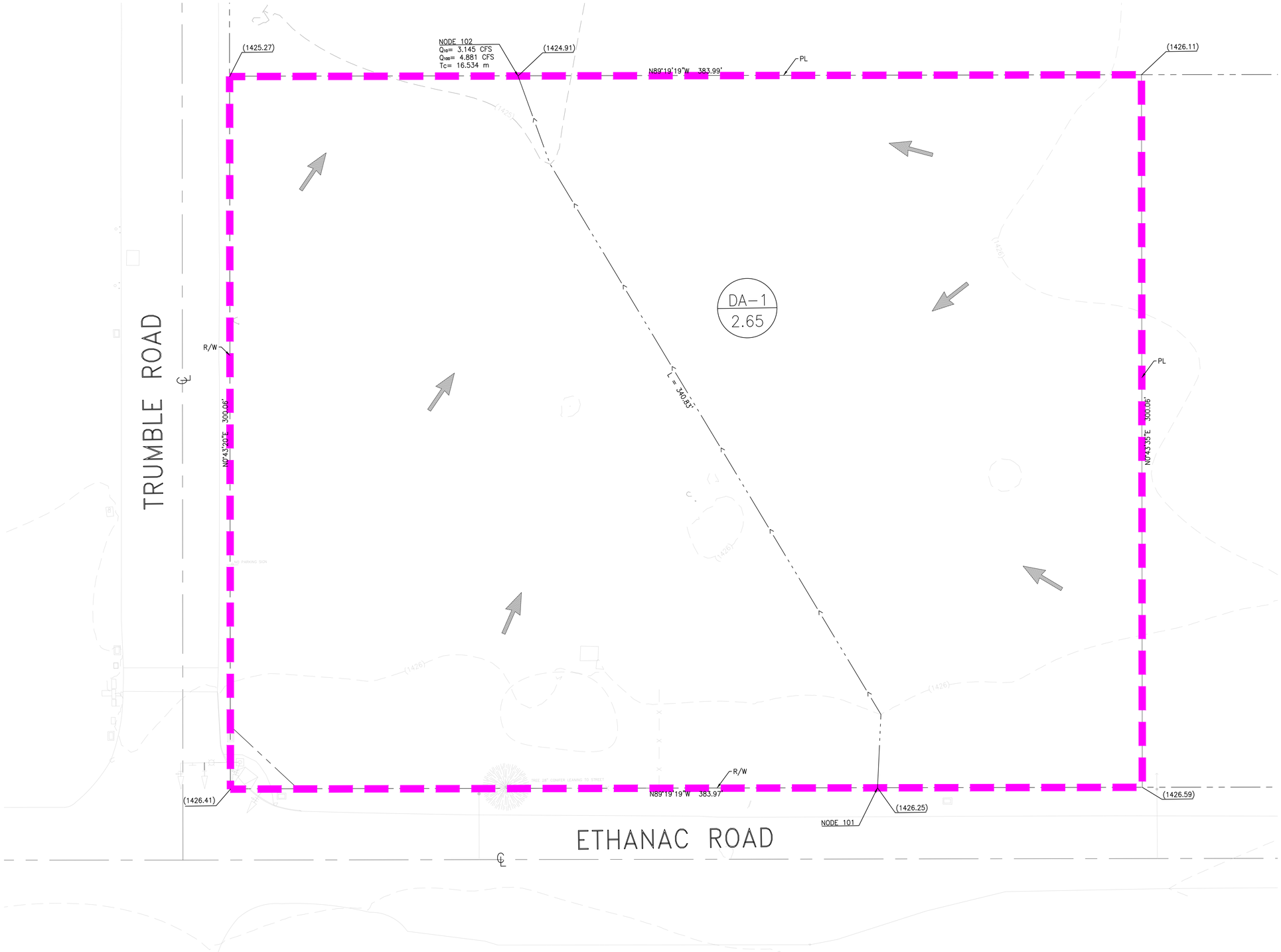
Concern Level	Factor Value (v)
Low	1
Medium	2
High	3

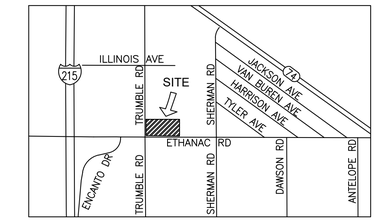
***Factor of safety should not be less than 2. Additional factor of safety in accordance with Table D-7 of the South Orange County Technical Guidance Document should be applied by the project civil engineer.**

Appendix

C

PRE-DEVELOPMENT CONDITION HYDROLOGY KEY MAP





VICINITY MAP
N.T.S.

LEGEND

- FLOW LINE
- FLOW DIRECTION
- DRAINAGE AREA BOUNDARY
- # / X.XX — DRAINAGE AREA DESIGNATION / DRAINAGE AREA (ACRES)

0 20 40 Feet
SCALE 1"= 20'

DESIGNED BY: MG	SEAL-DESIGN ENGINEER	BLUE Engineering & Consulting, Inc			CITY OF PERRIS	PRE-DEVELOPMENT HYDROLOGY EXHIBIT	CUP:
	REGISTERED PROFESSIONAL ENGINEER ANGEL CESAR No. 87222 CIVIL STATE OF CALIFORNIA	9320 BASELINE RD. STE. D - RANCHO CUCAMONGA, CA 91701 PHONE: 909-248-6557 - INFO@BLUECIVILENG.COM WWW.BLUECIVILENG.COM			27278 ETHANAC ROAD, PERRIS, CA 92585		LDP:
DRAWN BY: CG					REVIEWED BY:		DATE: August 3, 2022
CHECKED BY: AC		PLANS PREPARED UNDER THE SUPERVISION OF: ANGEL CESAR, P.E. 87222 EXP. 9/30/23 DATE	REV.	REVISION DESCRIPTION	BY	DATE	XXXXXXXXXX P.E. NO. C-XXXXX EXP. DATE XX-XX-XXXX DATE	BEYOND FOODS MART PERRIS SERVICE STATION CONDITIONAL USE PERMIT	SHEET 4 OF 5 SHEETS
									PROJECT NUMBER:

Z:\Shared\Blue\2022162 - Perris - Ethanac and Tremble_Entitlement Package\2022162 - PRE HYDRO.dwg Aug 03, 2022 - 3:52pm

Z:\Shared\Blue\2022162 - Perris - Ethanac and Tremble_Entitlement Package\2022162 - PRE HYDRO.dwg - LAST PLOTTED ON Wed 08/03/22 - 03:52PM BY BrandonMuse

Plans Prepared On: 8/3/2022

Appendix

D

PRE-DEVELOPMENT CONDITION RATIONAL METHOD

10-YEAR PRE-DEVELOPMENT CONDITION

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
        Rational Hydrology Study        Date: 08/02/22  File:ethanacpre.out
------------------------------------------------------------------------
Beyond Foods Mart Perris Service Station
Pre Development
10 yr


------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6481

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Perris Valley ] area used.
10 year storm 10 minute intensity =  1.880(In/Hr)
10 year storm 60 minute intensity =  0.780(In/Hr)
100 year storm 10 minute intensity =  2.690(In/Hr)
100 year storm 60 minute intensity =  1.120(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.780(In/Hr)
Slope of intensity duration curve = 0.4900




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   340.830(Ft.)
Top (of initial area) elevation =  1426.250(Ft.)
```

```
Bottom (of initial area) elevation =  1424.910(Ft.)
Difference in elevation =     1.340(Ft.)
Slope =    0.00393  s(percent)=       0.39
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   16.534 min.
Rainfall intensity =      1.467(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.809
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      3.145(CFS)
Total initial stream area =        2.650(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            2.65 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

100-YEAR PRE-DEVELOPMENT CONDITION

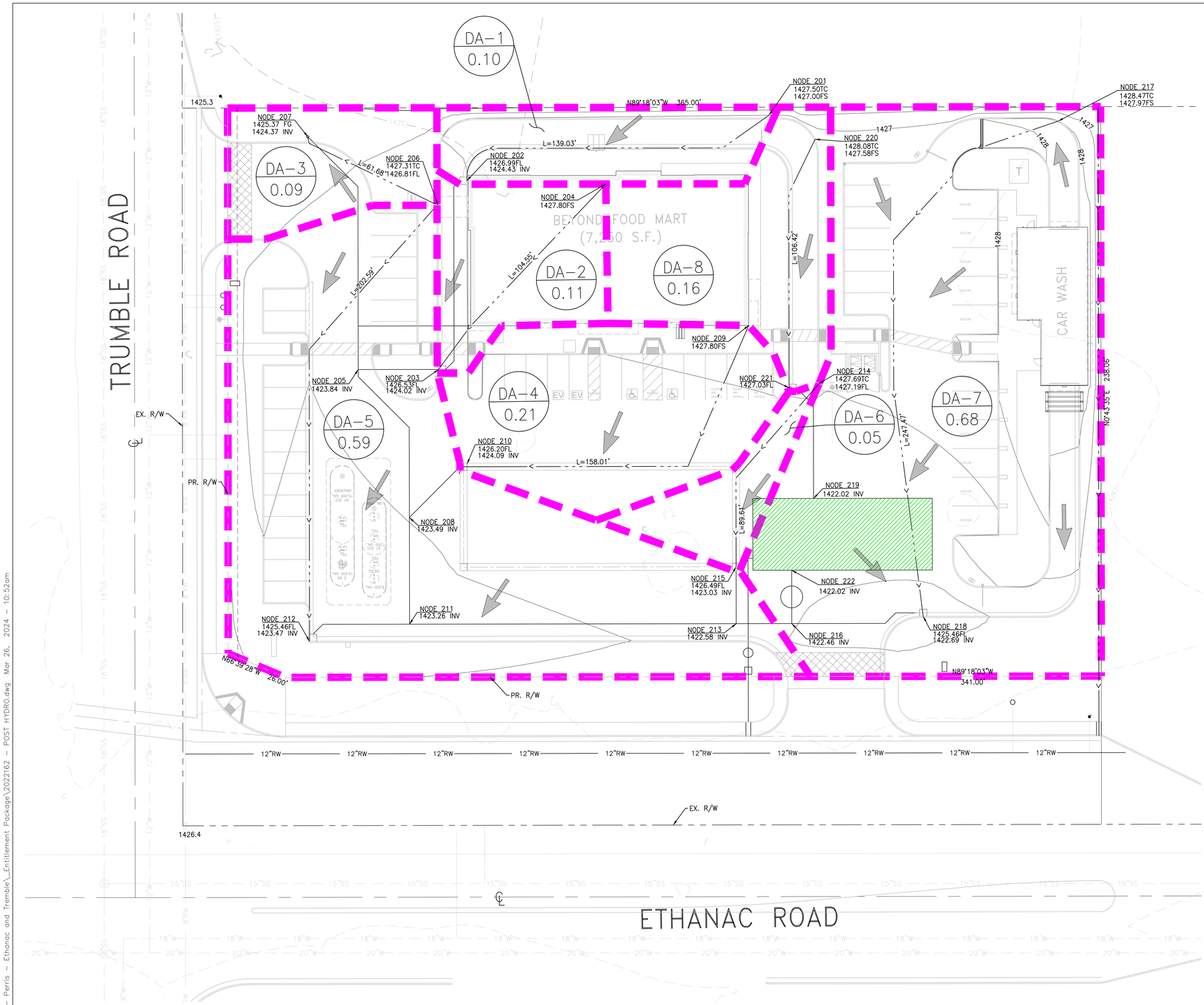
```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
        Rational Hydrology Study        Date: 08/02/22  File:ethanacpre.out
------------------------------------------------------------------------
Beyond Foods Mart Perris Service Station
Pre Development
100 yr


------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6481

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Perris Valley ] area used.
10 year storm 10 minute intensity =  1.880(In/Hr)
10 year storm 60 minute intensity =  0.780(In/Hr)
100 year storm 10 minute intensity =  2.690(In/Hr)
100 year storm 60 minute intensity =  1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.120(In/Hr)
Slope of intensity duration curve = 0.4900




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   340.830(Ft.)
Top (of initial area) elevation =  1426.250(Ft.)
```

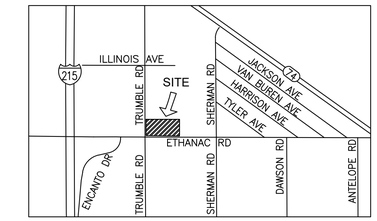
```
Bottom (of initial area) elevation =  1424.910(Ft.)
Difference in elevation =     1.340(Ft.)
Slope =    0.00393  s(percent)=       0.39
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   16.534 min.
Rainfall intensity =      2.106(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      4.881(CFS)
Total initial stream area =        2.650(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            2.65 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

Appendix

E

POST-DEVELOPMENT CONDITION HYDROLOGY KEY MAP





VICINITY MAP
N.T.S.

LEGEND

- FLOW LINE
- FLOW DIRECTION
- DRAINAGE AREA BOUNDARY
- # / X.XX — DRAINAGE AREA DESIGNATION / DRAINAGE AREA (ACRES)
- BEST MANAGEMENT PRACTICES (BMP)

0 20 40 Feet
SCALE 1"= 20'

DESIGNED BY: MG	SEAL-DESIGN ENGINEER	BLUE Engineering & Consulting, Inc	REV.	REVISION DESCRIPTION	BY	DATE
DRAWN BY: CG	REGISTERED PROFESSIONAL ENGINEER ANGEL CESAR No. 87222 CIVIL STATE OF CALIFORNIA	9320 BASELINE RD, STE. D - RANCHO CUCAMONGA, CA 91701 PHONE: 909-248-6557 - INFO@BLUECIVILENG.COM WWW.BLUECIVILENG.COM				
CHECKED BY: AC		PLANS PREPARED UNDER THE SUPERVISION OF: ANGEL CESAR, P.E. 87222 EXP. 9/30/23 DATE				

CITY OF PERRIS
27278 ETHANAC ROAD, PERRIS, CA 92585

REVIEWED BY: _____ DATE

XXXXXXXXXX
P.E. NO. C-XXXXX
EXP. DATE XX-XX-XXXX

POST-HYDROLOGY EXHIBIT

BEYOND FOODS MART
PERRIS SERVICE STATION
CONDITIONAL USE PERMIT

CUP:
LDP:
DATE: March 26, 2024
SHEET 5 OF 5 SHEETS
PROJECT NUMBER:

Z:\Shared\Blue\2022162 - Perris - Ethanac and Tremble_Entitlement Package\2022162 - POST HYDRO.dwg Mar 26, 2024 - 10:52am

Plans Prepared On: 3/26/2024

Appendix

F

POST-DEVELOPMENT CONDITION RATIONAL METHOD

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
        Rational Hydrology Study        Date: 12/13/23  File:162post.out
----------------------------------------------------------------------
Beyond Foods Mart Perris Service Station
Post Development
10 YR


----------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

----------------------------------------------------------------------


Program License Serial Number 6481

----------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Perris Valley ] area used.
10 year storm 10 minute intensity =  1.880(In/Hr)
10 year storm 60 minute intensity =  0.780(In/Hr)
100 year storm 10 minute intensity =  2.690(In/Hr)
100 year storm 60 minute intensity =  1.120(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.780(In/Hr)
Slope of intensity duration curve = 0.4900




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   139.030(Ft.)
Top (of initial area) elevation =  1427.500(Ft.)
```

```
Bottom (of initial area) elevation =     0.000(Ft.)
Difference in elevation =  1427.500(Ft.)
Slope =   10.26757  s(percent)=    1026.76
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.636(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.234(CFS)
Total initial stream area =        0.100(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.430(Ft.)
Downstream point/station elevation =  1424.020(Ft.)
Pipe length  =    84.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.234(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.234(CFS)
Normal flow depth in pipe =    3.34(In.)
Flow top width inside pipe =    5.96(In.)
Critical Depth =    2.92(In.)
Pipe flow velocity =      2.08(Ft/s)
Travel time through pipe =    0.68 min.
Time of concentration (TC) =     5.68 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.100(Ac.)
Runoff from this stream =      0.234(CFS)
Time of concentration =    5.68 min.
Rainfall intensity =     2.477(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.234      5.68                 2.477
Largest stream flow has longer time of concentration
Qp =      0.234 + sum of
Qp =      0.234

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.234
Area of streams before confluence:
        0.100
Results of confluence:
Total flow rate =      0.234(CFS)
Time of concentration =     5.676 min.
Effective stream area after confluence =      0.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   104.550(Ft.)
Top (of initial area) elevation =  1427.800(Ft.)
Bottom (of initial area) elevation =  1426.530(Ft.)
Difference in elevation =     1.270(Ft.)
Slope =    0.01215  s(percent)=       1.21
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.636(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.257(CFS)
Total initial stream area =        0.110(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
```

```
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.110(Ac.)
Runoff from this stream =      0.257(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     2.636(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.234      5.68                 2.477
2        0.257      5.00                 2.636
Largest stream flow has longer or shorter time of concentration
Qp =      0.257 + sum of
          Qa          Tb/Ta
           0.234 *    0.881 =      0.206
Qp =      0.463

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.234       0.257
Area of streams before confluence:
        0.100        0.110
Results of confluence:
Total flow rate =      0.463(CFS)
Time of concentration =     5.000 min.
Effective stream area after confluence =      0.210(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      205.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1424.020(Ft.)
Downstream point/station elevation =  1423.840(Ft.)
Pipe length  =    33.56(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.463(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.463(CFS)
Normal flow depth in pipe =    3.86(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    3.68(In.)
Pipe flow velocity =      2.56(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =     5.22 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      203.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.210(Ac.)
Runoff from this stream =      0.463(CFS)
Time of concentration =    5.22 min.
Rainfall intensity =     2.581(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.463      5.22                 2.581
Largest stream flow has longer time of concentration
Qp =      0.463 + sum of
Qp =      0.463

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.463
Area of streams before confluence:
        0.210
Results of confluence:
Total flow rate =      0.463(CFS)
Time of concentration =     5.219 min.
Effective stream area after confluence =      0.210(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      207.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =    61.680(Ft.)
Top (of initial area) elevation =  1427.310(Ft.)
Bottom (of initial area) elevation =  1425.370(Ft.)
Difference in elevation =     1.940(Ft.)
Slope =    0.03145  s(percent)=       3.15
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.636(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
```

```
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.210(CFS)
Total initial stream area =        0.090(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      205.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.370(Ft.)
Downstream point/station elevation =  1423.840(Ft.)
Pipe length  =   106.05(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.210(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.210(CFS)
Normal flow depth in pipe =    3.11(In.)
Flow top width inside pipe =    6.00(In.)
Critical Depth =    2.76(In.)
Pipe flow velocity =      2.05(Ft/s)
Travel time through pipe =    0.86 min.
Time of concentration (TC) =     5.86 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.090(Ac.)
Runoff from this stream =      0.210(CFS)
Time of concentration =    5.86 min.
Rainfall intensity =     2.438(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.463      5.22                 2.581
2        0.210      5.86                 2.438
Largest stream flow has longer or shorter time of concentration
Qp =      0.463 + sum of
          Qa          Tb/Ta
           0.210 *    0.890 =      0.187
Qp =      0.650

Total of 2 streams to confluence:
Flow rates before confluence point:
```

```
       0.463       0.210
Area of streams before confluence:
        0.210        0.090
Results of confluence:
Total flow rate =      0.650(CFS)
Time of concentration =     5.219 min.
Effective stream area after confluence =      0.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      208.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.840(Ft.)
Downstream point/station elevation =  1423.490(Ft.)
Pipe length  =    70.71(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.650(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.650(CFS)
Normal flow depth in pipe =    4.81(In.)
Flow top width inside pipe =    8.98(In.)
Critical Depth =    4.39(In.)
Pipe flow velocity =      2.71(Ft/s)
Travel time through pipe =    0.44 min.
Time of concentration (TC) =     5.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      208.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.300(Ac.)
Runoff from this stream =      0.650(CFS)
Time of concentration =    5.65 min.
Rainfall intensity =     2.482(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.650      5.65                 2.482
Largest stream flow has longer time of concentration
Qp =      0.650 + sum of
Qp =      0.650

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.650
```

```
Area of streams before confluence:
        0.300
Results of confluence:
Total flow rate =      0.650(CFS)
Time of concentration =     5.654 min.
Effective stream area after confluence =      0.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   158.010(Ft.)
Top (of initial area) elevation =  1427.800(Ft.)
Bottom (of initial area) elevation =  1426.200(Ft.)
Difference in elevation =     1.600(Ft.)
Slope =    0.01013  s(percent)=       1.01
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.695 min.
Rainfall intensity =      2.473(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.460(CFS)
Total initial stream area =        0.210(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      210.000 to Point/Station      208.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.090(Ft.)
Downstream point/station elevation =  1423.490(Ft.)
Pipe length  =    20.97(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.460(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.460(CFS)
Normal flow depth in pipe =    2.95(In.)
Flow top width inside pipe =    6.00(In.)
Critical Depth =    4.15(In.)
Pipe flow velocity =      4.80(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     5.77 min.
```

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Process from Point/Station      210.000 to Point/Station      208.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.210(Ac.)
Runoff from this stream =      0.460(CFS)
Time of concentration =    5.77 min.
Rainfall intensity =     2.457(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.650      5.65                 2.482
2        0.460      5.77                 2.457
Largest stream flow has longer or shorter time of concentration
Qp =      0.650 + sum of
          Qa          Tb/Ta
           0.460 *    0.980 =      0.451
Qp =      1.102

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.650       0.460
Area of streams before confluence:
        0.300        0.210
Results of confluence:
Total flow rate =      1.102(CFS)
Time of concentration =     5.654 min.
Effective stream area after confluence =      0.510(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.490(Ft.)
Downstream point/station elevation =  1423.260(Ft.)
Pipe length  =    44.60(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.102(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.102(CFS)
Normal flow depth in pipe =    6.00(In.)
Flow top width inside pipe =    8.49(In.)
Critical Depth =    5.79(In.)
Pipe flow velocity =      3.52(Ft/s)
Travel time through pipe =    0.21 min.
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```
Time of concentration (TC) =     5.87 min.


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Process from Point/Station      208.000 to Point/Station      211.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.510(Ac.)
Runoff from this stream =      1.102(CFS)
Time of concentration =    5.87 min.
Rainfall intensity =     2.437(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.102      5.87                 2.437
Largest stream flow has longer time of concentration
Qp =      1.102 + sum of
Qp =      1.102

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.102
Area of streams before confluence:
        0.510
Results of confluence:
Total flow rate =      1.102(CFS)
Time of concentration =     5.865 min.
Effective stream area after confluence =      0.510(Ac.)


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Process from Point/Station      206.000 to Point/Station      212.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   202.590(Ft.)
Top (of initial area) elevation =  1427.310(Ft.)
Bottom (of initial area) elevation =  1425.460(Ft.)
Difference in elevation =     1.850(Ft.)
Slope =    0.00913  s(percent)=       0.91
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.422 min.
Rainfall intensity =      2.332(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
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```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.122(CFS)
Total initial stream area =        0.059(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.470(Ft.)
Downstream point/station elevation =  1423.260(Ft.)
Pipe length  =    42.02(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     0.122(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.122(CFS)
Normal flow depth in pipe =    2.09(In.)
Flow top width inside pipe =    5.72(In.)
Critical Depth =    2.08(In.)
Pipe flow velocity =      2.01(Ft/s)
Travel time through pipe =    0.35 min.
Time of concentration (TC) =     6.77 min.


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Process from Point/Station      212.000 to Point/Station      211.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.059(Ac.)
Runoff from this stream =      0.122(CFS)
Time of concentration =    6.77 min.
Rainfall intensity =     2.272(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.102      5.87                 2.437
2        0.122      6.77                 2.272
Largest stream flow has longer or shorter time of concentration
Qp =      1.102 + sum of
          Qa          Tb/Ta
           0.122 *    0.866 =      0.106
Qp =      1.207
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
       1.102       0.122
Area of streams before confluence:
        0.510        0.059
Results of confluence:
Total flow rate =      1.207(CFS)
Time of concentration =     5.865 min.
Effective stream area after confluence =      0.569(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.260(Ft.)
Downstream point/station elevation =  1422.580(Ft.)
Pipe length  =   136.57(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.207(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.207(CFS)
Normal flow depth in pipe =    6.52(In.)
Flow top width inside pipe =    8.04(In.)
Critical Depth =    6.07(In.)
Pipe flow velocity =      3.52(Ft/s)
Travel time through pipe =    0.65 min.
Time of concentration (TC) =     6.51 min.


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Process from Point/Station      211.000 to Point/Station      213.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.569(Ac.)
Runoff from this stream =      1.207(CFS)
Time of concentration =    6.51 min.
Rainfall intensity =     2.316(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.207      6.51                 2.316
Largest stream flow has longer time of concentration
Qp =      1.207 + sum of
Qp =      1.207

Total of 1 streams to confluence:
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```
Flow rates before confluence point:
       1.207
Area of streams before confluence:
        0.569
Results of confluence:
Total flow rate =      1.207(CFS)
Time of concentration =     6.512 min.
Effective stream area after confluence =      0.569(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      215.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =    89.610(Ft.)
Top (of initial area) elevation =  1427.690(Ft.)
Bottom (of initial area) elevation =  1426.490(Ft.)
Difference in elevation =     1.200(Ft.)
Slope =    0.01339  s(percent)=       1.34
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.636(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.117(CFS)
Total initial stream area =        0.050(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.030(Ft.)
Downstream point/station elevation =  1422.580(Ft.)
Pipe length  =    22.29(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     0.117(CFS)
Nearest computed pipe diameter  =      3.00(In.)
Calculated individual pipe flow  =     0.117(CFS)
Normal flow depth in pipe =    2.00(In.)
Flow top width inside pipe =    2.83(In.)
Critical Depth =    2.47(In.)
```

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Pipe flow velocity =      3.34(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     5.11 min.


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Process from Point/Station      215.000 to Point/Station      213.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.050(Ac.)
Runoff from this stream =      0.117(CFS)
Time of concentration =    5.11 min.
Rainfall intensity =     2.607(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.207      6.51                 2.316
2        0.117      5.11                 2.607
Largest stream flow has longer time of concentration
Qp =      1.207 + sum of
          Qb         Ia/Ib
           0.117 *    0.888 =      0.104
Qp =      1.311

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.207       0.117
Area of streams before confluence:
        0.569        0.050
Results of confluence:
Total flow rate =      1.311(CFS)
Time of concentration =     6.512 min.
Effective stream area after confluence =      0.619(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1422.580(Ft.)
Downstream point/station elevation =  1422.460(Ft.)
Pipe length  =    23.22(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.311(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.311(CFS)
Normal flow depth in pipe =    6.89(In.)
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Flow top width inside pipe =    7.62(In.)
Critical Depth =    6.33(In.)
Pipe flow velocity =      3.61(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     6.62 min.


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Process from Point/Station      213.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.619(Ac.)
Runoff from this stream =      1.311(CFS)
Time of concentration =    6.62 min.
Rainfall intensity =     2.297(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.311      6.62                 2.297
Largest stream flow has longer time of concentration
Qp =      1.311 + sum of
Qp =      1.311

Total of 1 main streams to confluence:
Flow rates before confluence point:
       1.311
Area of streams before confluence:
        0.619


Results of confluence:
Total flow rate =      1.311(CFS)
Time of concentration =     6.619 min.
Effective stream area after confluence  =      0.619(Ac.)


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Process from Point/Station      217.000 to Point/Station      218.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   247.470(Ft.)
Top (of initial area) elevation =  1428.470(Ft.)
Bottom (of initial area) elevation =  1425.460(Ft.)
Difference in elevation =     3.010(Ft.)
Slope =    0.01216  s(percent)=       1.22
```

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.569 min.
Rainfall intensity =      2.306(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.388(CFS)
Total initial stream area =        0.680(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      218.000 to Point/Station      219.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1422.690(Ft.)
Downstream point/station elevation =  1422.510(Ft.)
Pipe length  =    46.10(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.388(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.388(CFS)
Normal flow depth in pipe =    6.19(In.)
Flow top width inside pipe =   11.99(In.)
Critical Depth =    5.98(In.)
Pipe flow velocity =      3.39(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     6.80 min.


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Process from Point/Station      218.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.680(Ac.)
Runoff from this stream =      1.388(CFS)
Time of concentration =    6.80 min.
Rainfall intensity =     2.268(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.388      6.80                  2.268
```

```
Largest stream flow has longer time of concentration
Qp =      1.388 + sum of
Qp =      1.388

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.388
Area of streams before confluence:
        0.680
Results of confluence:
Total flow rate =      1.388(CFS)
Time of concentration =     6.796 min.
Effective stream area after confluence =      0.680(Ac.)


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Process from Point/Station      220.000 to Point/Station      221.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   106.420(Ft.)
Top (of initial area) elevation =  1428.080(Ft.)
Bottom (of initial area) elevation =  1427.030(Ft.)
Difference in elevation =     1.050(Ft.)
Slope =    0.00987  s(percent)=       0.99
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.636(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.374(CFS)
Total initial stream area =        0.160(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      221.000 to Point/Station      219.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.540(Ft.)
Downstream point/station elevation =  1422.510(Ft.)
Pipe length  =   101.56(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     0.374(CFS)
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Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.374(CFS)
Normal flow depth in pipe =    2.64(In.)
Flow top width inside pipe =    5.96(In.)
Critical Depth =    3.73(In.)
Pipe flow velocity =      4.51(Ft/s)
Travel time through pipe =    0.38 min.
Time of concentration (TC) =     5.38 min.


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Process from Point/Station      221.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.160(Ac.)
Runoff from this stream =      0.374(CFS)
Time of concentration =    5.38 min.
Rainfall intensity =     2.544(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.388      6.80                 2.268
2        0.374      5.38                 2.544
Largest stream flow has longer time of concentration
Qp =      1.388 + sum of
          Qb         Ia/Ib
           0.374 *    0.891 =      0.333
Qp =      1.722

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.388       0.374
Area of streams before confluence:
        0.680        0.160
Results of confluence:
Total flow rate =      1.722(CFS)
Time of concentration =     6.796 min.
Effective stream area after confluence =      0.840(Ac.)


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Process from Point/Station      219.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1422.510(Ft.)
Downstream point/station elevation =  1422.460(Ft.)
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Pipe length  =     9.21(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.722(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.722(CFS)
Normal flow depth in pipe =    6.39(In.)
Flow top width inside pipe =   11.98(In.)
Critical Depth =    6.69(In.)
Pipe flow velocity =      4.05(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     6.83 min.


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Process from Point/Station      219.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.840(Ac.)
Runoff from this stream =      1.722(CFS)
Time of concentration =    6.83 min.
Rainfall intensity =     2.262(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.311      6.62                 2.297
2        1.722      6.83                 2.262
Largest stream flow has longer time of concentration
Qp =      1.722 + sum of
          Qb         Ia/Ib
           1.311 *    0.984 =      1.291
Qp =      3.012

Total of 2 main streams to confluence:
Flow rates before confluence point:
       1.311       1.722
Area of streams before confluence:
        0.619        0.840


Results of confluence:
Total flow rate =      3.012(CFS)
Time of concentration =     6.834 min.
Effective stream area after confluence  =      1.459(Ac.)


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Process from Point/Station      216.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1422.460(Ft.)
Downstream point/station elevation =  1422.440(Ft.)
Pipe length  =     4.52(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     3.012(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.012(CFS)
Normal flow depth in pipe =    8.31(In.)
Flow top width inside pipe =   14.91(In.)
Critical Depth =    8.38(In.)
Pipe flow velocity =      4.31(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     6.85 min.
End of computations, total study area =            1.46 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  75.0
```

10-YEAR POST-DEVELOPMENT CONDITION

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
        Rational Hydrology Study        Date: 12/13/23  File:162post.out
----------------------------------------------------------------------
Beyond Foods Mart Perris Service Station
Post Development
100 yr


----------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

----------------------------------------------------------------------


Program License Serial Number 6481

----------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [ Perris Valley ] area used.
10 year storm 10 minute intensity =  1.880(In/Hr)
10 year storm 60 minute intensity =  0.780(In/Hr)
100 year storm 10 minute intensity =  2.690(In/Hr)
100 year storm 60 minute intensity =  1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.120(In/Hr)
Slope of intensity duration curve = 0.4900




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Process from Point/Station      201.000 to Point/Station      202.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   139.030(Ft.)
Top (of initial area) elevation =  1427.500(Ft.)
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Bottom (of initial area) elevation =     0.000(Ft.)
Difference in elevation =  1427.500(Ft.)
Slope =   10.26757  s(percent)=    1026.76
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.785(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.896
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.339(CFS)
Total initial stream area =        0.100(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      202.000 to Point/Station      203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.430(Ft.)
Downstream point/station elevation =  1424.020(Ft.)
Pipe length  =    84.40(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.339(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.339(CFS)
Normal flow depth in pipe =    4.31(In.)
Flow top width inside pipe =    5.40(In.)
Critical Depth =    3.54(In.)
Pipe flow velocity =      2.24(Ft/s)
Travel time through pipe =    0.63 min.
Time of concentration (TC) =     5.63 min.


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Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.100(Ac.)
Runoff from this stream =      0.339(CFS)
Time of concentration =    5.63 min.
Rainfall intensity =     3.572(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.339      5.63                 3.572
Largest stream flow has longer time of concentration
Qp =      0.339 + sum of
Qp =      0.339

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.339
Area of streams before confluence:
        0.100
Results of confluence:
Total flow rate =      0.339(CFS)
Time of concentration =     5.627 min.
Effective stream area after confluence =      0.100(Ac.)


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Process from Point/Station      204.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   104.550(Ft.)
Top (of initial area) elevation =  1427.800(Ft.)
Bottom (of initial area) elevation =  1426.530(Ft.)
Difference in elevation =     1.270(Ft.)
Slope =    0.01215  s(percent)=       1.21
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.785(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.896
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.373(CFS)
Total initial stream area =        0.110(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      204.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
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```
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.110(Ac.)
Runoff from this stream =      0.373(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     3.785(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.339      5.63                 3.572
2        0.373      5.00                 3.785
Largest stream flow has longer or shorter time of concentration
Qp =      0.373 + sum of
          Qa          Tb/Ta
           0.339 *    0.889 =      0.301
Qp =      0.674

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.339       0.373
Area of streams before confluence:
        0.100        0.110
Results of confluence:
Total flow rate =      0.674(CFS)
Time of concentration =     5.000 min.
Effective stream area after confluence =      0.210(Ac.)


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Process from Point/Station      203.000 to Point/Station      205.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =  1424.020(Ft.)
Downstream point/station elevation =  1423.840(Ft.)
Pipe length  =    33.56(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.674(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.674(CFS)
Normal flow depth in pipe =    4.79(In.)
Flow top width inside pipe =    8.98(In.)
Critical Depth =    4.48(In.)
Pipe flow velocity =      2.81(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =     5.20 min.


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Process from Point/Station      203.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.210(Ac.)
Runoff from this stream =      0.674(CFS)
Time of concentration =    5.20 min.
Rainfall intensity =     3.713(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.674      5.20                 3.713
Largest stream flow has longer time of concentration
Qp =      0.674 + sum of
Qp =      0.674

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.674
Area of streams before confluence:
        0.210
Results of confluence:
Total flow rate =      0.674(CFS)
Time of concentration =     5.199 min.
Effective stream area after confluence =      0.210(Ac.)


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Process from Point/Station      206.000 to Point/Station      207.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =    61.680(Ft.)
Top (of initial area) elevation =  1427.310(Ft.)
Bottom (of initial area) elevation =  1425.370(Ft.)
Difference in elevation =     1.940(Ft.)
Slope =    0.03145  s(percent)=       3.15
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.785(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.896
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
```

```
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.305(CFS)
Total initial stream area =        0.090(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      207.000 to Point/Station      205.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.370(Ft.)
Downstream point/station elevation =  1423.840(Ft.)
Pipe length  =   106.05(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.305(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.305(CFS)
Normal flow depth in pipe =    3.94(In.)
Flow top width inside pipe =    5.70(In.)
Critical Depth =    3.35(In.)
Pipe flow velocity =      2.23(Ft/s)
Travel time through pipe =    0.79 min.
Time of concentration (TC) =     5.79 min.


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Process from Point/Station      207.000 to Point/Station      205.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.090(Ac.)
Runoff from this stream =      0.305(CFS)
Time of concentration =    5.79 min.
Rainfall intensity =     3.521(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.674      5.20                 3.713
2        0.305      5.79                 3.521
Largest stream flow has longer or shorter time of concentration
Qp =      0.674 + sum of
          Qa          Tb/Ta
           0.305 *    0.897 =      0.274
Qp =      0.948

Total of 2 streams to confluence:
Flow rates before confluence point:
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```
       0.674       0.305
Area of streams before confluence:
        0.210        0.090
Results of confluence:
Total flow rate =      0.948(CFS)
Time of concentration =     5.199 min.
Effective stream area after confluence =      0.300(Ac.)


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Process from Point/Station      205.000 to Point/Station      208.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.840(Ft.)
Downstream point/station elevation =  1423.490(Ft.)
Pipe length  =    70.71(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.948(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.948(CFS)
Normal flow depth in pipe =    6.17(In.)
Flow top width inside pipe =    8.36(In.)
Critical Depth =    5.35(In.)
Pipe flow velocity =      2.94(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =     5.60 min.


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Process from Point/Station      205.000 to Point/Station      208.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.300(Ac.)
Runoff from this stream =      0.948(CFS)
Time of concentration =    5.60 min.
Rainfall intensity =     3.580(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.948      5.60                 3.580
Largest stream flow has longer time of concentration
Qp =      0.948 + sum of
Qp =      0.948

Total of 1 streams to confluence:
Flow rates before confluence point:
       0.948
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```
Area of streams before confluence:
        0.300
Results of confluence:
Total flow rate =      0.948(CFS)
Time of concentration =     5.600 min.
Effective stream area after confluence =      0.300(Ac.)


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Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   158.010(Ft.)
Top (of initial area) elevation =  1427.800(Ft.)
Bottom (of initial area) elevation =  1426.200(Ft.)
Difference in elevation =     1.600(Ft.)
Slope =    0.01013  s(percent)=       1.01
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.695 min.
Rainfall intensity =      3.551(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.896
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.668(CFS)
Total initial stream area =        0.210(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      210.000 to Point/Station      208.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.090(Ft.)
Downstream point/station elevation =  1423.490(Ft.)
Pipe length  =    20.97(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.668(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.668(CFS)
Normal flow depth in pipe =    3.71(In.)
Flow top width inside pipe =    5.83(In.)
Critical Depth =    4.96(In.)
Pipe flow velocity =      5.24(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     5.76 min.
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Process from Point/Station      210.000 to Point/Station      208.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.210(Ac.)
Runoff from this stream =      0.668(CFS)
Time of concentration =    5.76 min.
Rainfall intensity =     3.530(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.948      5.60                 3.580
2        0.668      5.76                 3.530
Largest stream flow has longer or shorter time of concentration
Qp =      0.948 + sum of
          Qa          Tb/Ta
           0.668 *    0.972 =      0.649
Qp =      1.597

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.948       0.668
Area of streams before confluence:
        0.300        0.210
Results of confluence:
Total flow rate =      1.597(CFS)
Time of concentration =     5.600 min.
Effective stream area after confluence =      0.510(Ac.)


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Process from Point/Station      208.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.490(Ft.)
Downstream point/station elevation =  1423.260(Ft.)
Pipe length  =    44.60(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.597(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.597(CFS)
Normal flow depth in pipe =    6.20(In.)
Flow top width inside pipe =   11.99(In.)
Critical Depth =    6.44(In.)
Pipe flow velocity =      3.90(Ft/s)
Travel time through pipe =    0.19 min.
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```
Time of concentration (TC) =     5.79 min.


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Process from Point/Station      208.000 to Point/Station      211.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.510(Ac.)
Runoff from this stream =      1.597(CFS)
Time of concentration =    5.79 min.
Rainfall intensity =     3.522(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.597      5.79                 3.522
Largest stream flow has longer time of concentration
Qp =      1.597 + sum of
Qp =      1.597

Total of 1 streams to confluence:
Flow rates before confluence point:
       1.597
Area of streams before confluence:
        0.510
Results of confluence:
Total flow rate =      1.597(CFS)
Time of concentration =     5.791 min.
Effective stream area after confluence =      0.510(Ac.)


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Process from Point/Station      206.000 to Point/Station      212.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   202.590(Ft.)
Top (of initial area) elevation =  1427.310(Ft.)
Bottom (of initial area) elevation =  1425.460(Ft.)
Difference in elevation =     1.850(Ft.)
Slope =    0.00913  s(percent)=       0.91
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.422 min.
Rainfall intensity =      3.348(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.895
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
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Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.177(CFS)
Total initial stream area =        0.059(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      212.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.470(Ft.)
Downstream point/station elevation =  1423.260(Ft.)
Pipe length  =    42.02(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     0.177(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.177(CFS)
Normal flow depth in pipe =    2.56(In.)
Flow top width inside pipe =    5.93(In.)
Critical Depth =    2.52(In.)
Pipe flow velocity =      2.22(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =     6.74 min.


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Process from Point/Station      212.000 to Point/Station      211.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.059(Ac.)
Runoff from this stream =      0.177(CFS)
Time of concentration =    6.74 min.
Rainfall intensity =     3.270(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.597      5.79                 3.522
2        0.177      6.74                 3.270
Largest stream flow has longer or shorter time of concentration
Qp =      1.597 + sum of
          Qa          Tb/Ta
           0.177 *    0.860 =      0.152
Qp =      1.749
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
       1.597       0.177
Area of streams before confluence:
        0.510        0.059
Results of confluence:
Total flow rate =      1.749(CFS)
Time of concentration =     5.791 min.
Effective stream area after confluence =      0.569(Ac.)


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Process from Point/Station      211.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.260(Ft.)
Downstream point/station elevation =  1422.580(Ft.)
Pipe length  =   136.57(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.749(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.749(CFS)
Normal flow depth in pipe =    6.62(In.)
Flow top width inside pipe =   11.94(In.)
Critical Depth =    6.75(In.)
Pipe flow velocity =      3.94(Ft/s)
Travel time through pipe =    0.58 min.
Time of concentration (TC) =     6.37 min.


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Process from Point/Station      211.000 to Point/Station      213.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.569(Ac.)
Runoff from this stream =      1.749(CFS)
Time of concentration =    6.37 min.
Rainfall intensity =     3.361(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.749      6.37                 3.361
Largest stream flow has longer time of concentration
Qp =      1.749 + sum of
Qp =      1.749

Total of 1 streams to confluence:
```

```
Flow rates before confluence point:
       1.749
Area of streams before confluence:
        0.569
Results of confluence:
Total flow rate =      1.749(CFS)
Time of concentration =     6.369 min.
Effective stream area after confluence =      0.569(Ac.)


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Process from Point/Station      214.000 to Point/Station      215.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =    89.610(Ft.)
Top (of initial area) elevation =  1427.690(Ft.)
Bottom (of initial area) elevation =  1426.490(Ft.)
Difference in elevation =     1.200(Ft.)
Slope =    0.01339  s(percent)=       1.34
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.785(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.896
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.170(CFS)
Total initial stream area =        0.050(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      215.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1423.030(Ft.)
Downstream point/station elevation =  1422.580(Ft.)
Pipe length  =    22.29(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     0.170(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.170(CFS)
Normal flow depth in pipe =    1.73(In.)
Flow top width inside pipe =    5.43(In.)
Critical Depth =    2.47(In.)
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Pipe flow velocity =      3.64(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     5.10 min.


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Process from Point/Station      215.000 to Point/Station      213.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.050(Ac.)
Runoff from this stream =      0.170(CFS)
Time of concentration =    5.10 min.
Rainfall intensity =     3.747(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.749      6.37                 3.361
2        0.170      5.10                 3.747
Largest stream flow has longer time of concentration
Qp =      1.749 + sum of
          Qb         Ia/Ib
           0.170 *    0.897 =      0.152
Qp =      1.901

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.749       0.170
Area of streams before confluence:
        0.569        0.050
Results of confluence:
Total flow rate =      1.901(CFS)
Time of concentration =     6.369 min.
Effective stream area after confluence =      0.619(Ac.)


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Process from Point/Station      213.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1422.580(Ft.)
Downstream point/station elevation =  1422.460(Ft.)
Pipe length  =    23.22(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.901(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.901(CFS)
Normal flow depth in pipe =    6.89(In.)
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Flow top width inside pipe =   11.87(In.)
Critical Depth =    7.05(In.)
Pipe flow velocity =      4.07(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     6.46 min.


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Process from Point/Station      213.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.619(Ac.)
Runoff from this stream =      1.901(CFS)
Time of concentration =    6.46 min.
Rainfall intensity =     3.337(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.901      6.46                 3.337
Largest stream flow has longer time of concentration
Qp =      1.901 + sum of
Qp =      1.901

Total of 1 main streams to confluence:
Flow rates before confluence point:
       1.901
Area of streams before confluence:
        0.619


Results of confluence:
Total flow rate =      1.901(CFS)
Time of concentration =     6.464 min.
Effective stream area after confluence  =      0.619(Ac.)


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Process from Point/Station      217.000 to Point/Station      218.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   247.470(Ft.)
Top (of initial area) elevation =  1428.470(Ft.)
Bottom (of initial area) elevation =  1425.460(Ft.)
Difference in elevation =     3.010(Ft.)
Slope =    0.01216  s(percent)=       1.22
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```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.569 min.
Rainfall intensity =      3.311(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.895
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.016(CFS)
Total initial stream area =        0.680(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      218.000 to Point/Station      219.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1422.690(Ft.)
Downstream point/station elevation =  1422.510(Ft.)
Pipe length  =    46.10(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     2.016(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.016(CFS)
Normal flow depth in pipe =    7.88(In.)
Flow top width inside pipe =   11.40(In.)
Critical Depth =    7.27(In.)
Pipe flow velocity =      3.69(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =     6.78 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.680(Ac.)
Runoff from this stream =      2.016(CFS)
Time of concentration =    6.78 min.
Rainfall intensity =     3.261(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.016      6.78                  3.261
```

```
Largest stream flow has longer time of concentration
Qp =      2.016 + sum of
Qp =      2.016

Total of 1 streams to confluence:
Flow rates before confluence point:
       2.016
Area of streams before confluence:
        0.680
Results of confluence:
Total flow rate =      2.016(CFS)
Time of concentration =     6.777 min.
Effective stream area after confluence =      0.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      221.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Initial area flow distance =   106.420(Ft.)
Top (of initial area) elevation =  1428.080(Ft.)
Bottom (of initial area) elevation =  1427.030(Ft.)
Difference in elevation =     1.050(Ft.)
Slope =    0.00987  s(percent)=       0.99
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.785(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.896
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.542(CFS)
Total initial stream area =        0.160(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      219.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1424.540(Ft.)
Downstream point/station elevation =  1422.510(Ft.)
Pipe length  =   101.56(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     0.542(CFS)
```

```
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.542(CFS)
Normal flow depth in pipe =    3.28(In.)
Flow top width inside pipe =    5.97(In.)
Critical Depth =    4.50(In.)
Pipe flow velocity =      4.95(Ft/s)
Travel time through pipe =    0.34 min.
Time of concentration (TC) =     5.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      219.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.160(Ac.)
Runoff from this stream =      0.542(CFS)
Time of concentration =    5.34 min.
Rainfall intensity =     3.664(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.016      6.78                 3.261
2        0.542      5.34                 3.664
Largest stream flow has longer time of concentration
Qp =      2.016 + sum of
          Qb         Ia/Ib
           0.542 *    0.890 =      0.483
Qp =      2.498

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.016       0.542
Area of streams before confluence:
        0.680        0.160
Results of confluence:
Total flow rate =      2.498(CFS)
Time of concentration =     6.777 min.
Effective stream area after confluence =      0.840(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      216.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =  1422.510(Ft.)
Downstream point/station elevation =  1422.460(Ft.)
```

```
Pipe length  =     9.21(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     2.498(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.498(CFS)
Normal flow depth in pipe =    8.16(In.)
Flow top width inside pipe =   11.20(In.)
Critical Depth =    8.13(In.)
Pipe flow velocity =      4.39(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     6.81 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      216.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.840(Ac.)
Runoff from this stream =      2.498(CFS)
Time of concentration =    6.81 min.
Rainfall intensity =     3.252(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.901      6.46                 3.337
2        2.498      6.81                 3.252
Largest stream flow has longer time of concentration
Qp =      2.498 + sum of
          Qb         Ia/Ib
           1.901 *    0.975 =      1.853
Qp =      4.351

Total of 2 main streams to confluence:
Flow rates before confluence point:
       1.901       2.498
Area of streams before confluence:
        0.619        0.840


Results of confluence:
Total flow rate =      4.351(CFS)
Time of concentration =     6.812 min.
Effective stream area after confluence  =      1.459(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      216.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1422.460(Ft.)
Downstream point/station elevation =  1422.440(Ft.)
Pipe length  =     4.52(Ft.)   Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     4.351(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.351(CFS)
Normal flow depth in pipe =   10.69(In.)
Flow top width inside pipe =   13.58(In.)
Critical Depth =   10.14(In.)
Pipe flow velocity =      4.65(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     6.83 min.
End of computations, total study area =            1.46 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  75.0
```

100-YEAR POST-DEVELOPMENT CONDITION

Appendix

G

UNIT HYDROGRAPH ANALYSIS

10-YEAR 24 HR UNIT HYDROGRAPH
PRE-DEVELOPED CONDITION

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0
                Study date  08/02/22 File: ethanacpreuh2410.out


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----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6481

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
Beyond Foods Mart Perris Service Station
Pre Development UH
10 yr
24 hr
-------------------------------------------------------------------
Drainage Area =       1.99(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.99(Ac.)  =
0.003 Sq. Mi.
Length along longest watercourse =     273.59(Ft.)
Length along longest watercourse measured to centroid =     129.75(Ft.)
Length along longest watercourse =      0.052 Mi.
Length along longest watercourse measured to centroid =      0.025 Mi.
Difference in elevation =       1.00(Ft.)
Slope along watercourse =     19.2990 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.033 Hr.
Lag time =     1.95 Min.
25% of lag time =     0.49 Min.
40% of lag time =     0.78 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:
```

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            2.05                    4.08

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            5.33                   10.61

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.050(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    3.399(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    3.399(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.990           89.00         0.000
 Total Area Entered =      1.99(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
89.0  89.0      0.141     0.000        0.141       1.000      0.141
                                                  Sum (F) =   0.141
Area averaged mean soil loss (F) (In/Hr) =  0.141
Minimum soil loss rate ((In/Hr)) =  0.071
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
---------------------------------------------------------------------

                U n i t  H y d r o g r a p h
                        VALLEY S-Curve
--------------------------------------------------------------------
                Unit Hydrograph Data
---------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %            (CFS)
---------------------------------------------------------------------
    1   0.083        255.776         51.638              1.036
    2   0.167        511.553         39.699              0.796
    3   0.250        767.329          6.834              0.137
    4   0.333       1023.106          1.828              0.037
                                Sum = 100.000   Sum=       2.006
---------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.251)	0.024	0.003
2	0.17	0.07	0.027	(0.250)	0.024	0.003
3	0.25	0.07	0.027	(0.249)	0.024	0.003
4	0.33	0.10	0.041	(0.248)	0.037	0.004
5	0.42	0.10	0.041	(0.247)	0.037	0.004
6	0.50	0.10	0.041	(0.246)	0.037	0.004
7	0.58	0.10	0.041	(0.245)	0.037	0.004
8	0.67	0.10	0.041	(0.244)	0.037	0.004
9	0.75	0.10	0.041	(0.243)	0.037	0.004
10	0.83	0.13	0.054	(0.242)	0.049	0.005
11	0.92	0.13	0.054	(0.241)	0.049	0.005
12	1.00	0.13	0.054	(0.240)	0.049	0.005
13	1.08	0.10	0.041	(0.239)	0.037	0.004
14	1.17	0.10	0.041	(0.238)	0.037	0.004
15	1.25	0.10	0.041	(0.237)	0.037	0.004
16	1.33	0.10	0.041	(0.236)	0.037	0.004
17	1.42	0.10	0.041	(0.235)	0.037	0.004
18	1.50	0.10	0.041	(0.234)	0.037	0.004
19	1.58	0.10	0.041	(0.234)	0.037	0.004
20	1.67	0.10	0.041	(0.233)	0.037	0.004
21	1.75	0.10	0.041	(0.232)	0.037	0.004
22	1.83	0.13	0.054	(0.231)	0.049	0.005
23	1.92	0.13	0.054	(0.230)	0.049	0.005
24	2.00	0.13	0.054	(0.229)	0.049	0.005
25	2.08	0.13	0.054	(0.228)	0.049	0.005
26	2.17	0.13	0.054	(0.227)	0.049	0.005
27	2.25	0.13	0.054	(0.226)	0.049	0.005
28	2.33	0.13	0.054	(0.225)	0.049	0.005
29	2.42	0.13	0.054	(0.224)	0.049	0.005
30	2.50	0.13	0.054	(0.223)	0.049	0.005
31	2.58	0.17	0.068	(0.222)	0.061	0.007
32	2.67	0.17	0.068	(0.221)	0.061	0.007
33	2.75	0.17	0.068	(0.221)	0.061	0.007
34	2.83	0.17	0.068	(0.220)	0.061	0.007
35	2.92	0.17	0.068	(0.219)	0.061	0.007
36	3.00	0.17	0.068	(0.218)	0.061	0.007
37	3.08	0.17	0.068	(0.217)	0.061	0.007
38	3.17	0.17	0.068	(0.216)	0.061	0.007
39	3.25	0.17	0.068	(0.215)	0.061	0.007
40	3.33	0.17	0.068	(0.214)	0.061	0.007
41	3.42	0.17	0.068	(0.213)	0.061	0.007
42	3.50	0.17	0.068	(0.212)	0.061	0.007
43	3.58	0.17	0.068	(0.212)	0.061	0.007
44	3.67	0.17	0.068	(0.211)	0.061	0.007
45	3.75	0.17	0.068	(0.210)	0.061	0.007

46	3.83	0.20	0.082	(0.209)	0.073	0.008
47	3.92	0.20	0.082	(0.208)	0.073	0.008
48	4.00	0.20	0.082	(0.207)	0.073	0.008
49	4.08	0.20	0.082	(0.206)	0.073	0.008
50	4.17	0.20	0.082	(0.205)	0.073	0.008
51	4.25	0.20	0.082	(0.205)	0.073	0.008
52	4.33	0.23	0.095	(0.204)	0.086	0.010
53	4.42	0.23	0.095	(0.203)	0.086	0.010
54	4.50	0.23	0.095	(0.202)	0.086	0.010
55	4.58	0.23	0.095	(0.201)	0.086	0.010
56	4.67	0.23	0.095	(0.200)	0.086	0.010
57	4.75	0.23	0.095	(0.199)	0.086	0.010
58	4.83	0.27	0.109	(0.198)	0.098	0.011
59	4.92	0.27	0.109	(0.198)	0.098	0.011
60	5.00	0.27	0.109	(0.197)	0.098	0.011
61	5.08	0.20	0.082	(0.196)	0.073	0.008
62	5.17	0.20	0.082	(0.195)	0.073	0.008
63	5.25	0.20	0.082	(0.194)	0.073	0.008
64	5.33	0.23	0.095	(0.193)	0.086	0.010
65	5.42	0.23	0.095	(0.193)	0.086	0.010
66	5.50	0.23	0.095	(0.192)	0.086	0.010
67	5.58	0.27	0.109	(0.191)	0.098	0.011
68	5.67	0.27	0.109	(0.190)	0.098	0.011
69	5.75	0.27	0.109	(0.189)	0.098	0.011
70	5.83	0.27	0.109	(0.188)	0.098	0.011
71	5.92	0.27	0.109	(0.187)	0.098	0.011
72	6.00	0.27	0.109	(0.187)	0.098	0.011
73	6.08	0.30	0.122	(0.186)	0.110	0.012
74	6.17	0.30	0.122	(0.185)	0.110	0.012
75	6.25	0.30	0.122	(0.184)	0.110	0.012
76	6.33	0.30	0.122	(0.183)	0.110	0.012
77	6.42	0.30	0.122	(0.183)	0.110	0.012
78	6.50	0.30	0.122	(0.182)	0.110	0.012
79	6.58	0.33	0.136	(0.181)	0.122	0.014
80	6.67	0.33	0.136	(0.180)	0.122	0.014
81	6.75	0.33	0.136	(0.179)	0.122	0.014
82	6.83	0.33	0.136	(0.178)	0.122	0.014
83	6.92	0.33	0.136	(0.178)	0.122	0.014
84	7.00	0.33	0.136	(0.177)	0.122	0.014
85	7.08	0.33	0.136	(0.176)	0.122	0.014
86	7.17	0.33	0.136	(0.175)	0.122	0.014
87	7.25	0.33	0.136	(0.174)	0.122	0.014
88	7.33	0.37	0.150	(0.174)	0.135	0.015
89	7.42	0.37	0.150	(0.173)	0.135	0.015
90	7.50	0.37	0.150	(0.172)	0.135	0.015
91	7.58	0.40	0.163	(0.171)	0.147	0.016
92	7.67	0.40	0.163	(0.170)	0.147	0.016
93	7.75	0.40	0.163	(0.170)	0.147	0.016
94	7.83	0.43	0.177	(0.169)	0.159	0.018
95	7.92	0.43	0.177	(0.168)	0.159	0.018

96	8.00	0.43	0.177	(0.167)	0.159	0.018
97	8.08	0.50	0.204	0.167	(0.184)	0.037
98	8.17	0.50	0.204	0.166	(0.184)	0.038
99	8.25	0.50	0.204	0.165	(0.184)	0.039
100	8.33	0.50	0.204	0.164	(0.184)	0.040
101	8.42	0.50	0.204	0.163	(0.184)	0.040
102	8.50	0.50	0.204	0.163	(0.184)	0.041
103	8.58	0.53	0.218	0.162	(0.196)	0.056
104	8.67	0.53	0.218	0.161	(0.196)	0.056
105	8.75	0.53	0.218	0.160	(0.196)	0.057
106	8.83	0.57	0.231	0.160	(0.208)	0.071
107	8.92	0.57	0.231	0.159	(0.208)	0.072
108	9.00	0.57	0.231	0.158	(0.208)	0.073
109	9.08	0.63	0.258	0.157	(0.233)	0.101
110	9.17	0.63	0.258	0.157	(0.233)	0.102
111	9.25	0.63	0.258	0.156	(0.233)	0.102
112	9.33	0.67	0.272	0.155	(0.245)	0.117
113	9.42	0.67	0.272	0.154	(0.245)	0.118
114	9.50	0.67	0.272	0.154	(0.245)	0.118
115	9.58	0.70	0.286	0.153	(0.257)	0.133
116	9.67	0.70	0.286	0.152	(0.257)	0.133
117	9.75	0.70	0.286	0.151	(0.257)	0.134
118	9.83	0.73	0.299	0.151	(0.269)	0.148
119	9.92	0.73	0.299	0.150	(0.269)	0.149
120	10.00	0.73	0.299	0.149	(0.269)	0.150
121	10.08	0.50	0.204	0.149	(0.184)	0.055
122	10.17	0.50	0.204	0.148	(0.184)	0.056
123	10.25	0.50	0.204	0.147	(0.184)	0.057
124	10.33	0.50	0.204	0.146	(0.184)	0.058
125	10.42	0.50	0.204	0.146	(0.184)	0.058
126	10.50	0.50	0.204	0.145	(0.184)	0.059
127	10.58	0.67	0.272	0.144	(0.245)	0.128
128	10.67	0.67	0.272	0.144	(0.245)	0.128
129	10.75	0.67	0.272	0.143	(0.245)	0.129
130	10.83	0.67	0.272	0.142	(0.245)	0.130
131	10.92	0.67	0.272	0.142	(0.245)	0.130
132	11.00	0.67	0.272	0.141	(0.245)	0.131
133	11.08	0.63	0.258	0.140	(0.233)	0.118
134	11.17	0.63	0.258	0.139	(0.233)	0.119
135	11.25	0.63	0.258	0.139	(0.233)	0.120
136	11.33	0.63	0.258	0.138	(0.233)	0.120
137	11.42	0.63	0.258	0.137	(0.233)	0.121
138	11.50	0.63	0.258	0.137	(0.233)	0.122
139	11.58	0.57	0.231	0.136	(0.208)	0.095
140	11.67	0.57	0.231	0.135	(0.208)	0.096
141	11.75	0.57	0.231	0.135	(0.208)	0.096
142	11.83	0.60	0.245	0.134	(0.220)	0.111
143	11.92	0.60	0.245	0.133	(0.220)	0.111
144	12.00	0.60	0.245	0.133	(0.220)	0.112
145	12.08	0.83	0.340	0.132	(0.306)	0.208

146	12.17	0.83	0.340	0.131	(	0.306)	0.209
147	12.25	0.83	0.340	0.131	(	0.306)	0.209
148	12.33	0.87	0.354	0.130	(	0.318)	0.224
149	12.42	0.87	0.354	0.129	(	0.318)	0.224
150	12.50	0.87	0.354	0.129	(	0.318)	0.225
151	12.58	0.93	0.381	0.128	(	0.343)	0.253
152	12.67	0.93	0.381	0.127	(	0.343)	0.253
153	12.75	0.93	0.381	0.127	(	0.343)	0.254
154	12.83	0.97	0.394	0.126	(	0.355)	0.268
155	12.92	0.97	0.394	0.126	(	0.355)	0.269
156	13.00	0.97	0.394	0.125	(	0.355)	0.269
157	13.08	1.13	0.462	0.124	(	0.416)	0.338
158	13.17	1.13	0.462	0.124	(	0.416)	0.339
159	13.25	1.13	0.462	0.123	(	0.416)	0.339
160	13.33	1.13	0.462	0.122	(	0.416)	0.340
161	13.42	1.13	0.462	0.122	(	0.416)	0.341
162	13.50	1.13	0.462	0.121	(	0.416)	0.341
163	13.58	0.77	0.313	0.120	(	0.281)	0.192
164	13.67	0.77	0.313	0.120	(	0.281)	0.193
165	13.75	0.77	0.313	0.119	(	0.281)	0.193
166	13.83	0.77	0.313	0.119	(	0.281)	0.194
167	13.92	0.77	0.313	0.118	(	0.281)	0.195
168	14.00	0.77	0.313	0.117	(	0.281)	0.195
169	14.08	0.90	0.367	0.117	(	0.330)	0.250
170	14.17	0.90	0.367	0.116	(	0.330)	0.251
171	14.25	0.90	0.367	0.116	(	0.330)	0.251
172	14.33	0.87	0.354	0.115	(	0.318)	0.238
173	14.42	0.87	0.354	0.114	(	0.318)	0.239
174	14.50	0.87	0.354	0.114	(	0.318)	0.240
175	14.58	0.87	0.354	0.113	(	0.318)	0.240
176	14.67	0.87	0.354	0.113	(	0.318)	0.241
177	14.75	0.87	0.354	0.112	(	0.318)	0.241
178	14.83	0.83	0.340	0.112	(	0.306)	0.228
179	14.92	0.83	0.340	0.111	(	0.306)	0.229
180	15.00	0.83	0.340	0.110	(	0.306)	0.230
181	15.08	0.80	0.326	0.110	(	0.294)	0.216
182	15.17	0.80	0.326	0.109	(	0.294)	0.217
183	15.25	0.80	0.326	0.109	(	0.294)	0.218
184	15.33	0.77	0.313	0.108	(	0.281)	0.205
185	15.42	0.77	0.313	0.108	(	0.281)	0.205
186	15.50	0.77	0.313	0.107	(	0.281)	0.206
187	15.58	0.63	0.258	0.107	(	0.233)	0.152
188	15.67	0.63	0.258	0.106	(	0.233)	0.152
189	15.75	0.63	0.258	0.105	(	0.233)	0.153
190	15.83	0.63	0.258	0.105	(	0.233)	0.153
191	15.92	0.63	0.258	0.104	(	0.233)	0.154
192	16.00	0.63	0.258	0.104	(	0.233)	0.155
193	16.08	0.13	0.054	(0.103)		0.049	0.005
194	16.17	0.13	0.054	(0.103)		0.049	0.005
195	16.25	0.13	0.054	(0.102)		0.049	0.005

196	16.33	0.13	0.054	(0.102)	0.049	0.005
197	16.42	0.13	0.054	(0.101)	0.049	0.005
198	16.50	0.13	0.054	(0.101)	0.049	0.005
199	16.58	0.10	0.041	(0.100)	0.037	0.004
200	16.67	0.10	0.041	(0.100)	0.037	0.004
201	16.75	0.10	0.041	(0.099)	0.037	0.004
202	16.83	0.10	0.041	(0.099)	0.037	0.004
203	16.92	0.10	0.041	(0.098)	0.037	0.004
204	17.00	0.10	0.041	(0.098)	0.037	0.004
205	17.08	0.17	0.068	(0.097)	0.061	0.007
206	17.17	0.17	0.068	(0.097)	0.061	0.007
207	17.25	0.17	0.068	(0.096)	0.061	0.007
208	17.33	0.17	0.068	(0.096)	0.061	0.007
209	17.42	0.17	0.068	(0.095)	0.061	0.007
210	17.50	0.17	0.068	(0.095)	0.061	0.007
211	17.58	0.17	0.068	(0.094)	0.061	0.007
212	17.67	0.17	0.068	(0.094)	0.061	0.007
213	17.75	0.17	0.068	(0.093)	0.061	0.007
214	17.83	0.13	0.054	(0.093)	0.049	0.005
215	17.92	0.13	0.054	(0.092)	0.049	0.005
216	18.00	0.13	0.054	(0.092)	0.049	0.005
217	18.08	0.13	0.054	(0.092)	0.049	0.005
218	18.17	0.13	0.054	(0.091)	0.049	0.005
219	18.25	0.13	0.054	(0.091)	0.049	0.005
220	18.33	0.13	0.054	(0.090)	0.049	0.005
221	18.42	0.13	0.054	(0.090)	0.049	0.005
222	18.50	0.13	0.054	(0.089)	0.049	0.005
223	18.58	0.10	0.041	(0.089)	0.037	0.004
224	18.67	0.10	0.041	(0.088)	0.037	0.004
225	18.75	0.10	0.041	(0.088)	0.037	0.004
226	18.83	0.07	0.027	(0.088)	0.024	0.003
227	18.92	0.07	0.027	(0.087)	0.024	0.003
228	19.00	0.07	0.027	(0.087)	0.024	0.003
229	19.08	0.10	0.041	(0.086)	0.037	0.004
230	19.17	0.10	0.041	(0.086)	0.037	0.004
231	19.25	0.10	0.041	(0.086)	0.037	0.004
232	19.33	0.13	0.054	(0.085)	0.049	0.005
233	19.42	0.13	0.054	(0.085)	0.049	0.005
234	19.50	0.13	0.054	(0.084)	0.049	0.005
235	19.58	0.10	0.041	(0.084)	0.037	0.004
236	19.67	0.10	0.041	(0.084)	0.037	0.004
237	19.75	0.10	0.041	(0.083)	0.037	0.004
238	19.83	0.07	0.027	(0.083)	0.024	0.003
239	19.92	0.07	0.027	(0.082)	0.024	0.003
240	20.00	0.07	0.027	(0.082)	0.024	0.003
241	20.08	0.10	0.041	(0.082)	0.037	0.004
242	20.17	0.10	0.041	(0.081)	0.037	0.004
243	20.25	0.10	0.041	(0.081)	0.037	0.004
244	20.33	0.10	0.041	(0.081)	0.037	0.004
245	20.42	0.10	0.041	(0.080)	0.037	0.004

246	20.50	0.10	0.041	(0.080)	0.037	0.004
247	20.58	0.10	0.041	(0.080)	0.037	0.004
248	20.67	0.10	0.041	(0.079)	0.037	0.004
249	20.75	0.10	0.041	(0.079)	0.037	0.004
250	20.83	0.07	0.027	(0.079)	0.024	0.003
251	20.92	0.07	0.027	(0.078)	0.024	0.003
252	21.00	0.07	0.027	(0.078)	0.024	0.003
253	21.08	0.10	0.041	(0.078)	0.037	0.004
254	21.17	0.10	0.041	(0.077)	0.037	0.004
255	21.25	0.10	0.041	(0.077)	0.037	0.004
256	21.33	0.07	0.027	(0.077)	0.024	0.003
257	21.42	0.07	0.027	(0.077)	0.024	0.003
258	21.50	0.07	0.027	(0.076)	0.024	0.003
259	21.58	0.10	0.041	(0.076)	0.037	0.004
260	21.67	0.10	0.041	(0.076)	0.037	0.004
261	21.75	0.10	0.041	(0.075)	0.037	0.004
262	21.83	0.07	0.027	(0.075)	0.024	0.003
263	21.92	0.07	0.027	(0.075)	0.024	0.003
264	22.00	0.07	0.027	(0.075)	0.024	0.003
265	22.08	0.10	0.041	(0.074)	0.037	0.004
266	22.17	0.10	0.041	(0.074)	0.037	0.004
267	22.25	0.10	0.041	(0.074)	0.037	0.004
268	22.33	0.07	0.027	(0.074)	0.024	0.003
269	22.42	0.07	0.027	(0.073)	0.024	0.003
270	22.50	0.07	0.027	(0.073)	0.024	0.003
271	22.58	0.07	0.027	(0.073)	0.024	0.003
272	22.67	0.07	0.027	(0.073)	0.024	0.003
273	22.75	0.07	0.027	(0.073)	0.024	0.003
274	22.83	0.07	0.027	(0.072)	0.024	0.003
275	22.92	0.07	0.027	(0.072)	0.024	0.003
276	23.00	0.07	0.027	(0.072)	0.024	0.003
277	23.08	0.07	0.027	(0.072)	0.024	0.003
278	23.17	0.07	0.027	(0.072)	0.024	0.003
279	23.25	0.07	0.027	(0.072)	0.024	0.003
280	23.33	0.07	0.027	(0.071)	0.024	0.003
281	23.42	0.07	0.027	(0.071)	0.024	0.003
282	23.50	0.07	0.027	(0.071)	0.024	0.003
283	23.58	0.07	0.027	(0.071)	0.024	0.003
284	23.67	0.07	0.027	(0.071)	0.024	0.003
285	23.75	0.07	0.027	(0.071)	0.024	0.003
286	23.83	0.07	0.027	(0.071)	0.024	0.003
287	23.92	0.07	0.027	(0.071)	0.024	0.003
288	24.00	0.07	0.027	(0.071)	0.024	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 16.9

Flood volume = Effective rainfall 1.41(In)
times area 2.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 1.99(In)
Total soil loss = 0.330(Ac.Ft)
Total rainfall = 3.40(In)

```
Flood volume =       10200.6 Cubic Feet
Total soil loss =       14355.7 Cubic Feet
---------------------------------------------------------------------
 Peak flow rate of this hydrograph =      0.684(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                     24 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-----------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0001      0.00  Q         |         |         |         |
  0+15       0.0001      0.01  Q         |         |         |         |
  0+20       0.0001      0.01  Q         |         |         |         |
  0+25       0.0002      0.01  Q         |         |         |         |
  0+30       0.0002      0.01  Q         |         |         |         |
  0+35       0.0003      0.01  Q         |         |         |         |
  0+40       0.0004      0.01  Q         |         |         |         |
  0+45       0.0004      0.01  Q         |         |         |         |
  0+50       0.0005      0.01  Q         |         |         |         |
  0+55       0.0006      0.01  Q         |         |         |         |
  1+ 0       0.0006      0.01  Q         |         |         |         |
  1+ 5       0.0007      0.01  Q         |         |         |         |
  1+10       0.0008      0.01  Q         |         |         |         |
  1+15       0.0008      0.01  Q         |         |         |         |
  1+20       0.0009      0.01  Q         |         |         |         |
  1+25       0.0009      0.01  Q         |         |         |         |
  1+30       0.0010      0.01  Q         |         |         |         |
  1+35       0.0010      0.01  Q         |         |         |         |
  1+40       0.0011      0.01  Q         |         |         |         |
  1+45       0.0012      0.01  Q         |         |         |         |
  1+50       0.0012      0.01  Q         |         |         |         |
  1+55       0.0013      0.01  Q         |         |         |         |
  2+ 0       0.0014      0.01  Q         |         |         |         |
  2+ 5       0.0014      0.01  Q         |         |         |         |
  2+10       0.0015      0.01  Q         |         |         |         |
  2+15       0.0016      0.01  Q         |         |         |         |
  2+20       0.0017      0.01  Q         |         |         |         |
  2+25       0.0017      0.01  Q         |         |         |         |
  2+30       0.0018      0.01  Q         |         |         |         |
  2+35       0.0019      0.01  Q         |         |         |         |
  2+40       0.0020      0.01  Q         |         |         |         |
  2+45       0.0021      0.01  Q         |         |         |         |
  2+50       0.0022      0.01  Q         |         |         |         |
  2+55       0.0023      0.01  Q         |         |         |         |
  3+ 0       0.0024      0.01  Q         |         |         |         |
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3+ 5	0.0025	0.01	Q				
3+10	0.0026	0.01	Q				
3+15	0.0027	0.01	Q				
3+20	0.0027	0.01	Q				
3+25	0.0028	0.01	Q				
3+30	0.0029	0.01	Q				
3+35	0.0030	0.01	Q				
3+40	0.0031	0.01	Q				
3+45	0.0032	0.01	Q				
3+50	0.0033	0.02	Q				
3+55	0.0034	0.02	Q				
4+ 0	0.0035	0.02	Q				
4+ 5	0.0037	0.02	Q				
4+10	0.0038	0.02	Q				
4+15	0.0039	0.02	Q				
4+20	0.0040	0.02	Q				
4+25	0.0041	0.02	Q				
4+30	0.0043	0.02	Q				
4+35	0.0044	0.02	Q				
4+40	0.0045	0.02	Q				
4+45	0.0047	0.02	Q				
4+50	0.0048	0.02	Q				
4+55	0.0049	0.02	Q				
5+ 0	0.0051	0.02	Q				
5+ 5	0.0052	0.02	Q				
5+10	0.0053	0.02	Q				
5+15	0.0055	0.02	Q				
5+20	0.0056	0.02	Q				
5+25	0.0057	0.02	Q				
5+30	0.0058	0.02	Q				
5+35	0.0060	0.02	QV				
5+40	0.0061	0.02	QV				
5+45	0.0063	0.02	QV				
5+50	0.0064	0.02	QV				
5+55	0.0066	0.02	QV				
6+ 0	0.0067	0.02	QV				
6+ 5	0.0069	0.02	QV				
6+10	0.0071	0.02	QV				
6+15	0.0072	0.02	QV				
6+20	0.0074	0.02	QV				
6+25	0.0076	0.02	QV				
6+30	0.0077	0.02	QV				
6+35	0.0079	0.03	QV				
6+40	0.0081	0.03	QV				
6+45	0.0083	0.03	QV				
6+50	0.0085	0.03	QV				
6+55	0.0087	0.03	QV				
7+ 0	0.0089	0.03	QV				
7+ 5	0.0090	0.03	QV				
7+10	0.0092	0.03	QV				

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 7+15       0.0094      0.03  QV        |         |         |         |
 7+20       0.0096      0.03  QV        |         |         |         |
 7+25       0.0098      0.03  QV        |         |         |         |
 7+30       0.0100      0.03  QV        |         |         |         |
 7+35       0.0102      0.03  QV        |         |         |         |
 7+40       0.0105      0.03  QV        |         |         |         |
 7+45       0.0107      0.03  QV        |         |         |         |
 7+50       0.0109      0.03  QV        |         |         |         |
 7+55       0.0112      0.04  QV        |         |         |         |
 8+ 0       0.0114      0.04  QV        |         |         |         |
 8+ 5       0.0118      0.06  Q V       |         |         |         |
 8+10       0.0123      0.07  Q V       |         |         |         |
 8+15       0.0128      0.08  Q V       |         |         |         |
 8+20       0.0134      0.08  Q V       |         |         |         |
 8+25       0.0139      0.08  Q V       |         |         |         |
 8+30       0.0145      0.08  Q V       |         |         |         |
 8+35       0.0152      0.10  Q V       |         |         |         |
 8+40       0.0159      0.11  Q V       |         |         |         |
 8+45       0.0167      0.11  Q V       |         |         |         |
 8+50       0.0176      0.13  Q  V      |         |         |         |
 8+55       0.0186      0.14  Q  V      |         |         |         |
 9+ 0       0.0196      0.15  Q  V      |         |         |         |
 9+ 5       0.0208      0.18  Q  V      |         |         |         |
 9+10       0.0221      0.20  Q  V      |         |         |         |
 9+15       0.0235      0.20  Q   V     |         |         |         |
 9+20       0.0251      0.22  Q   V     |         |         |         |
 9+25       0.0267      0.23  Q   V     |         |         |         |
 9+30       0.0283      0.24  Q   V     |         |         |         |
 9+35       0.0300      0.25  |Q   V    |         |         |         |
 9+40       0.0318      0.26  |Q   V    |         |         |         |
 9+45       0.0337      0.27  |Q   V    |         |         |         |
 9+50       0.0356      0.28  |Q    V   |         |         |         |
 9+55       0.0377      0.30  |Q    V   |         |         |         |
10+ 0       0.0397      0.30  |Q    V   |         |         |         |
10+ 5       0.0411      0.20  Q      V  |         |         |         |
10+10       0.0420      0.13  Q      V  |         |         |         |
10+15       0.0428      0.12  Q      V  |         |         |         |
10+20       0.0436      0.11  Q      V  |         |         |         |
10+25       0.0444      0.12  Q      V  |         |         |         |
10+30       0.0452      0.12  Q      V  |         |         |         |
10+35       0.0465      0.19  Q      V  |         |         |         |
10+40       0.0482      0.24  Q       V |         |         |         |
10+45       0.0500      0.26  |Q      V |         |         |         |
10+50       0.0517      0.26  |Q      V |         |         |         |
10+55       0.0535      0.26  |Q       V|         |         |         |
11+ 0       0.0553      0.26  |Q       V|         |         |         |
11+ 5       0.0571      0.25  Q        V|         |         |         |
11+10       0.0587      0.24  Q         V         |         |         |
11+15       0.0604      0.24  Q         V         |         |         |
11+20       0.0620      0.24  Q         V         |         |         |
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11+25       0.0637      0.24  Q         V         |         |         |
11+30       0.0654      0.24  Q         |V        |         |         |
11+35       0.0669      0.22  Q         |V        |         |         |
11+40       0.0682      0.20  Q         |V        |         |         |
11+45       0.0695      0.19  Q         |V        |         |         |
11+50       0.0710      0.21  Q         | V       |         |         |
11+55       0.0725      0.22  Q         | V       |         |         |
12+ 0       0.0740      0.22  Q         | V       |         |         |
12+ 5       0.0763      0.32  |Q        |  V      |         |         |
12+10       0.0790      0.40  |Q        |  V      |         |         |
12+15       0.0819      0.42  |Q        |  V      |         |         |
12+20       0.0849      0.43  |Q        |   V     |         |         |
12+25       0.0880      0.45  |Q        |    V    |         |         |
12+30       0.0911      0.45  |Q        |    V    |         |         |
12+35       0.0944      0.48  |Q        |     V   |         |         |
12+40       0.0978      0.50  | Q       |     V   |         |         |
12+45       0.1013      0.51  | Q       |      V  |         |         |
12+50       0.1049      0.52  | Q       |      V  |         |         |
12+55       0.1086      0.54  | Q       |       V |         |         |
13+ 0       0.1124      0.54  | Q       |        V|         |         |
13+ 5       0.1166      0.61  | Q       |        V|         |         |
13+10       0.1212      0.67  | Q       |         V         |         |
13+15       0.1258      0.68  | Q       |         |V        |         |
13+20       0.1305      0.68  | Q       |         | V       |         |
13+25       0.1352      0.68  | Q       |         |  V      |         |
13+30       0.1399      0.68  | Q       |         |  V      |         |
13+35       0.1436      0.53  | Q       |         |   V     |         |
13+40       0.1464      0.41  |Q        |         |    V    |         |
13+45       0.1491      0.39  |Q        |         |    V    |         |
13+50       0.1518      0.39  |Q        |         |    V    |         |
13+55       0.1545      0.39  |Q        |         |     V   |         |
14+ 0       0.1572      0.39  |Q        |         |     V   |         |
14+ 5       0.1603      0.45  |Q        |         |      V  |         |
14+10       0.1637      0.49  |Q        |         |      V  |         |
14+15       0.1671      0.50  | Q       |         |       V |         |
14+20       0.1705      0.49  |Q        |         |        V|         |
14+25       0.1738      0.48  |Q        |         |        V|         |
14+30       0.1771      0.48  |Q        |         |         V         |
14+35       0.1805      0.48  |Q        |         |         V         |
14+40       0.1838      0.48  |Q        |         |         |V        |
14+45       0.1871      0.48  |Q        |         |         |V        |
14+50       0.1903      0.47  |Q        |         |         | V       |
14+55       0.1935      0.46  |Q        |         |         |  V      |
15+ 0       0.1967      0.46  |Q        |         |         |  V      |
15+ 5       0.1998      0.45  |Q        |         |         |   V     |
15+10       0.2028      0.44  |Q        |         |         |   V     |
15+15       0.2058      0.44  |Q        |         |         |    V    |
15+20       0.2087      0.42  |Q        |         |         |    V    |
15+25       0.2115      0.41  |Q        |         |         |     V   |
15+30       0.2144      0.41  |Q        |         |         |     V   |
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15+35       0.2168      0.36  |Q        |         |         |      V  |
15+40       0.2190      0.31  |Q        |         |         |      V  |
15+45       0.2211      0.31  |Q        |         |         |      V  |
15+50       0.2233      0.31  |Q        |         |         |       V |
15+55       0.2254      0.31  |Q        |         |         |       V |
16+ 0       0.2275      0.31  |Q        |         |         |       V |
16+ 5       0.2286      0.16  Q         |         |         |        V|
16+10       0.2288      0.04  Q         |         |         |        V|
16+15       0.2289      0.02  Q         |         |         |        V|
16+20       0.2290      0.01  Q         |         |         |        V|
16+25       0.2291      0.01  Q         |         |         |        V|
16+30       0.2292      0.01  Q         |         |         |        V|
16+35       0.2292      0.01  Q         |         |         |        V|
16+40       0.2293      0.01  Q         |         |         |        V|
16+45       0.2293      0.01  Q         |         |         |        V|
16+50       0.2294      0.01  Q         |         |         |        V|
16+55       0.2295      0.01  Q         |         |         |        V|
17+ 0       0.2295      0.01  Q         |         |         |        V|
17+ 5       0.2296      0.01  Q         |         |         |        V|
17+10       0.2297      0.01  Q         |         |         |        V|
17+15       0.2298      0.01  Q         |         |         |        V|
17+20       0.2299      0.01  Q         |         |         |        V|
17+25       0.2300      0.01  Q         |         |         |        V|
17+30       0.2301      0.01  Q         |         |         |        V|
17+35       0.2302      0.01  Q         |         |         |        V|
17+40       0.2302      0.01  Q         |         |         |        V|
17+45       0.2303      0.01  Q         |         |         |        V|
17+50       0.2304      0.01  Q         |         |         |        V|
17+55       0.2305      0.01  Q         |         |         |        V|
18+ 0       0.2306      0.01  Q         |         |         |        V|
18+ 5       0.2307      0.01  Q         |         |         |        V|
18+10       0.2307      0.01  Q         |         |         |        V|
18+15       0.2308      0.01  Q         |         |         |        V|
18+20       0.2309      0.01  Q         |         |         |        V|
18+25       0.2310      0.01  Q         |         |         |        V|
18+30       0.2310      0.01  Q         |         |         |        V|
18+35       0.2311      0.01  Q         |         |         |        V|
18+40       0.2312      0.01  Q         |         |         |        V|
18+45       0.2312      0.01  Q         |         |         |        V|
18+50       0.2313      0.01  Q         |         |         |        V|
18+55       0.2313      0.01  Q         |         |         |        V|
19+ 0       0.2313      0.01  Q         |         |         |        V|
19+ 5       0.2314      0.01  Q         |         |         |        V|
19+10       0.2314      0.01  Q         |         |         |        V|
19+15       0.2315      0.01  Q         |         |         |        V|
19+20       0.2316      0.01  Q         |         |         |        V|
19+25       0.2316      0.01  Q         |         |         |        V|
19+30       0.2317      0.01  Q         |         |         |        V|
19+35       0.2318      0.01  Q         |         |         |        V|
19+40       0.2318      0.01  Q         |         |         |        V|
```

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19+45       0.2319      0.01  Q          |          |          |         V|
19+50       0.2319      0.01  Q          |          |          |         V|
19+55       0.2320      0.01  Q          |          |          |         V|
20+ 0       0.2320      0.01  Q          |          |          |         V|
20+ 5       0.2321      0.01  Q          |          |          |         V|
20+10       0.2321      0.01  Q          |          |          |         V|
20+15       0.2322      0.01  Q          |          |          |         V|
20+20       0.2322      0.01  Q          |          |          |         V|
20+25       0.2323      0.01  Q          |          |          |         V|
20+30       0.2323      0.01  Q          |          |          |         V|
20+35       0.2324      0.01  Q          |          |          |         V|
20+40       0.2324      0.01  Q          |          |          |         V|
20+45       0.2325      0.01  Q          |          |          |         V|
20+50       0.2326      0.01  Q          |          |          |         V|
20+55       0.2326      0.01  Q          |          |          |         V|
21+ 0       0.2326      0.01  Q          |          |          |         V|
21+ 5       0.2327      0.01  Q          |          |          |         V|
21+10       0.2327      0.01  Q          |          |          |         V|
21+15       0.2328      0.01  Q          |          |          |         V|
21+20       0.2328      0.01  Q          |          |          |         V|
21+25       0.2329      0.01  Q          |          |          |         V|
21+30       0.2329      0.01  Q          |          |          |         V|
21+35       0.2330      0.01  Q          |          |          |         V|
21+40       0.2330      0.01  Q          |          |          |         V|
21+45       0.2331      0.01  Q          |          |          |         V|
21+50       0.2331      0.01  Q          |          |          |         V|
21+55       0.2332      0.01  Q          |          |          |         V|
22+ 0       0.2332      0.01  Q          |          |          |         V|
22+ 5       0.2332      0.01  Q          |          |          |         V|
22+10       0.2333      0.01  Q          |          |          |         V|
22+15       0.2334      0.01  Q          |          |          |         V|
22+20       0.2334      0.01  Q          |          |          |         V|
22+25       0.2334      0.01  Q          |          |          |         V|
22+30       0.2335      0.01  Q          |          |          |         V|
22+35       0.2335      0.01  Q          |          |          |         V|
22+40       0.2335      0.01  Q          |          |          |         V|
22+45       0.2336      0.01  Q          |          |          |         V|
22+50       0.2336      0.01  Q          |          |          |         V|
22+55       0.2337      0.01  Q          |          |          |         V|
23+ 0       0.2337      0.01  Q          |          |          |         V|
23+ 5       0.2337      0.01  Q          |          |          |         V|
23+10       0.2338      0.01  Q          |          |          |         V|
23+15       0.2338      0.01  Q          |          |          |         V|
23+20       0.2338      0.01  Q          |          |          |         V|
23+25       0.2339      0.01  Q          |          |          |         V|
23+30       0.2339      0.01  Q          |          |          |         V|
23+35       0.2340      0.01  Q          |          |          |         V|
23+40       0.2340      0.01  Q          |          |          |         V|
23+45       0.2340      0.01  Q          |          |          |         V|
23+50       0.2341      0.01  Q          |          |          |         V|
```

```
   23+55       0.2341      0.01  Q         |         |         |        V|
   24+ 0       0.2342      0.01  Q         |         |         |        V|
   24+ 5       0.2342      0.00  Q         |         |         |        V|
   24+10       0.2342      0.00  Q         |         |         |        V|
   24+15       0.2342      0.00  Q         |         |         |        V|
-----------------------------------------------------------------------
```

100-YEAR 24 HR UNIT HYDROGRAPH
PRE-DEVELOPED CONDITION

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0
                Study date  08/02/22 File: ethanacpreuh24100.out


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----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6481

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
Beyond Foods Mart Perris Service Station
Pre Development UH
100 yr
24 hr
-------------------------------------------------------------------
Drainage Area =       1.99(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.99(Ac.)  =
0.003 Sq. Mi.
Length along longest watercourse =     273.59(Ft.)
Length along longest watercourse measured to centroid =     129.75(Ft.)
Length along longest watercourse =      0.052 Mi.
Length along longest watercourse measured to centroid =      0.025 Mi.
Difference in elevation =       1.00(Ft.)
Slope along watercourse =     19.2990 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.033 Hr.
Lag time =     1.95 Min.
25% of lag time =     0.49 Min.
40% of lag time =     0.78 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:
```

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            2.05                    4.08

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            5.33                   10.61

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.050(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    5.330(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    5.330(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.990           89.00         0.000
 Total Area Entered =      1.99(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
89.0  95.6      0.057     0.000        0.057       1.000      0.057
                                                  Sum (F) =   0.057
Area averaged mean soil loss (F) (In/Hr) =  0.057
Minimum soil loss rate ((In/Hr)) =  0.029
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
--------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
-------------------------------------------------------------------
               Unit Hydrograph Data
--------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %            (CFS)
--------------------------------------------------------------------
    1   0.083        255.776         51.638              1.036
    2   0.167        511.553         39.699              0.796
    3   0.250        767.329          6.834              0.137
    4   0.333       1023.106          1.828              0.037
                                Sum = 100.000   Sum=       2.006
-------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.043	(0.101)	0.038	0.004
2	0.17	0.07	0.043	(0.101)	0.038	0.004
3	0.25	0.07	0.043	(0.101)	0.038	0.004
4	0.33	0.10	0.064	(0.100)	0.058	0.006
5	0.42	0.10	0.064	(0.100)	0.058	0.006
6	0.50	0.10	0.064	(0.099)	0.058	0.006
7	0.58	0.10	0.064	(0.099)	0.058	0.006
8	0.67	0.10	0.064	(0.099)	0.058	0.006
9	0.75	0.10	0.064	(0.098)	0.058	0.006
10	0.83	0.13	0.085	(0.098)	0.077	0.009
11	0.92	0.13	0.085	(0.098)	0.077	0.009
12	1.00	0.13	0.085	(0.097)	0.077	0.009
13	1.08	0.10	0.064	(0.097)	0.058	0.006
14	1.17	0.10	0.064	(0.096)	0.058	0.006
15	1.25	0.10	0.064	(0.096)	0.058	0.006
16	1.33	0.10	0.064	(0.096)	0.058	0.006
17	1.42	0.10	0.064	(0.095)	0.058	0.006
18	1.50	0.10	0.064	(0.095)	0.058	0.006
19	1.58	0.10	0.064	(0.094)	0.058	0.006
20	1.67	0.10	0.064	(0.094)	0.058	0.006
21	1.75	0.10	0.064	(0.094)	0.058	0.006
22	1.83	0.13	0.085	(0.093)	0.077	0.009
23	1.92	0.13	0.085	(0.093)	0.077	0.009
24	2.00	0.13	0.085	(0.093)	0.077	0.009
25	2.08	0.13	0.085	(0.092)	0.077	0.009
26	2.17	0.13	0.085	(0.092)	0.077	0.009
27	2.25	0.13	0.085	(0.091)	0.077	0.009
28	2.33	0.13	0.085	(0.091)	0.077	0.009
29	2.42	0.13	0.085	(0.091)	0.077	0.009
30	2.50	0.13	0.085	(0.090)	0.077	0.009
31	2.58	0.17	0.107	0.090	(0.096)	0.017
32	2.67	0.17	0.107	0.090	(0.096)	0.017
33	2.75	0.17	0.107	0.089	(0.096)	0.017
34	2.83	0.17	0.107	0.089	(0.096)	0.018
35	2.92	0.17	0.107	0.088	(0.096)	0.018
36	3.00	0.17	0.107	0.088	(0.096)	0.018
37	3.08	0.17	0.107	0.088	(0.096)	0.019
38	3.17	0.17	0.107	0.087	(0.096)	0.019
39	3.25	0.17	0.107	0.087	(0.096)	0.020
40	3.33	0.17	0.107	0.087	(0.096)	0.020
41	3.42	0.17	0.107	0.086	(0.096)	0.020
42	3.50	0.17	0.107	0.086	(0.096)	0.021
43	3.58	0.17	0.107	0.086	(0.096)	0.021
44	3.67	0.17	0.107	0.085	(0.096)	0.021
45	3.75	0.17	0.107	0.085	(0.096)	0.022

46	3.83	0.20	0.128	0.085	(0.115)	0.043
47	3.92	0.20	0.128	0.084	(0.115)	0.044
48	4.00	0.20	0.128	0.084	(0.115)	0.044
49	4.08	0.20	0.128	0.083	(0.115)	0.044
50	4.17	0.20	0.128	0.083	(0.115)	0.045
51	4.25	0.20	0.128	0.083	(0.115)	0.045
52	4.33	0.23	0.149	0.082	(0.134)	0.067
53	4.42	0.23	0.149	0.082	(0.134)	0.067
54	4.50	0.23	0.149	0.082	(0.134)	0.068
55	4.58	0.23	0.149	0.081	(0.134)	0.068
56	4.67	0.23	0.149	0.081	(0.134)	0.068
57	4.75	0.23	0.149	0.081	(0.134)	0.069
58	4.83	0.27	0.171	0.080	(0.154)	0.090
59	4.92	0.27	0.171	0.080	(0.154)	0.091
60	5.00	0.27	0.171	0.080	(0.154)	0.091
61	5.08	0.20	0.128	0.079	(0.115)	0.049
62	5.17	0.20	0.128	0.079	(0.115)	0.049
63	5.25	0.20	0.128	0.079	(0.115)	0.049
64	5.33	0.23	0.149	0.078	(0.134)	0.071
65	5.42	0.23	0.149	0.078	(0.134)	0.071
66	5.50	0.23	0.149	0.078	(0.134)	0.072
67	5.58	0.27	0.171	0.077	(0.154)	0.093
68	5.67	0.27	0.171	0.077	(0.154)	0.094
69	5.75	0.27	0.171	0.077	(0.154)	0.094
70	5.83	0.27	0.171	0.076	(0.154)	0.094
71	5.92	0.27	0.171	0.076	(0.154)	0.095
72	6.00	0.27	0.171	0.076	(0.154)	0.095
73	6.08	0.30	0.192	0.075	(0.173)	0.117
74	6.17	0.30	0.192	0.075	(0.173)	0.117
75	6.25	0.30	0.192	0.074	(0.173)	0.117
76	6.33	0.30	0.192	0.074	(0.173)	0.118
77	6.42	0.30	0.192	0.074	(0.173)	0.118
78	6.50	0.30	0.192	0.074	(0.173)	0.118
79	6.58	0.33	0.213	0.073	(0.192)	0.140
80	6.67	0.33	0.213	0.073	(0.192)	0.140
81	6.75	0.33	0.213	0.073	(0.192)	0.141
82	6.83	0.33	0.213	0.072	(0.192)	0.141
83	6.92	0.33	0.213	0.072	(0.192)	0.141
84	7.00	0.33	0.213	0.072	(0.192)	0.142
85	7.08	0.33	0.213	0.071	(0.192)	0.142
86	7.17	0.33	0.213	0.071	(0.192)	0.142
87	7.25	0.33	0.213	0.071	(0.192)	0.143
88	7.33	0.37	0.235	0.070	(0.211)	0.164
89	7.42	0.37	0.235	0.070	(0.211)	0.165
90	7.50	0.37	0.235	0.070	(0.211)	0.165
91	7.58	0.40	0.256	0.069	(0.230)	0.187
92	7.67	0.40	0.256	0.069	(0.230)	0.187
93	7.75	0.40	0.256	0.069	(0.230)	0.187
94	7.83	0.43	0.277	0.068	(0.249)	0.209
95	7.92	0.43	0.277	0.068	(0.249)	0.209

96	8.00	0.43	0.277	0.068	(0.249)	0.209
97	8.08	0.50	0.320	0.067	(0.288)	0.252
98	8.17	0.50	0.320	0.067	(0.288)	0.253
99	8.25	0.50	0.320	0.067	(0.288)	0.253
100	8.33	0.50	0.320	0.066	(0.288)	0.253
101	8.42	0.50	0.320	0.066	(0.288)	0.254
102	8.50	0.50	0.320	0.066	(0.288)	0.254
103	8.58	0.53	0.341	0.066	(0.307)	0.276
104	8.67	0.53	0.341	0.065	(0.307)	0.276
105	8.75	0.53	0.341	0.065	(0.307)	0.276
106	8.83	0.57	0.362	0.065	(0.326)	0.298
107	8.92	0.57	0.362	0.064	(0.326)	0.298
108	9.00	0.57	0.362	0.064	(0.326)	0.298
109	9.08	0.63	0.405	0.064	(0.365)	0.341
110	9.17	0.63	0.405	0.063	(0.365)	0.342
111	9.25	0.63	0.405	0.063	(0.365)	0.342
112	9.33	0.67	0.426	0.063	(0.384)	0.364
113	9.42	0.67	0.426	0.062	(0.384)	0.364
114	9.50	0.67	0.426	0.062	(0.384)	0.364
115	9.58	0.70	0.448	0.062	(0.403)	0.386
116	9.67	0.70	0.448	0.062	(0.403)	0.386
117	9.75	0.70	0.448	0.061	(0.403)	0.386
118	9.83	0.73	0.469	0.061	(0.422)	0.408
119	9.92	0.73	0.469	0.061	(0.422)	0.408
120	10.00	0.73	0.469	0.060	(0.422)	0.409
121	10.08	0.50	0.320	0.060	(0.288)	0.260
122	10.17	0.50	0.320	0.060	(0.288)	0.260
123	10.25	0.50	0.320	0.060	(0.288)	0.260
124	10.33	0.50	0.320	0.059	(0.288)	0.261
125	10.42	0.50	0.320	0.059	(0.288)	0.261
126	10.50	0.50	0.320	0.059	(0.288)	0.261
127	10.58	0.67	0.426	0.058	(0.384)	0.368
128	10.67	0.67	0.426	0.058	(0.384)	0.368
129	10.75	0.67	0.426	0.058	(0.384)	0.369
130	10.83	0.67	0.426	0.058	(0.384)	0.369
131	10.92	0.67	0.426	0.057	(0.384)	0.369
132	11.00	0.67	0.426	0.057	(0.384)	0.369
133	11.08	0.63	0.405	0.057	(0.365)	0.348
134	11.17	0.63	0.405	0.056	(0.365)	0.349
135	11.25	0.63	0.405	0.056	(0.365)	0.349
136	11.33	0.63	0.405	0.056	(0.365)	0.349
137	11.42	0.63	0.405	0.056	(0.365)	0.350
138	11.50	0.63	0.405	0.055	(0.365)	0.350
139	11.58	0.57	0.362	0.055	(0.326)	0.307
140	11.67	0.57	0.362	0.055	(0.326)	0.308
141	11.75	0.57	0.362	0.054	(0.326)	0.308
142	11.83	0.60	0.384	0.054	(0.345)	0.330
143	11.92	0.60	0.384	0.054	(0.345)	0.330
144	12.00	0.60	0.384	0.054	(0.345)	0.330
145	12.08	0.83	0.533	0.053	(0.480)	0.480

146	12.17	0.83	0.533	0.053	(	0.480)	0.480
147	12.25	0.83	0.533	0.053	(	0.480)	0.480
148	12.33	0.87	0.554	0.053	(	0.499)	0.502
149	12.42	0.87	0.554	0.052	(	0.499)	0.502
150	12.50	0.87	0.554	0.052	(	0.499)	0.502
151	12.58	0.93	0.597	0.052	(	0.537)	0.545
152	12.67	0.93	0.597	0.052	(	0.537)	0.545
153	12.75	0.93	0.597	0.051	(	0.537)	0.546
154	12.83	0.97	0.618	0.051	(	0.556)	0.567
155	12.92	0.97	0.618	0.051	(	0.556)	0.568
156	13.00	0.97	0.618	0.051	(	0.556)	0.568
157	13.08	1.13	0.725	0.050	(	0.652)	0.675
158	13.17	1.13	0.725	0.050	(	0.652)	0.675
159	13.25	1.13	0.725	0.050	(	0.652)	0.675
160	13.33	1.13	0.725	0.049	(	0.652)	0.675
161	13.42	1.13	0.725	0.049	(	0.652)	0.676
162	13.50	1.13	0.725	0.049	(	0.652)	0.676
163	13.58	0.77	0.490	0.049	(	0.441)	0.442
164	13.67	0.77	0.490	0.048	(	0.441)	0.442
165	13.75	0.77	0.490	0.048	(	0.441)	0.442
166	13.83	0.77	0.490	0.048	(	0.441)	0.442
167	13.92	0.77	0.490	0.048	(	0.441)	0.443
168	14.00	0.77	0.490	0.048	(	0.441)	0.443
169	14.08	0.90	0.576	0.047	(	0.518)	0.528
170	14.17	0.90	0.576	0.047	(	0.518)	0.529
171	14.25	0.90	0.576	0.047	(	0.518)	0.529
172	14.33	0.87	0.554	0.047	(	0.499)	0.508
173	14.42	0.87	0.554	0.046	(	0.499)	0.508
174	14.50	0.87	0.554	0.046	(	0.499)	0.508
175	14.58	0.87	0.554	0.046	(	0.499)	0.508
176	14.67	0.87	0.554	0.046	(	0.499)	0.509
177	14.75	0.87	0.554	0.045	(	0.499)	0.509
178	14.83	0.83	0.533	0.045	(	0.480)	0.488
179	14.92	0.83	0.533	0.045	(	0.480)	0.488
180	15.00	0.83	0.533	0.045	(	0.480)	0.488
181	15.08	0.80	0.512	0.044	(	0.461)	0.467
182	15.17	0.80	0.512	0.044	(	0.461)	0.467
183	15.25	0.80	0.512	0.044	(	0.461)	0.468
184	15.33	0.77	0.490	0.044	(	0.441)	0.447
185	15.42	0.77	0.490	0.044	(	0.441)	0.447
186	15.50	0.77	0.490	0.043	(	0.441)	0.447
187	15.58	0.63	0.405	0.043	(	0.365)	0.362
188	15.67	0.63	0.405	0.043	(	0.365)	0.362
189	15.75	0.63	0.405	0.043	(	0.365)	0.362
190	15.83	0.63	0.405	0.042	(	0.365)	0.363
191	15.92	0.63	0.405	0.042	(	0.365)	0.363
192	16.00	0.63	0.405	0.042	(	0.365)	0.363
193	16.08	0.13	0.085	0.042	(	0.077)	0.043
194	16.17	0.13	0.085	0.042	(	0.077)	0.044
195	16.25	0.13	0.085	0.041	(	0.077)	0.044

196	16.33	0.13	0.085	0.041	(0.077)	0.044
197	16.42	0.13	0.085	0.041	(0.077)	0.044
198	16.50	0.13	0.085	0.041	(0.077)	0.045
199	16.58	0.10	0.064	0.041	(0.058)	0.023
200	16.67	0.10	0.064	0.040	(0.058)	0.024
201	16.75	0.10	0.064	0.040	(0.058)	0.024
202	16.83	0.10	0.064	0.040	(0.058)	0.024
203	16.92	0.10	0.064	0.040	(0.058)	0.024
204	17.00	0.10	0.064	0.040	(0.058)	0.024
205	17.08	0.17	0.107	0.039	(0.096)	0.067
206	17.17	0.17	0.107	0.039	(0.096)	0.067
207	17.25	0.17	0.107	0.039	(0.096)	0.068
208	17.33	0.17	0.107	0.039	(0.096)	0.068
209	17.42	0.17	0.107	0.039	(0.096)	0.068
210	17.50	0.17	0.107	0.038	(0.096)	0.068
211	17.58	0.17	0.107	0.038	(0.096)	0.068
212	17.67	0.17	0.107	0.038	(0.096)	0.069
213	17.75	0.17	0.107	0.038	(0.096)	0.069
214	17.83	0.13	0.085	0.038	(0.077)	0.048
215	17.92	0.13	0.085	0.037	(0.077)	0.048
216	18.00	0.13	0.085	0.037	(0.077)	0.048
217	18.08	0.13	0.085	0.037	(0.077)	0.048
218	18.17	0.13	0.085	0.037	(0.077)	0.048
219	18.25	0.13	0.085	0.037	(0.077)	0.049
220	18.33	0.13	0.085	0.036	(0.077)	0.049
221	18.42	0.13	0.085	0.036	(0.077)	0.049
222	18.50	0.13	0.085	0.036	(0.077)	0.049
223	18.58	0.10	0.064	0.036	(0.058)	0.028
224	18.67	0.10	0.064	0.036	(0.058)	0.028
225	18.75	0.10	0.064	0.036	(0.058)	0.028
226	18.83	0.07	0.043	0.035	(0.038)	0.007
227	18.92	0.07	0.043	0.035	(0.038)	0.007
228	19.00	0.07	0.043	0.035	(0.038)	0.008
229	19.08	0.10	0.064	0.035	(0.058)	0.029
230	19.17	0.10	0.064	0.035	(0.058)	0.029
231	19.25	0.10	0.064	0.035	(0.058)	0.029
232	19.33	0.13	0.085	0.034	(0.077)	0.051
233	19.42	0.13	0.085	0.034	(0.077)	0.051
234	19.50	0.13	0.085	0.034	(0.077)	0.051
235	19.58	0.10	0.064	0.034	(0.058)	0.030
236	19.67	0.10	0.064	0.034	(0.058)	0.030
237	19.75	0.10	0.064	0.034	(0.058)	0.030
238	19.83	0.07	0.043	0.034	(0.038)	0.009
239	19.92	0.07	0.043	0.033	(0.038)	0.009
240	20.00	0.07	0.043	0.033	(0.038)	0.009
241	20.08	0.10	0.064	0.033	(0.058)	0.031
242	20.17	0.10	0.064	0.033	(0.058)	0.031
243	20.25	0.10	0.064	0.033	(0.058)	0.031
244	20.33	0.10	0.064	0.033	(0.058)	0.031
245	20.42	0.10	0.064	0.032	(0.058)	0.031

246	20.50	0.10	0.064	0.032	(	0.058)	0.032
247	20.58	0.10	0.064	0.032	(	0.058)	0.032
248	20.67	0.10	0.064	0.032	(	0.058)	0.032
249	20.75	0.10	0.064	0.032	(	0.058)	0.032
250	20.83	0.07	0.043	0.032	(	0.038)	0.011
251	20.92	0.07	0.043	0.032	(	0.038)	0.011
252	21.00	0.07	0.043	0.032	(	0.038)	0.011
253	21.08	0.10	0.064	0.031	(	0.058)	0.033
254	21.17	0.10	0.064	0.031	(	0.058)	0.033
255	21.25	0.10	0.064	0.031	(	0.058)	0.033
256	21.33	0.07	0.043	0.031	(	0.038)	0.012
257	21.42	0.07	0.043	0.031	(	0.038)	0.012
258	21.50	0.07	0.043	0.031	(	0.038)	0.012
259	21.58	0.10	0.064	0.031	(	0.058)	0.033
260	21.67	0.10	0.064	0.031	(	0.058)	0.033
261	21.75	0.10	0.064	0.031	(	0.058)	0.033
262	21.83	0.07	0.043	0.030	(	0.038)	0.012
263	21.92	0.07	0.043	0.030	(	0.038)	0.012
264	22.00	0.07	0.043	0.030	(	0.038)	0.012
265	22.08	0.10	0.064	0.030	(	0.058)	0.034
266	22.17	0.10	0.064	0.030	(	0.058)	0.034
267	22.25	0.10	0.064	0.030	(	0.058)	0.034
268	22.33	0.07	0.043	0.030	(	0.038)	0.013
269	22.42	0.07	0.043	0.030	(	0.038)	0.013
270	22.50	0.07	0.043	0.030	(	0.038)	0.013
271	22.58	0.07	0.043	0.030	(	0.038)	0.013
272	22.67	0.07	0.043	0.029	(	0.038)	0.013
273	22.75	0.07	0.043	0.029	(	0.038)	0.013
274	22.83	0.07	0.043	0.029	(	0.038)	0.013
275	22.92	0.07	0.043	0.029	(	0.038)	0.013
276	23.00	0.07	0.043	0.029	(	0.038)	0.013
277	23.08	0.07	0.043	0.029	(	0.038)	0.014
278	23.17	0.07	0.043	0.029	(	0.038)	0.014
279	23.25	0.07	0.043	0.029	(	0.038)	0.014
280	23.33	0.07	0.043	0.029	(	0.038)	0.014
281	23.42	0.07	0.043	0.029	(	0.038)	0.014
282	23.50	0.07	0.043	0.029	(	0.038)	0.014
283	23.58	0.07	0.043	0.029	(	0.038)	0.014
284	23.67	0.07	0.043	0.029	(	0.038)	0.014
285	23.75	0.07	0.043	0.029	(	0.038)	0.014
286	23.83	0.07	0.043	0.029	(	0.038)	0.014
287	23.92	0.07	0.043	0.029	(	0.038)	0.014
288	24.00	0.07	0.043	0.029	(	0.038)	0.014

(Loss Rate Not Used)

Sum = 100.0 Sum = 48.5

Flood volume = Effective rainfall 4.04(In)
times area 2.0(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 1.29(In)
Total soil loss = 0.214(Ac.Ft)
Total rainfall = 5.33(In)

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Flood volume =       29167.9 Cubic Feet
Total soil loss =        9334.3 Cubic Feet
---------------------------------------------------------------------
 Peak flow rate of this hydrograph =      1.356(CFS)
---------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                     24 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-----------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0001      0.01  Q         |         |         |         |
  0+15       0.0001      0.01  Q         |         |         |         |
  0+20       0.0002      0.01  Q         |         |         |         |
  0+25       0.0003      0.01  Q         |         |         |         |
  0+30       0.0004      0.01  Q         |         |         |         |
  0+35       0.0005      0.01  Q         |         |         |         |
  0+40       0.0006      0.01  Q         |         |         |         |
  0+45       0.0007      0.01  Q         |         |         |         |
  0+50       0.0008      0.02  Q         |         |         |         |
  0+55       0.0009      0.02  Q         |         |         |         |
  1+ 0       0.0010      0.02  Q         |         |         |         |
  1+ 5       0.0011      0.01  Q         |         |         |         |
  1+10       0.0012      0.01  Q         |         |         |         |
  1+15       0.0013      0.01  Q         |         |         |         |
  1+20       0.0014      0.01  Q         |         |         |         |
  1+25       0.0015      0.01  Q         |         |         |         |
  1+30       0.0015      0.01  Q         |         |         |         |
  1+35       0.0016      0.01  Q         |         |         |         |
  1+40       0.0017      0.01  Q         |         |         |         |
  1+45       0.0018      0.01  Q         |         |         |         |
  1+50       0.0019      0.02  Q         |         |         |         |
  1+55       0.0020      0.02  Q         |         |         |         |
  2+ 0       0.0021      0.02  Q         |         |         |         |
  2+ 5       0.0023      0.02  Q         |         |         |         |
  2+10       0.0024      0.02  Q         |         |         |         |
  2+15       0.0025      0.02  Q         |         |         |         |
  2+20       0.0026      0.02  Q         |         |         |         |
  2+25       0.0027      0.02  Q         |         |         |         |
  2+30       0.0028      0.02  Q         |         |         |         |
  2+35       0.0030      0.03  Q         |         |         |         |
  2+40       0.0032      0.03  Q         |         |         |         |
  2+45       0.0035      0.03  Q         |         |         |         |
  2+50       0.0037      0.04  Q         |         |         |         |
  2+55       0.0040      0.04  Q         |         |         |         |
  3+ 0       0.0042      0.04  Q         |         |         |         |
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3+ 5	0.0045	0.04	Q	|	|	|	|
3+10	0.0047	0.04	Q	|	|	|	|
3+15	0.0050	0.04	Q	|	|	|	|
3+20	0.0053	0.04	Q	|	|	|	|
3+25	0.0056	0.04	Q	|	|	|	|
3+30	0.0058	0.04	Q	|	|	|	|
3+35	0.0061	0.04	Q	|	|	|	|
3+40	0.0064	0.04	Q	|	|	|	|
3+45	0.0067	0.04	Q	|	|	|	|
3+50	0.0072	0.07	Q	|	|	|	|
3+55	0.0077	0.08	Q	|	|	|	|
4+ 0	0.0084	0.09	Q	|	|	|	|
4+ 5	0.0090	0.09	Q	|	|	|	|
4+10	0.0096	0.09	Q	|	|	|	|
4+15	0.0102	0.09	Q	|	|	|	|
4+20	0.0110	0.11	Q	|	|	|	|
4+25	0.0119	0.13	Q	|	|	|	|
4+30	0.0128	0.13	Q	|	|	|	|
4+35	0.0137	0.14	Q	|	|	|	|
4+40	0.0147	0.14	Q	|	|	|	|
4+45	0.0156	0.14	Q	|	|	|	|
4+50	0.0167	0.16	Q	|	|	|	|
4+55	0.0180	0.18	QV	|	|	|	|
5+ 0	0.0192	0.18	QV	|	|	|	|
5+ 5	0.0202	0.14	QV	|	|	|	|
5+10	0.0209	0.11	QV	|	|	|	|
5+15	0.0216	0.10	QV	|	|	|	|
5+20	0.0224	0.12	QV	|	|	|	|
5+25	0.0234	0.14	QV	|	|	|	|
5+30	0.0243	0.14	QV	|	|	|	|
5+35	0.0255	0.17	QV	|	|	|	|
5+40	0.0268	0.18	QV	|	|	|	|
5+45	0.0281	0.19	QV	|	|	|	|
5+50	0.0294	0.19	QV	|	|	|	|
5+55	0.0307	0.19	QV	|	|	|	|
6+ 0	0.0320	0.19	QV	|	|	|	|
6+ 5	0.0334	0.21	QV	|	|	|	|
6+10	0.0350	0.23	Q V	|	|	|	|
6+15	0.0366	0.23	Q V	|	|	|	|
6+20	0.0383	0.24	Q V	|	|	|	|
6+25	0.0399	0.24	Q V	|	|	|	|
6+30	0.0415	0.24	Q V	|	|	|	|
6+35	0.0433	0.26	|QV	|	|	|	|
6+40	0.0452	0.28	|QV	|	|	|	|
6+45	0.0472	0.28	|QV	|	|	|	|
6+50	0.0491	0.28	|QV	|	|	|	|
6+55	0.0511	0.28	|Q V	|	|	|	|
7+ 0	0.0530	0.28	|Q V	|	|	|	|
7+ 5	0.0550	0.28	|Q V	|	|	|	|
7+10	0.0569	0.29	|Q V	|	|	|	|

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 7+15       0.0589      0.29  |Q V      |         |         |         |
 7+20       0.0610      0.31  |Q V      |         |         |         |
 7+25       0.0633      0.33  |Q V      |         |         |         |
 7+30       0.0656      0.33  |Q V      |         |         |         |
 7+35       0.0680      0.35  |Q  V     |         |         |         |
 7+40       0.0705      0.37  |Q  V     |         |         |         |
 7+45       0.0731      0.37  |Q  V     |         |         |         |
 7+50       0.0759      0.40  |Q  V     |         |         |         |
 7+55       0.0787      0.42  |Q  V     |         |         |         |
 8+ 0       0.0816      0.42  |Q  V     |         |         |         |
 8+ 5       0.0848      0.46  |Q   V    |         |         |         |
 8+10       0.0882      0.50  |Q   V    |         |         |         |
 8+15       0.0917      0.51  | Q  V    |         |         |         |
 8+20       0.0952      0.51  | Q  V    |         |         |         |
 8+25       0.0987      0.51  | Q  V    |         |         |         |
 8+30       0.1022      0.51  | Q   V   |         |         |         |
 8+35       0.1059      0.53  | Q   V   |         |         |         |
 8+40       0.1097      0.55  | Q   V   |         |         |         |
 8+45       0.1135      0.55  | Q   V   |         |         |         |
 8+50       0.1175      0.58  | Q    V  |         |         |         |
 8+55       0.1216      0.59  | Q    V  |         |         |         |
 9+ 0       0.1257      0.60  | Q    V  |         |         |         |
 9+ 5       0.1301      0.64  | Q    V  |         |         |         |
 9+10       0.1348      0.68  | Q     V |         |         |         |
 9+15       0.1395      0.68  | Q     V |         |         |         |
 9+20       0.1444      0.71  | Q     V |         |         |         |
 9+25       0.1494      0.73  | Q     V |         |         |         |
 9+30       0.1544      0.73  | Q      V|         |         |         |
 9+35       0.1596      0.75  |  Q     V|         |         |         |
 9+40       0.1649      0.77  |  Q     V|         |         |         |
 9+45       0.1702      0.77  |  Q      V         |         |         |
 9+50       0.1757      0.80  |  Q      V         |         |         |
 9+55       0.1813      0.82  |  Q      V         |         |         |
10+ 0       0.1870      0.82  |  Q      |V        |         |         |
10+ 5       0.1916      0.67  | Q       |V        |         |         |
10+10       0.1953      0.55  | Q       |V        |         |         |
10+15       0.1990      0.53  | Q       |V        |         |         |
10+20       0.2026      0.52  | Q       | V       |         |         |
10+25       0.2062      0.52  | Q       | V       |         |         |
10+30       0.2098      0.52  | Q       | V       |         |         |
10+35       0.2141      0.63  | Q       | V       |         |         |
10+40       0.2191      0.72  | Q       |  V      |         |         |
10+45       0.2242      0.74  | Q       |  V      |         |         |
10+50       0.2293      0.74  | Q       |  V      |         |         |
10+55       0.2344      0.74  | Q       |  V      |         |         |
11+ 0       0.2395      0.74  | Q       |   V     |         |         |
11+ 5       0.2444      0.72  | Q       |   V     |         |         |
11+10       0.2493      0.70  | Q       |   V     |         |         |
11+15       0.2541      0.70  | Q       |    V    |         |         |
11+20       0.2589      0.70  | Q       |    V    |         |         |
```

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11+25       0.2637      0.70  | Q       |    V    |         |         |
11+30       0.2686      0.70  | Q       |     V   |         |         |
11+35       0.2731      0.66  | Q       |     V   |         |         |
11+40       0.2774      0.62  | Q       |     V   |         |         |
11+45       0.2817      0.62  | Q       |     V   |         |         |
11+50       0.2861      0.64  | Q       |      V  |         |         |
11+55       0.2906      0.66  | Q       |      V  |         |         |
12+ 0       0.2952      0.66  | Q       |      V  |         |         |
12+ 5       0.3008      0.82  |  Q      |      V  |         |         |
12+10       0.3072      0.94  |  Q      |       V |         |         |
12+15       0.3138      0.96  |  Q      |       V |         |         |
12+20       0.3206      0.99  |  Q      |        V|         |         |
12+25       0.3275      1.00  |   Q     |        V|         |         |
12+30       0.3345      1.01  |   Q     |        V|         |         |
12+35       0.3417      1.05  |   Q     |         V         |         |
12+40       0.3492      1.09  |   Q     |         V         |         |
12+45       0.3567      1.09  |   Q     |         |V        |         |
12+50       0.3644      1.12  |   Q     |         |V        |         |
12+55       0.3722      1.13  |   Q     |         | V       |         |
13+ 0       0.3801      1.14  |   Q     |         | V       |         |
13+ 5       0.3887      1.25  |   Q     |         |  V      |         |
13+10       0.3979      1.34  |    Q    |         |  V      |         |
13+15       0.4072      1.35  |    Q    |         |   V     |         |
13+20       0.4165      1.35  |    Q    |         |   V     |         |
13+25       0.4258      1.36  |    Q    |         |    V    |         |
13+30       0.4352      1.36  |    Q    |         |    V    |         |
13+35       0.4428      1.11  |   Q     |         |     V   |         |
13+40       0.4492      0.93  |  Q      |         |     V   |         |
13+45       0.4554      0.90  |  Q      |         |      V  |         |
13+50       0.4615      0.89  |  Q      |         |      V  |         |
13+55       0.4676      0.89  |  Q      |         |      V  |         |
14+ 0       0.4737      0.89  |  Q      |         |       V |         |
14+ 5       0.4805      0.98  |  Q      |         |       V |         |
14+10       0.4877      1.05  |   Q     |         |        V|         |
14+15       0.4950      1.06  |   Q     |         |        V|         |
14+20       0.5021      1.04  |   Q     |         |        V|         |
14+25       0.5092      1.02  |   Q     |         |         V         |
14+30       0.5162      1.02  |   Q     |         |         V         |
14+35       0.5232      1.02  |   Q     |         |         |V        |
14+40       0.5302      1.02  |   Q     |         |         |V        |
14+45       0.5373      1.02  |   Q     |         |         | V       |
14+50       0.5442      1.00  |  Q      |         |         | V       |
14+55       0.5509      0.98  |  Q      |         |         | V       |
15+ 0       0.5577      0.98  |  Q      |         |         |  V      |
15+ 5       0.5643      0.96  |  Q      |         |         |  V      |
15+10       0.5708      0.94  |  Q      |         |         |   V     |
15+15       0.5772      0.94  |  Q      |         |         |   V     |
15+20       0.5835      0.92  |  Q      |         |         |   V     |
15+25       0.5897      0.90  |  Q      |         |         |    V    |
15+30       0.5959      0.90  |  Q      |         |         |    V    |
```

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15+35       0.6015      0.81  |  Q      |          |          |    V    |
15+40       0.6066      0.74  | Q       |          |          |     V   |
15+45       0.6116      0.73  | Q       |          |          |     V   |
15+50       0.6166      0.73  | Q       |          |          |     V   |
15+55       0.6216      0.73  | Q       |          |          |      V  |
16+ 0       0.6267      0.73  | Q       |          |          |      V  |
16+ 5       0.6294      0.40  |Q        |          |          |      V  |
16+10       0.6304      0.14  Q         |          |          |      V  |
16+15       0.6311      0.10  Q         |          |          |      V  |
16+20       0.6317      0.09  Q         |          |          |      V  |
16+25       0.6323      0.09  Q         |          |          |      V  |
16+30       0.6329      0.09  Q         |          |          |      V  |
16+35       0.6334      0.07  Q         |          |          |      V  |
16+40       0.6337      0.05  Q         |          |          |      V  |
16+45       0.6340      0.05  Q         |          |          |      V  |
16+50       0.6344      0.05  Q         |          |          |      V  |
16+55       0.6347      0.05  Q         |          |          |      V  |
17+ 0       0.6350      0.05  Q         |          |          |      V  |
17+ 5       0.6357      0.09  Q         |          |          |      V  |
17+10       0.6366      0.13  Q         |          |          |       V |
17+15       0.6375      0.13  Q         |          |          |       V |
17+20       0.6384      0.14  Q         |          |          |       V |
17+25       0.6394      0.14  Q         |          |          |       V |
17+30       0.6403      0.14  Q         |          |          |       V |
17+35       0.6413      0.14  Q         |          |          |       V |
17+40       0.6422      0.14  Q         |          |          |       V |
17+45       0.6432      0.14  Q         |          |          |       V |
17+50       0.6440      0.12  Q         |          |          |       V |
17+55       0.6446      0.10  Q         |          |          |       V |
18+ 0       0.6453      0.10  Q         |          |          |       V |
18+ 5       0.6460      0.10  Q         |          |          |       V |
18+10       0.6466      0.10  Q         |          |          |       V |
18+15       0.6473      0.10  Q         |          |          |       V |
18+20       0.6480      0.10  Q         |          |          |       V |
18+25       0.6487      0.10  Q         |          |          |       V |
18+30       0.6493      0.10  Q         |          |          |       V |
18+35       0.6499      0.08  Q         |          |          |       V |
18+40       0.6503      0.06  Q         |          |          |       V |
18+45       0.6507      0.06  Q         |          |          |       V |
18+50       0.6509      0.03  Q         |          |          |       V |
18+55       0.6510      0.02  Q         |          |          |       V |
19+ 0       0.6511      0.02  Q         |          |          |       V |
19+ 5       0.6514      0.04  Q         |          |          |       V |
19+10       0.6518      0.05  Q         |          |          |       V |
19+15       0.6522      0.06  Q         |          |          |       V |
19+20       0.6527      0.08  Q         |          |          |       V |
19+25       0.6534      0.10  Q         |          |          |        V|
19+30       0.6541      0.10  Q         |          |          |        V|
19+35       0.6547      0.08  Q         |          |          |        V|
19+40       0.6551      0.06  Q         |          |          |        V|
```

19+45	0.6555	0.06	Q	|	|	|	V|
19+50	0.6558	0.04	Q	|	|	|	V|
19+55	0.6560	0.02	Q	|	|	|	V|
20+ 0	0.6561	0.02	Q	|	|	|	V|
20+ 5	0.6564	0.04	Q	|	|	|	V|
20+10	0.6568	0.06	Q	|	|	|	V|
20+15	0.6572	0.06	Q	|	|	|	V|
20+20	0.6576	0.06	Q	|	|	|	V|
20+25	0.6581	0.06	Q	|	|	|	V|
20+30	0.6585	0.06	Q	|	|	|	V|
20+35	0.6589	0.06	Q	|	|	|	V|
20+40	0.6594	0.06	Q	|	|	|	V|
20+45	0.6598	0.06	Q	|	|	|	V|
20+50	0.6601	0.04	Q	|	|	|	V|
20+55	0.6603	0.03	Q	|	|	|	V|
21+ 0	0.6604	0.02	Q	|	|	|	V|
21+ 5	0.6607	0.04	Q	|	|	|	V|
21+10	0.6612	0.06	Q	|	|	|	V|
21+15	0.6616	0.06	Q	|	|	|	V|
21+20	0.6619	0.04	Q	|	|	|	V|
21+25	0.6621	0.03	Q	|	|	|	V|
21+30	0.6623	0.02	Q	|	|	|	V|
21+35	0.6626	0.05	Q	|	|	|	V|
21+40	0.6630	0.06	Q	|	|	|	V|
21+45	0.6635	0.07	Q	|	|	|	V|
21+50	0.6638	0.05	Q	|	|	|	V|
21+55	0.6640	0.03	Q	|	|	|	V|
22+ 0	0.6642	0.03	Q	|	|	|	V|
22+ 5	0.6645	0.05	Q	|	|	|	V|
22+10	0.6649	0.06	Q	|	|	|	V|
22+15	0.6654	0.07	Q	|	|	|	V|
22+20	0.6657	0.05	Q	|	|	|	V|
22+25	0.6659	0.03	Q	|	|	|	V|
22+30	0.6661	0.03	Q	|	|	|	V|
22+35	0.6663	0.03	Q	|	|	|	V|
22+40	0.6665	0.03	Q	|	|	|	V|
22+45	0.6666	0.03	Q	|	|	|	V|
22+50	0.6668	0.03	Q	|	|	|	V|
22+55	0.6670	0.03	Q	|	|	|	V|
23+ 0	0.6672	0.03	Q	|	|	|	V|
23+ 5	0.6674	0.03	Q	|	|	|	V|
23+10	0.6676	0.03	Q	|	|	|	V|
23+15	0.6678	0.03	Q	|	|	|	V|
23+20	0.6680	0.03	Q	|	|	|	V|
23+25	0.6681	0.03	Q	|	|	|	V|
23+30	0.6683	0.03	Q	|	|	|	V|
23+35	0.6685	0.03	Q	|	|	|	V|
23+40	0.6687	0.03	Q	|	|	|	V|
23+45	0.6689	0.03	Q	|	|	|	V|
23+50	0.6691	0.03	Q	|	|	|	V|

```
   23+55       0.6693      0.03  Q         |         |         |        V|
   24+ 0       0.6695      0.03  Q         |         |         |        V|
   24+ 5       0.6696      0.01  Q         |         |         |        V|
   24+10       0.6696      0.00  Q         |         |         |        V|
   24+15       0.6696      0.00  Q         |         |         |         V
-----------------------------------------------------------------------
```

10-YEAR 24 HR UNIT HYDROGRAPH
POST-DEVELOPED CONDITION

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0
                Study date  12/13/23 File: 162POSTUH2410.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6481

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
Beyond Food Mart Perris Service Station
Post Development UH
10 yr
24 hr
-------------------------------------------------------------------
Drainage Area =       1.99(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.99(Ac.)  =
0.003 Sq. Mi.
Length along longest watercourse =     247.47(Ft.)
Length along longest watercourse measured to centroid =     152.57(Ft.)
Length along longest watercourse =      0.047 Mi.
Length along longest watercourse measured to centroid =      0.029 Mi.
Difference in elevation =       3.01(Ft.)
Slope along watercourse =     64.2211 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.013 Hr.
Lag time =     0.80 Min.
25% of lag time =     0.20 Min.
40% of lag time =     0.32 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:
```

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            2.05                    4.08

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            5.33                   10.61

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.050(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    3.399(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    3.399(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.990           75.00         0.800
 Total Area Entered =      1.99(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
75.0  75.0      0.303     0.800        0.085       1.000      0.085
                                                  Sum (F) =   0.085
Area averaged mean soil loss (F) (In/Hr) =  0.085
Minimum soil loss rate ((In/Hr)) =  0.042
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.260
-------------------------------------------------------------------

                U n i t  H y d r o g r a p h
                        VALLEY S-Curve
-------------------------------------------------------------------
                Unit Hydrograph Data
-------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %            (CFS)
-------------------------------------------------------------------
    1   0.083        627.943         76.257              1.529
    2   0.167       1255.885         23.743              0.476
                                Sum = 100.000   Sum=       2.006
-------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value
```

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.150)	0.007	0.020
2	0.17	0.07	0.027	(0.150)	0.007	0.020
3	0.25	0.07	0.027	(0.149)	0.007	0.020
4	0.33	0.10	0.041	(0.149)	0.011	0.030
5	0.42	0.10	0.041	(0.148)	0.011	0.030
6	0.50	0.10	0.041	(0.148)	0.011	0.030
7	0.58	0.10	0.041	(0.147)	0.011	0.030
8	0.67	0.10	0.041	(0.146)	0.011	0.030
9	0.75	0.10	0.041	(0.146)	0.011	0.030
10	0.83	0.13	0.054	(0.145)	0.014	0.040
11	0.92	0.13	0.054	(0.145)	0.014	0.040
12	1.00	0.13	0.054	(0.144)	0.014	0.040
13	1.08	0.10	0.041	(0.143)	0.011	0.030
14	1.17	0.10	0.041	(0.143)	0.011	0.030
15	1.25	0.10	0.041	(0.142)	0.011	0.030
16	1.33	0.10	0.041	(0.142)	0.011	0.030
17	1.42	0.10	0.041	(0.141)	0.011	0.030
18	1.50	0.10	0.041	(0.141)	0.011	0.030
19	1.58	0.10	0.041	(0.140)	0.011	0.030
20	1.67	0.10	0.041	(0.140)	0.011	0.030
21	1.75	0.10	0.041	(0.139)	0.011	0.030
22	1.83	0.13	0.054	(0.138)	0.014	0.040
23	1.92	0.13	0.054	(0.138)	0.014	0.040
24	2.00	0.13	0.054	(0.137)	0.014	0.040
25	2.08	0.13	0.054	(0.137)	0.014	0.040
26	2.17	0.13	0.054	(0.136)	0.014	0.040
27	2.25	0.13	0.054	(0.136)	0.014	0.040
28	2.33	0.13	0.054	(0.135)	0.014	0.040
29	2.42	0.13	0.054	(0.135)	0.014	0.040
30	2.50	0.13	0.054	(0.134)	0.014	0.040
31	2.58	0.17	0.068	(0.133)	0.018	0.050
32	2.67	0.17	0.068	(0.133)	0.018	0.050
33	2.75	0.17	0.068	(0.132)	0.018	0.050
34	2.83	0.17	0.068	(0.132)	0.018	0.050
35	2.92	0.17	0.068	(0.131)	0.018	0.050
36	3.00	0.17	0.068	(0.131)	0.018	0.050
37	3.08	0.17	0.068	(0.130)	0.018	0.050
38	3.17	0.17	0.068	(0.130)	0.018	0.050
39	3.25	0.17	0.068	(0.129)	0.018	0.050
40	3.33	0.17	0.068	(0.129)	0.018	0.050
41	3.42	0.17	0.068	(0.128)	0.018	0.050
42	3.50	0.17	0.068	(0.127)	0.018	0.050
43	3.58	0.17	0.068	(0.127)	0.018	0.050
44	3.67	0.17	0.068	(0.126)	0.018	0.050
45	3.75	0.17	0.068	(0.126)	0.018	0.050
46	3.83	0.20	0.082	(0.125)	0.021	0.060
47	3.92	0.20	0.082	(0.125)	0.021	0.060

48	4.00	0.20	0.082	(0.124)	0.021	0.060
49	4.08	0.20	0.082	(0.124)	0.021	0.060
50	4.17	0.20	0.082	(0.123)	0.021	0.060
51	4.25	0.20	0.082	(0.123)	0.021	0.060
52	4.33	0.23	0.095	(0.122)	0.025	0.070
53	4.42	0.23	0.095	(0.122)	0.025	0.070
54	4.50	0.23	0.095	(0.121)	0.025	0.070
55	4.58	0.23	0.095	(0.121)	0.025	0.070
56	4.67	0.23	0.095	(0.120)	0.025	0.070
57	4.75	0.23	0.095	(0.120)	0.025	0.070
58	4.83	0.27	0.109	(0.119)	0.028	0.080
59	4.92	0.27	0.109	(0.119)	0.028	0.080
60	5.00	0.27	0.109	(0.118)	0.028	0.080
61	5.08	0.20	0.082	(0.118)	0.021	0.060
62	5.17	0.20	0.082	(0.117)	0.021	0.060
63	5.25	0.20	0.082	(0.117)	0.021	0.060
64	5.33	0.23	0.095	(0.116)	0.025	0.070
65	5.42	0.23	0.095	(0.116)	0.025	0.070
66	5.50	0.23	0.095	(0.115)	0.025	0.070
67	5.58	0.27	0.109	(0.114)	0.028	0.080
68	5.67	0.27	0.109	(0.114)	0.028	0.080
69	5.75	0.27	0.109	(0.113)	0.028	0.080
70	5.83	0.27	0.109	(0.113)	0.028	0.080
71	5.92	0.27	0.109	(0.112)	0.028	0.080
72	6.00	0.27	0.109	(0.112)	0.028	0.080
73	6.08	0.30	0.122	(0.111)	0.032	0.091
74	6.17	0.30	0.122	(0.111)	0.032	0.091
75	6.25	0.30	0.122	(0.110)	0.032	0.091
76	6.33	0.30	0.122	(0.110)	0.032	0.091
77	6.42	0.30	0.122	(0.110)	0.032	0.091
78	6.50	0.30	0.122	(0.109)	0.032	0.091
79	6.58	0.33	0.136	(0.109)	0.035	0.101
80	6.67	0.33	0.136	(0.108)	0.035	0.101
81	6.75	0.33	0.136	(0.108)	0.035	0.101
82	6.83	0.33	0.136	(0.107)	0.035	0.101
83	6.92	0.33	0.136	(0.107)	0.035	0.101
84	7.00	0.33	0.136	(0.106)	0.035	0.101
85	7.08	0.33	0.136	(0.106)	0.035	0.101
86	7.17	0.33	0.136	(0.105)	0.035	0.101
87	7.25	0.33	0.136	(0.105)	0.035	0.101
88	7.33	0.37	0.150	(0.104)	0.039	0.111
89	7.42	0.37	0.150	(0.104)	0.039	0.111
90	7.50	0.37	0.150	(0.103)	0.039	0.111
91	7.58	0.40	0.163	(0.103)	0.042	0.121
92	7.67	0.40	0.163	(0.102)	0.042	0.121
93	7.75	0.40	0.163	(0.102)	0.042	0.121
94	7.83	0.43	0.177	(0.101)	0.046	0.131
95	7.92	0.43	0.177	(0.101)	0.046	0.131
96	8.00	0.43	0.177	(0.100)	0.046	0.131
97	8.08	0.50	0.204	(0.100)	0.053	0.151

98	8.17	0.50	0.204	(0.099)	0.053	0.151
99	8.25	0.50	0.204	(0.099)	0.053	0.151
100	8.33	0.50	0.204	(0.099)	0.053	0.151
101	8.42	0.50	0.204	(0.098)	0.053	0.151
102	8.50	0.50	0.204	(0.098)	0.053	0.151
103	8.58	0.53	0.218	(0.097)	0.057	0.161
104	8.67	0.53	0.218	(0.097)	0.057	0.161
105	8.75	0.53	0.218	(0.096)	0.057	0.161
106	8.83	0.57	0.231	(0.096)	0.060	0.171
107	8.92	0.57	0.231	(0.095)	0.060	0.171
108	9.00	0.57	0.231	(0.095)	0.060	0.171
109	9.08	0.63	0.258	(0.094)	0.067	0.191
110	9.17	0.63	0.258	(0.094)	0.067	0.191
111	9.25	0.63	0.258	(0.094)	0.067	0.191
112	9.33	0.67	0.272	(0.093)	0.071	0.201
113	9.42	0.67	0.272	(0.093)	0.071	0.201
114	9.50	0.67	0.272	(0.092)	0.071	0.201
115	9.58	0.70	0.286	(0.092)	0.074	0.211
116	9.67	0.70	0.286	(0.091)	0.074	0.211
117	9.75	0.70	0.286	(0.091)	0.074	0.211
118	9.83	0.73	0.299	(0.090)	0.078	0.221
119	9.92	0.73	0.299	(0.090)	0.078	0.221
120	10.00	0.73	0.299	(0.090)	0.078	0.221
121	10.08	0.50	0.204	(0.089)	0.053	0.151
122	10.17	0.50	0.204	(0.089)	0.053	0.151
123	10.25	0.50	0.204	(0.088)	0.053	0.151
124	10.33	0.50	0.204	(0.088)	0.053	0.151
125	10.42	0.50	0.204	(0.087)	0.053	0.151
126	10.50	0.50	0.204	(0.087)	0.053	0.151
127	10.58	0.67	0.272	(0.087)	0.071	0.201
128	10.67	0.67	0.272	(0.086)	0.071	0.201
129	10.75	0.67	0.272	(0.086)	0.071	0.201
130	10.83	0.67	0.272	(0.085)	0.071	0.201
131	10.92	0.67	0.272	(0.085)	0.071	0.201
132	11.00	0.67	0.272	(0.084)	0.071	0.201
133	11.08	0.63	0.258	(0.084)	0.067	0.191
134	11.17	0.63	0.258	(0.084)	0.067	0.191
135	11.25	0.63	0.258	(0.083)	0.067	0.191
136	11.33	0.63	0.258	(0.083)	0.067	0.191
137	11.42	0.63	0.258	(0.082)	0.067	0.191
138	11.50	0.63	0.258	(0.082)	0.067	0.191
139	11.58	0.57	0.231	(0.082)	0.060	0.171
140	11.67	0.57	0.231	(0.081)	0.060	0.171
141	11.75	0.57	0.231	(0.081)	0.060	0.171
142	11.83	0.60	0.245	(0.080)	0.064	0.181
143	11.92	0.60	0.245	(0.080)	0.064	0.181
144	12.00	0.60	0.245	(0.080)	0.064	0.181
145	12.08	0.83	0.340	0.079	(0.088)	0.261
146	12.17	0.83	0.340	0.079	(0.088)	0.261
147	12.25	0.83	0.340	0.078	(0.088)	0.262

148	12.33	0.87	0.354	0.078	(0.092)	0.276
149	12.42	0.87	0.354	0.078	(0.092)	0.276
150	12.50	0.87	0.354	0.077	(0.092)	0.276
151	12.58	0.93	0.381	0.077	(0.099)	0.304
152	12.67	0.93	0.381	0.076	(0.099)	0.304
153	12.75	0.93	0.381	0.076	(0.099)	0.305
154	12.83	0.97	0.394	0.076	(0.103)	0.319
155	12.92	0.97	0.394	0.075	(0.103)	0.319
156	13.00	0.97	0.394	0.075	(0.103)	0.319
157	13.08	1.13	0.462	0.075	(0.120)	0.388
158	13.17	1.13	0.462	0.074	(0.120)	0.388
159	13.25	1.13	0.462	0.074	(0.120)	0.389
160	13.33	1.13	0.462	0.073	(0.120)	0.389
161	13.42	1.13	0.462	0.073	(0.120)	0.389
162	13.50	1.13	0.462	0.073	(0.120)	0.390
163	13.58	0.77	0.313	0.072	(0.081)	0.240
164	13.67	0.77	0.313	0.072	(0.081)	0.241
165	13.75	0.77	0.313	0.072	(0.081)	0.241
166	13.83	0.77	0.313	0.071	(0.081)	0.242
167	13.92	0.77	0.313	0.071	(0.081)	0.242
168	14.00	0.77	0.313	0.070	(0.081)	0.242
169	14.08	0.90	0.367	0.070	(0.095)	0.297
170	14.17	0.90	0.367	0.070	(0.095)	0.297
171	14.25	0.90	0.367	0.069	(0.095)	0.298
172	14.33	0.87	0.354	0.069	(0.092)	0.284
173	14.42	0.87	0.354	0.069	(0.092)	0.285
174	14.50	0.87	0.354	0.068	(0.092)	0.285
175	14.58	0.87	0.354	0.068	(0.092)	0.286
176	14.67	0.87	0.354	0.068	(0.092)	0.286
177	14.75	0.87	0.354	0.067	(0.092)	0.286
178	14.83	0.83	0.340	0.067	(0.088)	0.273
179	14.92	0.83	0.340	0.067	(0.088)	0.273
180	15.00	0.83	0.340	0.066	(0.088)	0.274
181	15.08	0.80	0.326	0.066	(0.085)	0.260
182	15.17	0.80	0.326	0.066	(0.085)	0.261
183	15.25	0.80	0.326	0.065	(0.085)	0.261
184	15.33	0.77	0.313	0.065	(0.081)	0.248
185	15.42	0.77	0.313	0.065	(0.081)	0.248
186	15.50	0.77	0.313	0.064	(0.081)	0.248
187	15.58	0.63	0.258	0.064	(0.067)	0.194
188	15.67	0.63	0.258	0.064	(0.067)	0.195
189	15.75	0.63	0.258	0.063	(0.067)	0.195
190	15.83	0.63	0.258	0.063	(0.067)	0.195
191	15.92	0.63	0.258	0.063	(0.067)	0.196
192	16.00	0.63	0.258	0.062	(0.067)	0.196
193	16.08	0.13	0.054	(0.062)	0.014	0.040
194	16.17	0.13	0.054	(0.062)	0.014	0.040
195	16.25	0.13	0.054	(0.061)	0.014	0.040
196	16.33	0.13	0.054	(0.061)	0.014	0.040
197	16.42	0.13	0.054	(0.061)	0.014	0.040

198	16.50	0.13	0.054	(0.060)	0.014	0.040
199	16.58	0.10	0.041	(0.060)	0.011	0.030
200	16.67	0.10	0.041	(0.060)	0.011	0.030
201	16.75	0.10	0.041	(0.060)	0.011	0.030
202	16.83	0.10	0.041	(0.059)	0.011	0.030
203	16.92	0.10	0.041	(0.059)	0.011	0.030
204	17.00	0.10	0.041	(0.059)	0.011	0.030
205	17.08	0.17	0.068	(0.058)	0.018	0.050
206	17.17	0.17	0.068	(0.058)	0.018	0.050
207	17.25	0.17	0.068	(0.058)	0.018	0.050
208	17.33	0.17	0.068	(0.057)	0.018	0.050
209	17.42	0.17	0.068	(0.057)	0.018	0.050
210	17.50	0.17	0.068	(0.057)	0.018	0.050
211	17.58	0.17	0.068	(0.057)	0.018	0.050
212	17.67	0.17	0.068	(0.056)	0.018	0.050
213	17.75	0.17	0.068	(0.056)	0.018	0.050
214	17.83	0.13	0.054	(0.056)	0.014	0.040
215	17.92	0.13	0.054	(0.055)	0.014	0.040
216	18.00	0.13	0.054	(0.055)	0.014	0.040
217	18.08	0.13	0.054	(0.055)	0.014	0.040
218	18.17	0.13	0.054	(0.055)	0.014	0.040
219	18.25	0.13	0.054	(0.054)	0.014	0.040
220	18.33	0.13	0.054	(0.054)	0.014	0.040
221	18.42	0.13	0.054	(0.054)	0.014	0.040
222	18.50	0.13	0.054	(0.054)	0.014	0.040
223	18.58	0.10	0.041	(0.053)	0.011	0.030
224	18.67	0.10	0.041	(0.053)	0.011	0.030
225	18.75	0.10	0.041	(0.053)	0.011	0.030
226	18.83	0.07	0.027	(0.053)	0.007	0.020
227	18.92	0.07	0.027	(0.052)	0.007	0.020
228	19.00	0.07	0.027	(0.052)	0.007	0.020
229	19.08	0.10	0.041	(0.052)	0.011	0.030
230	19.17	0.10	0.041	(0.052)	0.011	0.030
231	19.25	0.10	0.041	(0.051)	0.011	0.030
232	19.33	0.13	0.054	(0.051)	0.014	0.040
233	19.42	0.13	0.054	(0.051)	0.014	0.040
234	19.50	0.13	0.054	(0.051)	0.014	0.040
235	19.58	0.10	0.041	(0.050)	0.011	0.030
236	19.67	0.10	0.041	(0.050)	0.011	0.030
237	19.75	0.10	0.041	(0.050)	0.011	0.030
238	19.83	0.07	0.027	(0.050)	0.007	0.020
239	19.92	0.07	0.027	(0.049)	0.007	0.020
240	20.00	0.07	0.027	(0.049)	0.007	0.020
241	20.08	0.10	0.041	(0.049)	0.011	0.030
242	20.17	0.10	0.041	(0.049)	0.011	0.030
243	20.25	0.10	0.041	(0.049)	0.011	0.030
244	20.33	0.10	0.041	(0.048)	0.011	0.030
245	20.42	0.10	0.041	(0.048)	0.011	0.030
246	20.50	0.10	0.041	(0.048)	0.011	0.030
247	20.58	0.10	0.041	(0.048)	0.011	0.030

248	20.67	0.10	0.041	(0.048)	0.011	0.030
249	20.75	0.10	0.041	(0.047)	0.011	0.030
250	20.83	0.07	0.027	(0.047)	0.007	0.020
251	20.92	0.07	0.027	(0.047)	0.007	0.020
252	21.00	0.07	0.027	(0.047)	0.007	0.020
253	21.08	0.10	0.041	(0.047)	0.011	0.030
254	21.17	0.10	0.041	(0.046)	0.011	0.030
255	21.25	0.10	0.041	(0.046)	0.011	0.030
256	21.33	0.07	0.027	(0.046)	0.007	0.020
257	21.42	0.07	0.027	(0.046)	0.007	0.020
258	21.50	0.07	0.027	(0.046)	0.007	0.020
259	21.58	0.10	0.041	(0.046)	0.011	0.030
260	21.67	0.10	0.041	(0.045)	0.011	0.030
261	21.75	0.10	0.041	(0.045)	0.011	0.030
262	21.83	0.07	0.027	(0.045)	0.007	0.020
263	21.92	0.07	0.027	(0.045)	0.007	0.020
264	22.00	0.07	0.027	(0.045)	0.007	0.020
265	22.08	0.10	0.041	(0.045)	0.011	0.030
266	22.17	0.10	0.041	(0.045)	0.011	0.030
267	22.25	0.10	0.041	(0.044)	0.011	0.030
268	22.33	0.07	0.027	(0.044)	0.007	0.020
269	22.42	0.07	0.027	(0.044)	0.007	0.020
270	22.50	0.07	0.027	(0.044)	0.007	0.020
271	22.58	0.07	0.027	(0.044)	0.007	0.020
272	22.67	0.07	0.027	(0.044)	0.007	0.020
273	22.75	0.07	0.027	(0.044)	0.007	0.020
274	22.83	0.07	0.027	(0.043)	0.007	0.020
275	22.92	0.07	0.027	(0.043)	0.007	0.020
276	23.00	0.07	0.027	(0.043)	0.007	0.020
277	23.08	0.07	0.027	(0.043)	0.007	0.020
278	23.17	0.07	0.027	(0.043)	0.007	0.020
279	23.25	0.07	0.027	(0.043)	0.007	0.020
280	23.33	0.07	0.027	(0.043)	0.007	0.020
281	23.42	0.07	0.027	(0.043)	0.007	0.020
282	23.50	0.07	0.027	(0.043)	0.007	0.020
283	23.58	0.07	0.027	(0.043)	0.007	0.020
284	23.67	0.07	0.027	(0.043)	0.007	0.020
285	23.75	0.07	0.027	(0.043)	0.007	0.020
286	23.83	0.07	0.027	(0.042)	0.007	0.020
287	23.92	0.07	0.027	(0.042)	0.007	0.020
288	24.00	0.07	0.027	(0.042)	0.007	0.020

(Loss Rate Not Used)

Sum = 100.0 Sum = 31.2

Flood volume = Effective rainfall 2.60(In)
times area 2.0(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.80(In)
Total soil loss = 0.133(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 18760.1 Cubic Feet
Total soil loss = 5796.2 Cubic Feet

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      ----------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.782(CFS)
      ----------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f     H y d r o g r a p h
      ----------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

      ----------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-----------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0005      0.04  Q         |         |         |         |
  0+15       0.0008      0.04  Q         |         |         |         |
  0+20       0.0012      0.06  Q         |         |         |         |
  0+25       0.0016      0.06  Q         |         |         |         |
  0+30       0.0020      0.06  Q         |         |         |         |
  0+35       0.0024      0.06  Q         |         |         |         |
  0+40       0.0028      0.06  Q         |         |         |         |
  0+45       0.0032      0.06  Q         |         |         |         |
  0+50       0.0038      0.08  Q         |         |         |         |
  0+55       0.0043      0.08  Q         |         |         |         |
  1+ 0       0.0049      0.08  Q         |         |         |         |
  1+ 5       0.0053      0.07  Q         |         |         |         |
  1+10       0.0057      0.06  Q         |         |         |         |
  1+15       0.0062      0.06  Q         |         |         |         |
  1+20       0.0066      0.06  Q         |         |         |         |
  1+25       0.0070      0.06  Q         |         |         |         |
  1+30       0.0074      0.06  Q         |         |         |         |
  1+35       0.0078      0.06  Q         |         |         |         |
  1+40       0.0082      0.06  Q         |         |         |         |
  1+45       0.0087      0.06  Q         |         |         |         |
  1+50       0.0092      0.08  Q         |         |         |         |
  1+55       0.0097      0.08  Q         |         |         |         |
  2+ 0       0.0103      0.08  Q         |         |         |         |
  2+ 5       0.0109      0.08  QV        |         |         |         |
  2+10       0.0114      0.08  QV        |         |         |         |
  2+15       0.0120      0.08  QV        |         |         |         |
  2+20       0.0125      0.08  QV        |         |         |         |
  2+25       0.0131      0.08  QV        |         |         |         |
  2+30       0.0136      0.08  QV        |         |         |         |
  2+35       0.0143      0.10  QV        |         |         |         |
  2+40       0.0150      0.10  QV        |         |         |         |
  2+45       0.0157      0.10  QV        |         |         |         |
  2+50       0.0164      0.10  QV        |         |         |         |
  2+55       0.0171      0.10  QV        |         |         |         |
  3+ 0       0.0178      0.10  QV        |         |         |         |
  3+ 5       0.0185      0.10  QV        |         |         |         |
  3+10       0.0192      0.10  QV        |         |         |         |
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3+15	0.0199	0.10	QV				
3+20	0.0206	0.10	QV				
3+25	0.0212	0.10	QV				
3+30	0.0219	0.10	Q V				
3+35	0.0226	0.10	Q V				
3+40	0.0233	0.10	Q V				
3+45	0.0240	0.10	Q V				
3+50	0.0248	0.12	Q V				
3+55	0.0257	0.12	Q V				
4+ 0	0.0265	0.12	Q V				
4+ 5	0.0273	0.12	Q V				
4+10	0.0282	0.12	Q V				
4+15	0.0290	0.12	Q V				
4+20	0.0299	0.14	Q V				
4+25	0.0309	0.14	Q V				
4+30	0.0319	0.14	Q V				
4+35	0.0329	0.14	Q V				
4+40	0.0338	0.14	Q V				
4+45	0.0348	0.14	Q V				
4+50	0.0359	0.16	Q V				
4+55	0.0370	0.16	Q V				
5+ 0	0.0381	0.16	Q V				
5+ 5	0.0390	0.13	Q V				
5+10	0.0398	0.12	Q V				
5+15	0.0407	0.12	Q V				
5+20	0.0416	0.14	Q V				
5+25	0.0426	0.14	Q V				
5+30	0.0436	0.14	Q V				
5+35	0.0447	0.16	Q V				
5+40	0.0458	0.16	Q V				
5+45	0.0469	0.16	Q V				
5+50	0.0480	0.16	Q V				
5+55	0.0491	0.16	Q V				
6+ 0	0.0502	0.16	Q V				
6+ 5	0.0514	0.18	Q V				
6+10	0.0527	0.18	Q V				
6+15	0.0539	0.18	Q V				
6+20	0.0552	0.18	Q V				
6+25	0.0564	0.18	Q V				
6+30	0.0577	0.18	Q V				
6+35	0.0590	0.20	Q V				
6+40	0.0604	0.20	Q V				
6+45	0.0618	0.20	Q V				
6+50	0.0632	0.20	Q V				
6+55	0.0646	0.20	Q V				
7+ 0	0.0660	0.20	Q V				
7+ 5	0.0674	0.20	Q V				
7+10	0.0688	0.20	Q V				
7+15	0.0702	0.20	Q V				
7+20	0.0717	0.22	Q V				

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 7+25       0.0732      0.22  Q     V   |          |          |          |
 7+30       0.0747      0.22  Q     V   |          |          |          |
 7+35       0.0764      0.24  Q      V  |          |          |          |
 7+40       0.0780      0.24  Q      V  |          |          |          |
 7+45       0.0797      0.24  Q      V  |          |          |          |
 7+50       0.0815      0.26  |Q     V  |          |          |          |
 7+55       0.0833      0.26  |Q     V  |          |          |          |
 8+ 0       0.0851      0.26  |Q     V  |          |          |          |
 8+ 5       0.0871      0.29  |Q      V |          |          |          |
 8+10       0.0892      0.30  |Q      V |          |          |          |
 8+15       0.0913      0.30  |Q      V |          |          |          |
 8+20       0.0934      0.30  |Q      V |          |          |          |
 8+25       0.0955      0.30  |Q      V |          |          |          |
 8+30       0.0975      0.30  |Q       V|          |          |          |
 8+35       0.0997      0.32  |Q       V|          |          |          |
 8+40       0.1020      0.32  |Q       V|          |          |          |
 8+45       0.1042      0.32  |Q       V|          |          |          |
 8+50       0.1065      0.34  |Q       V|          |          |          |
 8+55       0.1089      0.34  |Q        V          |          |          |
 9+ 0       0.1112      0.34  |Q        V          |          |          |
 9+ 5       0.1138      0.37  |Q        V          |          |          |
 9+10       0.1165      0.38  |Q        V          |          |          |
 9+15       0.1191      0.38  |Q        |V         |          |          |
 9+20       0.1218      0.40  |Q        |V         |          |          |
 9+25       0.1246      0.40  |Q        |V         |          |          |
 9+30       0.1274      0.40  |Q        |V         |          |          |
 9+35       0.1303      0.42  |Q        | V        |          |          |
 9+40       0.1332      0.42  |Q        | V        |          |          |
 9+45       0.1361      0.42  |Q        | V        |          |          |
 9+50       0.1392      0.44  |Q        | V        |          |          |
 9+55       0.1422      0.44  |Q        |  V       |          |          |
10+ 0       0.1453      0.44  |Q        |  V       |          |          |
10+ 5       0.1476      0.34  |Q        |  V       |          |          |
10+10       0.1497      0.30  |Q        |  V       |          |          |
10+15       0.1518      0.30  |Q        |   V      |          |          |
10+20       0.1539      0.30  |Q        |   V      |          |          |
10+25       0.1559      0.30  |Q        |   V      |          |          |
10+30       0.1580      0.30  |Q        |   V      |          |          |
10+35       0.1606      0.38  |Q        |   V      |          |          |
10+40       0.1634      0.40  |Q        |    V     |          |          |
10+45       0.1662      0.40  |Q        |    V     |          |          |
10+50       0.1690      0.40  |Q        |    V     |          |          |
10+55       0.1718      0.40  |Q        |    V     |          |          |
11+ 0       0.1745      0.40  |Q        |     V    |          |          |
11+ 5       0.1772      0.39  |Q        |     V    |          |          |
11+10       0.1799      0.38  |Q        |     V    |          |          |
11+15       0.1825      0.38  |Q        |     V    |          |          |
11+20       0.1851      0.38  |Q        |      V   |          |          |
11+25       0.1878      0.38  |Q        |      V   |          |          |
11+30       0.1904      0.38  |Q        |      V   |          |          |
```

```
11+35       0.1929      0.35  |Q        |       V  |         |         |
11+40       0.1952      0.34  |Q        |        V |         |         |
11+45       0.1976      0.34  |Q        |        V |         |         |
11+50       0.2001      0.36  |Q        |        V |         |         |
11+55       0.2026      0.36  |Q        |        V |         |         |
12+ 0       0.2051      0.36  |Q        |         V|         |         |
12+ 5       0.2084      0.49  |Q        |         V|         |         |
12+10       0.2120      0.52  | Q       |         V|         |         |
12+15       0.2156      0.52  | Q       |          V         |         |
12+20       0.2194      0.55  | Q       |          V         |         |
12+25       0.2232      0.55  | Q       |          V         |         |
12+30       0.2270      0.55  | Q       |          |V        |         |
12+35       0.2311      0.60  | Q       |          |V        |         |
12+40       0.2353      0.61  | Q       |          |V        |         |
12+45       0.2395      0.61  | Q       |          | V       |         |
12+50       0.2439      0.63  | Q       |          | V       |         |
12+55       0.2483      0.64  | Q       |          |  V      |         |
13+ 0       0.2527      0.64  | Q       |          |  V      |         |
13+ 5       0.2579      0.75  | Q       |          |  V      |         |
13+10       0.2632      0.78  |  Q      |          |   V     |         |
13+15       0.2686      0.78  |  Q      |          |   V     |         |
13+20       0.2740      0.78  |  Q      |          |    V    |         |
13+25       0.2793      0.78  |  Q      |          |    V    |         |
13+30       0.2847      0.78  |  Q      |          |     V   |         |
13+35       0.2885      0.55  | Q       |          |     V   |         |
13+40       0.2919      0.48  |Q        |          |      V  |         |
13+45       0.2952      0.48  |Q        |          |      V  |         |
13+50       0.2985      0.48  |Q        |          |      V  |         |
13+55       0.3019      0.49  |Q        |          |       V |         |
14+ 0       0.3052      0.49  |Q        |          |       V |         |
14+ 5       0.3091      0.57  | Q       |          |       V |         |
14+10       0.3133      0.60  | Q       |          |        V|         |
14+15       0.3174      0.60  | Q       |          |        V|         |
14+20       0.3213      0.58  | Q       |          |        V|         |
14+25       0.3253      0.57  | Q       |          |         V         |
14+30       0.3292      0.57  | Q       |          |         V         |
14+35       0.3332      0.57  | Q       |          |         V         |
14+40       0.3371      0.57  | Q       |          |         |V        |
14+45       0.3411      0.57  | Q       |          |         |V        |
14+50       0.3449      0.55  | Q       |          |         | V       |
14+55       0.3487      0.55  | Q       |          |         | V       |
15+ 0       0.3524      0.55  | Q       |          |         | V       |
15+ 5       0.3561      0.53  | Q       |          |         |  V      |
15+10       0.3597      0.52  | Q       |          |         |  V      |
15+15       0.3633      0.52  | Q       |          |         |  V      |
15+20       0.3668      0.50  | Q       |          |         |   V     |
15+25       0.3702      0.50  |Q        |          |         |   V     |
15+30       0.3736      0.50  |Q        |          |         |   V     |
15+35       0.3765      0.42  |Q        |          |         |   V     |
15+40       0.3792      0.39  |Q        |          |         |    V    |
```

```
15+45       0.3819      0.39  |Q        |         |         |    V    |
15+50       0.3846      0.39  |Q        |         |         |    V    |
15+55       0.3873      0.39  |Q        |         |         |    V    |
16+ 0       0.3900      0.39  |Q        |         |         |     V   |
16+ 5       0.3910      0.15  Q         |         |         |     V   |
16+10       0.3916      0.08  Q         |         |         |     V   |
16+15       0.3922      0.08  Q         |         |         |     V   |
16+20       0.3927      0.08  Q         |         |         |     V   |
16+25       0.3933      0.08  Q         |         |         |     V   |
16+30       0.3938      0.08  Q         |         |         |     V   |
16+35       0.3943      0.07  Q         |         |         |     V   |
16+40       0.3947      0.06  Q         |         |         |     V   |
16+45       0.3951      0.06  Q         |         |         |     V   |
16+50       0.3955      0.06  Q         |         |         |     V   |
16+55       0.3959      0.06  Q         |         |         |     V   |
17+ 0       0.3964      0.06  Q         |         |         |     V   |
17+ 5       0.3970      0.09  Q         |         |         |     V   |
17+10       0.3977      0.10  Q         |         |         |     V   |
17+15       0.3984      0.10  Q         |         |         |      V  |
17+20       0.3991      0.10  Q         |         |         |      V  |
17+25       0.3998      0.10  Q         |         |         |      V  |
17+30       0.4005      0.10  Q         |         |         |      V  |
17+35       0.4012      0.10  Q         |         |         |      V  |
17+40       0.4019      0.10  Q         |         |         |      V  |
17+45       0.4026      0.10  Q         |         |         |      V  |
17+50       0.4031      0.09  Q         |         |         |      V  |
17+55       0.4037      0.08  Q         |         |         |      V  |
18+ 0       0.4043      0.08  Q         |         |         |      V  |
18+ 5       0.4048      0.08  Q         |         |         |      V  |
18+10       0.4054      0.08  Q         |         |         |      V  |
18+15       0.4059      0.08  Q         |         |         |      V  |
18+20       0.4065      0.08  Q         |         |         |      V  |
18+25       0.4070      0.08  Q         |         |         |      V  |
18+30       0.4076      0.08  Q         |         |         |      V  |
18+35       0.4080      0.07  Q         |         |         |      V  |
18+40       0.4085      0.06  Q         |         |         |      V  |
18+45       0.4089      0.06  Q         |         |         |      V  |
18+50       0.4092      0.05  Q         |         |         |       V |
18+55       0.4095      0.04  Q         |         |         |       V |
19+ 0       0.4097      0.04  Q         |         |         |       V |
19+ 5       0.4101      0.06  Q         |         |         |       V |
19+10       0.4105      0.06  Q         |         |         |       V |
19+15       0.4110      0.06  Q         |         |         |       V |
19+20       0.4115      0.08  Q         |         |         |       V |
19+25       0.4120      0.08  Q         |         |         |       V |
19+30       0.4126      0.08  Q         |         |         |       V |
19+35       0.4131      0.07  Q         |         |         |       V |
19+40       0.4135      0.06  Q         |         |         |       V |
19+45       0.4139      0.06  Q         |         |         |       V |
19+50       0.4142      0.05  Q         |         |         |       V |
```

```
19+55       0.4145      0.04  Q          |          |          |        V |
20+ 0       0.4148      0.04  Q          |          |          |        V |
20+ 5       0.4151      0.06  Q          |          |          |        V |
20+10       0.4156      0.06  Q          |          |          |        V |
20+15       0.4160      0.06  Q          |          |          |        V |
20+20       0.4164      0.06  Q          |          |          |        V |
20+25       0.4168      0.06  Q          |          |          |        V |
20+30       0.4172      0.06  Q          |          |          |        V |
20+35       0.4176      0.06  Q          |          |          |        V |
20+40       0.4181      0.06  Q          |          |          |        V |
20+45       0.4185      0.06  Q          |          |          |        V |
20+50       0.4188      0.05  Q          |          |          |        V |
20+55       0.4191      0.04  Q          |          |          |        V |
21+ 0       0.4193      0.04  Q          |          |          |        V |
21+ 5       0.4197      0.06  Q          |          |          |        V |
21+10       0.4201      0.06  Q          |          |          |         V|
21+15       0.4206      0.06  Q          |          |          |         V|
21+20       0.4209      0.05  Q          |          |          |         V|
21+25       0.4212      0.04  Q          |          |          |         V|
21+30       0.4214      0.04  Q          |          |          |         V|
21+35       0.4218      0.06  Q          |          |          |         V|
21+40       0.4222      0.06  Q          |          |          |         V|
21+45       0.4226      0.06  Q          |          |          |         V|
21+50       0.4230      0.05  Q          |          |          |         V|
21+55       0.4232      0.04  Q          |          |          |         V|
22+ 0       0.4235      0.04  Q          |          |          |         V|
22+ 5       0.4239      0.06  Q          |          |          |         V|
22+10       0.4243      0.06  Q          |          |          |         V|
22+15       0.4247      0.06  Q          |          |          |         V|
22+20       0.4250      0.05  Q          |          |          |         V|
22+25       0.4253      0.04  Q          |          |          |         V|
22+30       0.4256      0.04  Q          |          |          |         V|
22+35       0.4259      0.04  Q          |          |          |         V|
22+40       0.4262      0.04  Q          |          |          |         V|
22+45       0.4264      0.04  Q          |          |          |         V|
22+50       0.4267      0.04  Q          |          |          |         V|
22+55       0.4270      0.04  Q          |          |          |         V|
23+ 0       0.4273      0.04  Q          |          |          |         V|
23+ 5       0.4275      0.04  Q          |          |          |         V|
23+10       0.4278      0.04  Q          |          |          |         V|
23+15       0.4281      0.04  Q          |          |          |         V|
23+20       0.4284      0.04  Q          |          |          |         V|
23+25       0.4287      0.04  Q          |          |          |         V|
23+30       0.4289      0.04  Q          |          |          |         V|
23+35       0.4292      0.04  Q          |          |          |         V|
23+40       0.4295      0.04  Q          |          |          |         V|
23+45       0.4298      0.04  Q          |          |          |         V|
23+50       0.4300      0.04  Q          |          |          |         V|
23+55       0.4303      0.04  Q          |          |          |         V|
24+ 0       0.4306      0.04  Q          |          |          |         V|
```

```
   24+ 5       0.4307      0.01  Q         |         |         |         V
-----------------------------------------------------------------------
```

100-YEAR 24 HR UNIT HYDROGRAPH
POST-DEVELOPED CONDITION

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0
                Study date  12/13/23 File: 162POSTUH24100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6481

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
Beyond Food Mart Perris Service Station
Post Development UH
100 yr
24 hr
------------------------------------------------------------------
Drainage Area =       1.99(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.99(Ac.)  =
0.003 Sq. Mi.
Length along longest watercourse =     247.47(Ft.)
Length along longest watercourse measured to centroid =     152.57(Ft.)
Length along longest watercourse =      0.047 Mi.
Length along longest watercourse measured to centroid =      0.029 Mi.
Difference in elevation =       3.01(Ft.)
Slope along watercourse =     64.2211 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.013 Hr.
Lag time =     0.80 Min.
25% of lag time =     0.20 Min.
40% of lag time =     0.32 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:
```

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            2.05                    4.08

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.99            5.33                   10.61

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.050(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    5.330(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    5.330(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.990           75.00         0.800
 Total Area Entered =      1.99(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
75.0  88.0      0.153     0.800        0.043       1.000      0.043
                                                  Sum (F) =   0.043
Area averaged mean soil loss (F) (In/Hr) =  0.043
Minimum soil loss rate ((In/Hr)) =  0.021
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.260
-------------------------------------------------------------------

                U n i t  H y d r o g r a p h
                        VALLEY S-Curve
-------------------------------------------------------------------
                Unit Hydrograph Data
-------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %            (CFS)
-------------------------------------------------------------------
    1   0.083        627.943         76.257              1.529
    2   0.167       1255.885         23.743              0.476
                                Sum = 100.000   Sum=       2.006
-------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value
```

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.043	(0.076)	0.011	0.032
2	0.17	0.07	0.043	(0.076)	0.011	0.032
3	0.25	0.07	0.043	(0.075)	0.011	0.032
4	0.33	0.10	0.064	(0.075)	0.017	0.047
5	0.42	0.10	0.064	(0.075)	0.017	0.047
6	0.50	0.10	0.064	(0.074)	0.017	0.047
7	0.58	0.10	0.064	(0.074)	0.017	0.047
8	0.67	0.10	0.064	(0.074)	0.017	0.047
9	0.75	0.10	0.064	(0.074)	0.017	0.047
10	0.83	0.13	0.085	(0.073)	0.022	0.063
11	0.92	0.13	0.085	(0.073)	0.022	0.063
12	1.00	0.13	0.085	(0.073)	0.022	0.063
13	1.08	0.10	0.064	(0.072)	0.017	0.047
14	1.17	0.10	0.064	(0.072)	0.017	0.047
15	1.25	0.10	0.064	(0.072)	0.017	0.047
16	1.33	0.10	0.064	(0.072)	0.017	0.047
17	1.42	0.10	0.064	(0.071)	0.017	0.047
18	1.50	0.10	0.064	(0.071)	0.017	0.047
19	1.58	0.10	0.064	(0.071)	0.017	0.047
20	1.67	0.10	0.064	(0.070)	0.017	0.047
21	1.75	0.10	0.064	(0.070)	0.017	0.047
22	1.83	0.13	0.085	(0.070)	0.022	0.063
23	1.92	0.13	0.085	(0.070)	0.022	0.063
24	2.00	0.13	0.085	(0.069)	0.022	0.063
25	2.08	0.13	0.085	(0.069)	0.022	0.063
26	2.17	0.13	0.085	(0.069)	0.022	0.063
27	2.25	0.13	0.085	(0.068)	0.022	0.063
28	2.33	0.13	0.085	(0.068)	0.022	0.063
29	2.42	0.13	0.085	(0.068)	0.022	0.063
30	2.50	0.13	0.085	(0.068)	0.022	0.063
31	2.58	0.17	0.107	(0.067)	0.028	0.079
32	2.67	0.17	0.107	(0.067)	0.028	0.079
33	2.75	0.17	0.107	(0.067)	0.028	0.079
34	2.83	0.17	0.107	(0.066)	0.028	0.079
35	2.92	0.17	0.107	(0.066)	0.028	0.079
36	3.00	0.17	0.107	(0.066)	0.028	0.079
37	3.08	0.17	0.107	(0.066)	0.028	0.079
38	3.17	0.17	0.107	(0.065)	0.028	0.079
39	3.25	0.17	0.107	(0.065)	0.028	0.079
40	3.33	0.17	0.107	(0.065)	0.028	0.079
41	3.42	0.17	0.107	(0.065)	0.028	0.079
42	3.50	0.17	0.107	(0.064)	0.028	0.079
43	3.58	0.17	0.107	(0.064)	0.028	0.079
44	3.67	0.17	0.107	(0.064)	0.028	0.079
45	3.75	0.17	0.107	(0.063)	0.028	0.079
46	3.83	0.20	0.128	(0.063)	0.033	0.095
47	3.92	0.20	0.128	(0.063)	0.033	0.095

48	4.00	0.20	0.128	(0.063)	0.033	0.095
49	4.08	0.20	0.128	(0.062)	0.033	0.095
50	4.17	0.20	0.128	(0.062)	0.033	0.095
51	4.25	0.20	0.128	(0.062)	0.033	0.095
52	4.33	0.23	0.149	(0.062)	0.039	0.110
53	4.42	0.23	0.149	(0.061)	0.039	0.110
54	4.50	0.23	0.149	(0.061)	0.039	0.110
55	4.58	0.23	0.149	(0.061)	0.039	0.110
56	4.67	0.23	0.149	(0.061)	0.039	0.110
57	4.75	0.23	0.149	(0.060)	0.039	0.110
58	4.83	0.27	0.171	(0.060)	0.044	0.126
59	4.92	0.27	0.171	(0.060)	0.044	0.126
60	5.00	0.27	0.171	(0.060)	0.044	0.126
61	5.08	0.20	0.128	(0.059)	0.033	0.095
62	5.17	0.20	0.128	(0.059)	0.033	0.095
63	5.25	0.20	0.128	(0.059)	0.033	0.095
64	5.33	0.23	0.149	(0.059)	0.039	0.110
65	5.42	0.23	0.149	(0.058)	0.039	0.110
66	5.50	0.23	0.149	(0.058)	0.039	0.110
67	5.58	0.27	0.171	(0.058)	0.044	0.126
68	5.67	0.27	0.171	(0.057)	0.044	0.126
69	5.75	0.27	0.171	(0.057)	0.044	0.126
70	5.83	0.27	0.171	(0.057)	0.044	0.126
71	5.92	0.27	0.171	(0.057)	0.044	0.126
72	6.00	0.27	0.171	(0.056)	0.044	0.126
73	6.08	0.30	0.192	(0.056)	0.050	0.142
74	6.17	0.30	0.192	(0.056)	0.050	0.142
75	6.25	0.30	0.192	(0.056)	0.050	0.142
76	6.33	0.30	0.192	(0.055)	0.050	0.142
77	6.42	0.30	0.192	(0.055)	0.050	0.142
78	6.50	0.30	0.192	(0.055)	0.050	0.142
79	6.58	0.33	0.213	0.055	(0.055)	0.158
80	6.67	0.33	0.213	0.054	(0.055)	0.159
81	6.75	0.33	0.213	0.054	(0.055)	0.159
82	6.83	0.33	0.213	0.054	(0.055)	0.159
83	6.92	0.33	0.213	0.054	(0.055)	0.159
84	7.00	0.33	0.213	0.054	(0.055)	0.160
85	7.08	0.33	0.213	0.053	(0.055)	0.160
86	7.17	0.33	0.213	0.053	(0.055)	0.160
87	7.25	0.33	0.213	0.053	(0.055)	0.160
88	7.33	0.37	0.235	0.053	(0.061)	0.182
89	7.42	0.37	0.235	0.052	(0.061)	0.182
90	7.50	0.37	0.235	0.052	(0.061)	0.182
91	7.58	0.40	0.256	0.052	(0.067)	0.204
92	7.67	0.40	0.256	0.052	(0.067)	0.204
93	7.75	0.40	0.256	0.051	(0.067)	0.204
94	7.83	0.43	0.277	0.051	(0.072)	0.226
95	7.92	0.43	0.277	0.051	(0.072)	0.226
96	8.00	0.43	0.277	0.051	(0.072)	0.227
97	8.08	0.50	0.320	0.050	(0.083)	0.269

98	8.17	0.50	0.320	0.050	(	0.083)	0.270
99	8.25	0.50	0.320	0.050	(	0.083)	0.270
100	8.33	0.50	0.320	0.050	(	0.083)	0.270
101	8.42	0.50	0.320	0.049	(	0.083)	0.270
102	8.50	0.50	0.320	0.049	(	0.083)	0.271
103	8.58	0.53	0.341	0.049	(	0.089)	0.292
104	8.67	0.53	0.341	0.049	(	0.089)	0.292
105	8.75	0.53	0.341	0.049	(	0.089)	0.293
106	8.83	0.57	0.362	0.048	(	0.094)	0.314
107	8.92	0.57	0.362	0.048	(	0.094)	0.314
108	9.00	0.57	0.362	0.048	(	0.094)	0.315
109	9.08	0.63	0.405	0.048	(	0.105)	0.357
110	9.17	0.63	0.405	0.047	(	0.105)	0.358
111	9.25	0.63	0.405	0.047	(	0.105)	0.358
112	9.33	0.67	0.426	0.047	(	0.111)	0.379
113	9.42	0.67	0.426	0.047	(	0.111)	0.380
114	9.50	0.67	0.426	0.047	(	0.111)	0.380
115	9.58	0.70	0.448	0.046	(	0.116)	0.401
116	9.67	0.70	0.448	0.046	(	0.116)	0.402
117	9.75	0.70	0.448	0.046	(	0.116)	0.402
118	9.83	0.73	0.469	0.046	(	0.122)	0.423
119	9.92	0.73	0.469	0.045	(	0.122)	0.424
120	10.00	0.73	0.469	0.045	(	0.122)	0.424
121	10.08	0.50	0.320	0.045	(	0.083)	0.275
122	10.17	0.50	0.320	0.045	(	0.083)	0.275
123	10.25	0.50	0.320	0.045	(	0.083)	0.275
124	10.33	0.50	0.320	0.044	(	0.083)	0.275
125	10.42	0.50	0.320	0.044	(	0.083)	0.276
126	10.50	0.50	0.320	0.044	(	0.083)	0.276
127	10.58	0.67	0.426	0.044	(	0.111)	0.383
128	10.67	0.67	0.426	0.043	(	0.111)	0.383
129	10.75	0.67	0.426	0.043	(	0.111)	0.383
130	10.83	0.67	0.426	0.043	(	0.111)	0.383
131	10.92	0.67	0.426	0.043	(	0.111)	0.384
132	11.00	0.67	0.426	0.043	(	0.111)	0.384
133	11.08	0.63	0.405	0.042	(	0.105)	0.363
134	11.17	0.63	0.405	0.042	(	0.105)	0.363
135	11.25	0.63	0.405	0.042	(	0.105)	0.363
136	11.33	0.63	0.405	0.042	(	0.105)	0.363
137	11.42	0.63	0.405	0.042	(	0.105)	0.364
138	11.50	0.63	0.405	0.041	(	0.105)	0.364
139	11.58	0.57	0.362	0.041	(	0.094)	0.321
140	11.67	0.57	0.362	0.041	(	0.094)	0.321
141	11.75	0.57	0.362	0.041	(	0.094)	0.322
142	11.83	0.60	0.384	0.041	(	0.100)	0.343
143	11.92	0.60	0.384	0.040	(	0.100)	0.343
144	12.00	0.60	0.384	0.040	(	0.100)	0.344
145	12.08	0.83	0.533	0.040	(	0.139)	0.493
146	12.17	0.83	0.533	0.040	(	0.139)	0.493
147	12.25	0.83	0.533	0.040	(	0.139)	0.493

148	12.33	0.87	0.554	0.039	(0.144)	0.515
149	12.42	0.87	0.554	0.039	(0.144)	0.515
150	12.50	0.87	0.554	0.039	(0.144)	0.515
151	12.58	0.93	0.597	0.039	(0.155)	0.558
152	12.67	0.93	0.597	0.039	(0.155)	0.558
153	12.75	0.93	0.597	0.038	(0.155)	0.559
154	12.83	0.97	0.618	0.038	(0.161)	0.580
155	12.92	0.97	0.618	0.038	(0.161)	0.580
156	13.00	0.97	0.618	0.038	(0.161)	0.580
157	13.08	1.13	0.725	0.038	(0.188)	0.687
158	13.17	1.13	0.725	0.037	(0.188)	0.687
159	13.25	1.13	0.725	0.037	(0.188)	0.688
160	13.33	1.13	0.725	0.037	(0.188)	0.688
161	13.42	1.13	0.725	0.037	(0.188)	0.688
162	13.50	1.13	0.725	0.037	(0.188)	0.688
163	13.58	0.77	0.490	0.036	(0.127)	0.454
164	13.67	0.77	0.490	0.036	(0.127)	0.454
165	13.75	0.77	0.490	0.036	(0.127)	0.454
166	13.83	0.77	0.490	0.036	(0.127)	0.454
167	13.92	0.77	0.490	0.036	(0.127)	0.455
168	14.00	0.77	0.490	0.036	(0.127)	0.455
169	14.08	0.90	0.576	0.035	(0.150)	0.540
170	14.17	0.90	0.576	0.035	(0.150)	0.540
171	14.25	0.90	0.576	0.035	(0.150)	0.541
172	14.33	0.87	0.554	0.035	(0.144)	0.520
173	14.42	0.87	0.554	0.035	(0.144)	0.520
174	14.50	0.87	0.554	0.034	(0.144)	0.520
175	14.58	0.87	0.554	0.034	(0.144)	0.520
176	14.67	0.87	0.554	0.034	(0.144)	0.520
177	14.75	0.87	0.554	0.034	(0.144)	0.520
178	14.83	0.83	0.533	0.034	(0.139)	0.499
179	14.92	0.83	0.533	0.034	(0.139)	0.499
180	15.00	0.83	0.533	0.033	(0.139)	0.500
181	15.08	0.80	0.512	0.033	(0.133)	0.478
182	15.17	0.80	0.512	0.033	(0.133)	0.479
183	15.25	0.80	0.512	0.033	(0.133)	0.479
184	15.33	0.77	0.490	0.033	(0.127)	0.458
185	15.42	0.77	0.490	0.033	(0.127)	0.458
186	15.50	0.77	0.490	0.032	(0.127)	0.458
187	15.58	0.63	0.405	0.032	(0.105)	0.373
188	15.67	0.63	0.405	0.032	(0.105)	0.373
189	15.75	0.63	0.405	0.032	(0.105)	0.373
190	15.83	0.63	0.405	0.032	(0.105)	0.373
191	15.92	0.63	0.405	0.032	(0.105)	0.373
192	16.00	0.63	0.405	0.031	(0.105)	0.374
193	16.08	0.13	0.085	(0.031)	0.022	0.063
194	16.17	0.13	0.085	(0.031)	0.022	0.063
195	16.25	0.13	0.085	(0.031)	0.022	0.063
196	16.33	0.13	0.085	(0.031)	0.022	0.063
197	16.42	0.13	0.085	(0.031)	0.022	0.063

198	16.50	0.13	0.085	(0.030)	0.022	0.063
199	16.58	0.10	0.064	(0.030)	0.017	0.047
200	16.67	0.10	0.064	(0.030)	0.017	0.047
201	16.75	0.10	0.064	(0.030)	0.017	0.047
202	16.83	0.10	0.064	(0.030)	0.017	0.047
203	16.92	0.10	0.064	(0.030)	0.017	0.047
204	17.00	0.10	0.064	(0.030)	0.017	0.047
205	17.08	0.17	0.107	(0.029)	0.028	0.079
206	17.17	0.17	0.107	(0.029)	0.028	0.079
207	17.25	0.17	0.107	(0.029)	0.028	0.079
208	17.33	0.17	0.107	(0.029)	0.028	0.079
209	17.42	0.17	0.107	(0.029)	0.028	0.079
210	17.50	0.17	0.107	(0.029)	0.028	0.079
211	17.58	0.17	0.107	(0.029)	0.028	0.079
212	17.67	0.17	0.107	(0.028)	0.028	0.079
213	17.75	0.17	0.107	(0.028)	0.028	0.079
214	17.83	0.13	0.085	(0.028)	0.022	0.063
215	17.92	0.13	0.085	(0.028)	0.022	0.063
216	18.00	0.13	0.085	(0.028)	0.022	0.063
217	18.08	0.13	0.085	(0.028)	0.022	0.063
218	18.17	0.13	0.085	(0.028)	0.022	0.063
219	18.25	0.13	0.085	(0.027)	0.022	0.063
220	18.33	0.13	0.085	(0.027)	0.022	0.063
221	18.42	0.13	0.085	(0.027)	0.022	0.063
222	18.50	0.13	0.085	(0.027)	0.022	0.063
223	18.58	0.10	0.064	(0.027)	0.017	0.047
224	18.67	0.10	0.064	(0.027)	0.017	0.047
225	18.75	0.10	0.064	(0.027)	0.017	0.047
226	18.83	0.07	0.043	(0.027)	0.011	0.032
227	18.92	0.07	0.043	(0.026)	0.011	0.032
228	19.00	0.07	0.043	(0.026)	0.011	0.032
229	19.08	0.10	0.064	(0.026)	0.017	0.047
230	19.17	0.10	0.064	(0.026)	0.017	0.047
231	19.25	0.10	0.064	(0.026)	0.017	0.047
232	19.33	0.13	0.085	(0.026)	0.022	0.063
233	19.42	0.13	0.085	(0.026)	0.022	0.063
234	19.50	0.13	0.085	(0.026)	0.022	0.063
235	19.58	0.10	0.064	(0.025)	0.017	0.047
236	19.67	0.10	0.064	(0.025)	0.017	0.047
237	19.75	0.10	0.064	(0.025)	0.017	0.047
238	19.83	0.07	0.043	(0.025)	0.011	0.032
239	19.92	0.07	0.043	(0.025)	0.011	0.032
240	20.00	0.07	0.043	(0.025)	0.011	0.032
241	20.08	0.10	0.064	(0.025)	0.017	0.047
242	20.17	0.10	0.064	(0.025)	0.017	0.047
243	20.25	0.10	0.064	(0.025)	0.017	0.047
244	20.33	0.10	0.064	(0.024)	0.017	0.047
245	20.42	0.10	0.064	(0.024)	0.017	0.047
246	20.50	0.10	0.064	(0.024)	0.017	0.047
247	20.58	0.10	0.064	(0.024)	0.017	0.047

248	20.67	0.10	0.064	(0.024)	0.017	0.047
249	20.75	0.10	0.064	(0.024)	0.017	0.047
250	20.83	0.07	0.043	(0.024)	0.011	0.032
251	20.92	0.07	0.043	(0.024)	0.011	0.032
252	21.00	0.07	0.043	(0.024)	0.011	0.032
253	21.08	0.10	0.064	(0.024)	0.017	0.047
254	21.17	0.10	0.064	(0.023)	0.017	0.047
255	21.25	0.10	0.064	(0.023)	0.017	0.047
256	21.33	0.07	0.043	(0.023)	0.011	0.032
257	21.42	0.07	0.043	(0.023)	0.011	0.032
258	21.50	0.07	0.043	(0.023)	0.011	0.032
259	21.58	0.10	0.064	(0.023)	0.017	0.047
260	21.67	0.10	0.064	(0.023)	0.017	0.047
261	21.75	0.10	0.064	(0.023)	0.017	0.047
262	21.83	0.07	0.043	(0.023)	0.011	0.032
263	21.92	0.07	0.043	(0.023)	0.011	0.032
264	22.00	0.07	0.043	(0.023)	0.011	0.032
265	22.08	0.10	0.064	(0.023)	0.017	0.047
266	22.17	0.10	0.064	(0.022)	0.017	0.047
267	22.25	0.10	0.064	(0.022)	0.017	0.047
268	22.33	0.07	0.043	(0.022)	0.011	0.032
269	22.42	0.07	0.043	(0.022)	0.011	0.032
270	22.50	0.07	0.043	(0.022)	0.011	0.032
271	22.58	0.07	0.043	(0.022)	0.011	0.032
272	22.67	0.07	0.043	(0.022)	0.011	0.032
273	22.75	0.07	0.043	(0.022)	0.011	0.032
274	22.83	0.07	0.043	(0.022)	0.011	0.032
275	22.92	0.07	0.043	(0.022)	0.011	0.032
276	23.00	0.07	0.043	(0.022)	0.011	0.032
277	23.08	0.07	0.043	(0.022)	0.011	0.032
278	23.17	0.07	0.043	(0.022)	0.011	0.032
279	23.25	0.07	0.043	(0.022)	0.011	0.032
280	23.33	0.07	0.043	(0.022)	0.011	0.032
281	23.42	0.07	0.043	(0.022)	0.011	0.032
282	23.50	0.07	0.043	(0.022)	0.011	0.032
283	23.58	0.07	0.043	(0.022)	0.011	0.032
284	23.67	0.07	0.043	(0.021)	0.011	0.032
285	23.75	0.07	0.043	(0.021)	0.011	0.032
286	23.83	0.07	0.043	(0.021)	0.011	0.032
287	23.92	0.07	0.043	(0.021)	0.011	0.032
288	24.00	0.07	0.043	(0.021)	0.011	0.032

(Loss Rate Not Used)

Sum = 100.0 Sum = 55.2

Flood volume = Effective rainfall 4.60(In)
times area 2.0(Ac.)/[(In)/(Ft.)] = 0.8(Ac.Ft)
Total soil loss = 0.73(In)
Total soil loss = 0.121(Ac.Ft)
Total rainfall = 5.33(In)
Flood volume = 33248.1 Cubic Feet
Total soil loss = 5254.0 Cubic Feet

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      ----------------------------------------------------------------------
       Peak flow rate of this hydrograph =      1.381(CFS)
      ----------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f     H y d r o g r a p h
      ----------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ----------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0003      0.05  Q         |         |         |         |
  0+10       0.0008      0.06  Q         |         |         |         |
  0+15       0.0012      0.06  Q         |         |         |         |
  0+20       0.0018      0.09  Q         |         |         |         |
  0+25       0.0025      0.09  Q         |         |         |         |
  0+30       0.0031      0.09  Q         |         |         |         |
  0+35       0.0038      0.09  Q         |         |         |         |
  0+40       0.0044      0.09  Q         |         |         |         |
  0+45       0.0051      0.09  Q         |         |         |         |
  0+50       0.0059      0.12  Q         |         |         |         |
  0+55       0.0068      0.13  Q         |         |         |         |
  1+ 0       0.0076      0.13  Q         |         |         |         |
  1+ 5       0.0083      0.10  Q         |         |         |         |
  1+10       0.0090      0.09  Q         |         |         |         |
  1+15       0.0097      0.09  Q         |         |         |         |
  1+20       0.0103      0.09  Q         |         |         |         |
  1+25       0.0110      0.09  Q         |         |         |         |
  1+30       0.0116      0.09  Q         |         |         |         |
  1+35       0.0123      0.09  Q         |         |         |         |
  1+40       0.0129      0.09  Q         |         |         |         |
  1+45       0.0136      0.09  Q         |         |         |         |
  1+50       0.0144      0.12  Q         |         |         |         |
  1+55       0.0153      0.13  Q         |         |         |         |
  2+ 0       0.0161      0.13  Q         |         |         |         |
  2+ 5       0.0170      0.13  Q         |         |         |         |
  2+10       0.0179      0.13  Q         |         |         |         |
  2+15       0.0188      0.13  Q         |         |         |         |
  2+20       0.0196      0.13  QV        |         |         |         |
  2+25       0.0205      0.13  QV        |         |         |         |
  2+30       0.0214      0.13  QV        |         |         |         |
  2+35       0.0224      0.15  QV        |         |         |         |
  2+40       0.0235      0.16  QV        |         |         |         |
  2+45       0.0246      0.16  QV        |         |         |         |
  2+50       0.0257      0.16  QV        |         |         |         |
  2+55       0.0268      0.16  QV        |         |         |         |
  3+ 0       0.0279      0.16  QV        |         |         |         |
  3+ 5       0.0290      0.16  QV        |         |         |         |
  3+10       0.0300      0.16  QV        |         |         |         |
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3+15       0.0311      0.16  QV        |         |         |         |
3+20       0.0322      0.16  QV        |         |         |         |
3+25       0.0333      0.16  QV        |         |         |         |
3+30       0.0344      0.16  QV        |         |         |         |
3+35       0.0355      0.16  QV        |         |         |         |
3+40       0.0366      0.16  QV        |         |         |         |
3+45       0.0377      0.16  QV        |         |         |         |
3+50       0.0389      0.18  Q V       |         |         |         |
3+55       0.0402      0.19  Q V       |         |         |         |
4+ 0       0.0416      0.19  Q V       |         |         |         |
4+ 5       0.0429      0.19  Q V       |         |         |         |
4+10       0.0442      0.19  Q V       |         |         |         |
4+15       0.0455      0.19  Q V       |         |         |         |
4+20       0.0469      0.21  Q V       |         |         |         |
4+25       0.0485      0.22  Q V       |         |         |         |
4+30       0.0500      0.22  Q V       |         |         |         |
4+35       0.0515      0.22  Q V       |         |         |         |
4+40       0.0531      0.22  Q V       |         |         |         |
4+45       0.0546      0.22  Q V       |         |         |         |
4+50       0.0563      0.25  Q V       |         |         |         |
4+55       0.0580      0.25  |Q V      |         |         |         |
5+ 0       0.0598      0.25  |Q V      |         |         |         |
5+ 5       0.0612      0.20  Q  V      |         |         |         |
5+10       0.0625      0.19  Q  V      |         |         |         |
5+15       0.0638      0.19  Q  V      |         |         |         |
5+20       0.0653      0.21  Q  V      |         |         |         |
5+25       0.0668      0.22  Q  V      |         |         |         |
5+30       0.0683      0.22  Q  V      |         |         |         |
5+35       0.0700      0.25  Q  V      |         |         |         |
5+40       0.0718      0.25  |Q V      |         |         |         |
5+45       0.0735      0.25  |Q V      |         |         |         |
5+50       0.0752      0.25  |Q V      |         |         |         |
5+55       0.0770      0.25  |Q  V     |         |         |         |
6+ 0       0.0787      0.25  |Q  V     |         |         |         |
6+ 5       0.0806      0.28  |Q  V     |         |         |         |
6+10       0.0826      0.28  |Q  V     |         |         |         |
6+15       0.0846      0.28  |Q  V     |         |         |         |
6+20       0.0865      0.28  |Q  V     |         |         |         |
6+25       0.0885      0.28  |Q  V     |         |         |         |
6+30       0.0905      0.28  |Q  V     |         |         |         |
6+35       0.0926      0.31  |Q  V     |         |         |         |
6+40       0.0948      0.32  |Q  V     |         |         |         |
6+45       0.0970      0.32  |Q   V    |         |         |         |
6+50       0.0992      0.32  |Q   V    |         |         |         |
6+55       0.1014      0.32  |Q   V    |         |         |         |
7+ 0       0.1036      0.32  |Q   V    |         |         |         |
7+ 5       0.1058      0.32  |Q   V    |         |         |         |
7+10       0.1080      0.32  |Q   V    |         |         |         |
7+15       0.1102      0.32  |Q   V    |         |         |         |
7+20       0.1127      0.35  |Q   V    |         |         |         |
```

```
 7+25       0.1152      0.37  |Q    V   |          |          |          |
 7+30       0.1177      0.37  |Q    V   |          |          |          |
 7+35       0.1205      0.40  |Q    V   |          |          |          |
 7+40       0.1233      0.41  |Q    V   |          |          |          |
 7+45       0.1261      0.41  |Q    V   |          |          |          |
 7+50       0.1292      0.44  |Q    V   |          |          |          |
 7+55       0.1323      0.45  |Q    V   |          |          |          |
 8+ 0       0.1354      0.45  |Q     V  |          |          |          |
 8+ 5       0.1390      0.52  | Q    V  |          |          |          |
 8+10       0.1427      0.54  | Q    V  |          |          |          |
 8+15       0.1464      0.54  | Q    V  |          |          |          |
 8+20       0.1502      0.54  | Q    V  |          |          |          |
 8+25       0.1539      0.54  | Q     V |          |          |          |
 8+30       0.1577      0.54  | Q     V |          |          |          |
 8+35       0.1616      0.58  | Q     V |          |          |          |
 8+40       0.1657      0.59  | Q     V |          |          |          |
 8+45       0.1697      0.59  | Q     V |          |          |          |
 8+50       0.1740      0.62  | Q      V|          |          |          |
 8+55       0.1783      0.63  | Q      V|          |          |          |
 9+ 0       0.1827      0.63  | Q      V|          |          |          |
 9+ 5       0.1875      0.70  | Q      V|          |          |          |
 9+10       0.1924      0.72  | Q       V          |          |          |
 9+15       0.1973      0.72  | Q       V          |          |          |
 9+20       0.2025      0.75  |  Q      V          |          |          |
 9+25       0.2078      0.76  |  Q      V          |          |          |
 9+30       0.2130      0.76  |  Q      |V         |          |          |
 9+35       0.2185      0.80  |  Q      |V         |          |          |
 9+40       0.2240      0.81  |  Q      |V         |          |          |
 9+45       0.2296      0.81  |  Q      | V        |          |          |
 9+50       0.2354      0.84  |  Q      | V        |          |          |
 9+55       0.2412      0.85  |  Q      | V        |          |          |
10+ 0       0.2471      0.85  |  Q      | V        |          |          |
10+ 5       0.2514      0.62  | Q       |  V       |          |          |
10+10       0.2552      0.55  | Q       |  V       |          |          |
10+15       0.2590      0.55  | Q       |  V       |          |          |
10+20       0.2628      0.55  | Q       |  V       |          |          |
10+25       0.2666      0.55  | Q       |  V       |          |          |
10+30       0.2704      0.55  | Q       |   V      |          |          |
10+35       0.2753      0.72  | Q       |   V      |          |          |
10+40       0.2806      0.77  |  Q      |   V      |          |          |
10+45       0.2859      0.77  |  Q      |   V      |          |          |
10+50       0.2912      0.77  |  Q      |    V     |          |          |
10+55       0.2965      0.77  |  Q      |    V     |          |          |
11+ 0       0.3018      0.77  |  Q      |    V     |          |          |
11+ 5       0.3069      0.74  | Q       |     V    |          |          |
11+10       0.3119      0.73  | Q       |     V    |          |          |
11+15       0.3169      0.73  | Q       |     V    |          |          |
11+20       0.3220      0.73  | Q       |     V    |          |          |
11+25       0.3270      0.73  | Q       |      V   |          |          |
11+30       0.3320      0.73  | Q       |      V   |          |          |
```

```
11+35       0.3366      0.66  | Q       |       V  |         |         |
11+40       0.3410      0.64  | Q       |       V  |         |         |
11+45       0.3455      0.65  | Q       |        V |         |         |
11+50       0.3501      0.68  | Q       |        V |         |         |
11+55       0.3549      0.69  | Q       |        V |         |         |
12+ 0       0.3596      0.69  | Q       |        V |         |         |
12+ 5       0.3660      0.92  |  Q      |         V|         |         |
12+10       0.3728      0.99  |  Q      |         V|         |         |
12+15       0.3796      0.99  |  Q      |         V|         |         |
12+20       0.3866      1.02  |   Q     |          V         |         |
12+25       0.3938      1.03  |   Q     |          V         |         |
12+30       0.4009      1.03  |   Q     |          |V        |         |
12+35       0.4085      1.10  |   Q     |          |V        |         |
12+40       0.4162      1.12  |   Q     |          |V        |         |
12+45       0.4239      1.12  |   Q     |          | V       |         |
12+50       0.4318      1.15  |   Q     |          | V       |         |
12+55       0.4399      1.16  |   Q     |          |  V      |         |
13+ 0       0.4479      1.16  |   Q     |          |  V      |         |
13+ 5       0.4570      1.33  |    Q    |          |  V      |         |
13+10       0.4665      1.38  |    Q    |          |   V     |         |
13+15       0.4760      1.38  |    Q    |          |   V     |         |
13+20       0.4855      1.38  |    Q    |          |    V    |         |
13+25       0.4950      1.38  |    Q    |          |    V    |         |
13+30       0.5046      1.38  |    Q    |          |     V   |         |
13+35       0.5116      1.02  |   Q     |          |     V   |         |
13+40       0.5179      0.91  |  Q      |          |      V  |         |
13+45       0.5241      0.91  |  Q      |          |      V  |         |
13+50       0.5304      0.91  |  Q      |          |      V  |         |
13+55       0.5367      0.91  |  Q      |          |       V |         |
14+ 0       0.5430      0.91  |  Q      |          |       V |         |
14+ 5       0.5502      1.04  |   Q     |          |       V |         |
14+10       0.5576      1.08  |   Q     |          |        V|         |
14+15       0.5651      1.08  |   Q     |          |        V|         |
14+20       0.5724      1.05  |   Q     |          |        V|         |
14+25       0.5795      1.04  |   Q     |          |         V         |
14+30       0.5867      1.04  |   Q     |          |         V         |
14+35       0.5939      1.04  |   Q     |          |         |V        |
14+40       0.6011      1.04  |   Q     |          |         |V        |
14+45       0.6083      1.04  |   Q     |          |         |V        |
14+50       0.6153      1.01  |   Q     |          |         | V       |
14+55       0.6222      1.00  |   Q     |          |         | V       |
15+ 0       0.6291      1.00  |   Q     |          |         | V       |
15+ 5       0.6358      0.97  |  Q      |          |         |  V      |
15+10       0.6424      0.96  |  Q      |          |         |  V      |
15+15       0.6490      0.96  |  Q      |          |         |   V     |
15+20       0.6554      0.93  |  Q      |          |         |   V     |
15+25       0.6617      0.92  |  Q      |          |         |   V     |
15+30       0.6680      0.92  |  Q      |          |         |    V    |
15+35       0.6735      0.79  |  Q      |          |         |    V    |
15+40       0.6786      0.75  | Q       |          |         |    V    |
```

```
15+45       0.6838      0.75  | Q       |         |         |    V    |
15+50       0.6889      0.75  | Q       |         |         |     V   |
15+55       0.6941      0.75  | Q       |         |         |     V   |
16+ 0       0.6993      0.75  | Q       |         |         |     V   |
16+ 5       0.7011      0.27  |Q        |         |         |     V   |
16+10       0.7020      0.13  Q         |         |         |     V   |
16+15       0.7029      0.13  Q         |         |         |     V   |
16+20       0.7038      0.13  Q         |         |         |     V   |
16+25       0.7046      0.13  Q         |         |         |     V   |
16+30       0.7055      0.13  Q         |         |         |     V   |
16+35       0.7062      0.10  Q         |         |         |      V  |
16+40       0.7069      0.09  Q         |         |         |      V  |
16+45       0.7075      0.09  Q         |         |         |      V  |
16+50       0.7082      0.09  Q         |         |         |      V  |
16+55       0.7088      0.09  Q         |         |         |      V  |
17+ 0       0.7095      0.09  Q         |         |         |      V  |
17+ 5       0.7105      0.14  Q         |         |         |      V  |
17+10       0.7116      0.16  Q         |         |         |      V  |
17+15       0.7126      0.16  Q         |         |         |      V  |
17+20       0.7137      0.16  Q         |         |         |      V  |
17+25       0.7148      0.16  Q         |         |         |      V  |
17+30       0.7159      0.16  Q         |         |         |      V  |
17+35       0.7170      0.16  Q         |         |         |      V  |
17+40       0.7181      0.16  Q         |         |         |      V  |
17+45       0.7192      0.16  Q         |         |         |      V  |
17+50       0.7201      0.13  Q         |         |         |      V  |
17+55       0.7210      0.13  Q         |         |         |      V  |
18+ 0       0.7219      0.13  Q         |         |         |      V  |
18+ 5       0.7227      0.13  Q         |         |         |      V  |
18+10       0.7236      0.13  Q         |         |         |      V  |
18+15       0.7245      0.13  Q         |         |         |      V  |
18+20       0.7253      0.13  Q         |         |         |       V |
18+25       0.7262      0.13  Q         |         |         |       V |
18+30       0.7271      0.13  Q         |         |         |       V |
18+35       0.7278      0.10  Q         |         |         |       V |
18+40       0.7285      0.09  Q         |         |         |       V |
18+45       0.7291      0.09  Q         |         |         |       V |
18+50       0.7296      0.07  Q         |         |         |       V |
18+55       0.7300      0.06  Q         |         |         |       V |
19+ 0       0.7305      0.06  Q         |         |         |       V |
19+ 5       0.7311      0.09  Q         |         |         |       V |
19+10       0.7317      0.09  Q         |         |         |       V |
19+15       0.7324      0.09  Q         |         |         |       V |
19+20       0.7332      0.12  Q         |         |         |       V |
19+25       0.7341      0.13  Q         |         |         |       V |
19+30       0.7349      0.13  Q         |         |         |       V |
19+35       0.7356      0.10  Q         |         |         |       V |
19+40       0.7363      0.09  Q         |         |         |       V |
19+45       0.7370      0.09  Q         |         |         |       V |
19+50       0.7374      0.07  Q         |         |         |       V |
```

```
19+55       0.7379      0.06  Q          |          |          |        V |
20+ 0       0.7383      0.06  Q          |          |          |        V |
20+ 5       0.7389      0.09  Q          |          |          |        V |
20+10       0.7396      0.09  Q          |          |          |        V |
20+15       0.7402      0.09  Q          |          |          |        V |
20+20       0.7409      0.09  Q          |          |          |        V |
20+25       0.7415      0.09  Q          |          |          |        V |
20+30       0.7422      0.09  Q          |          |          |        V |
20+35       0.7428      0.09  Q          |          |          |        V |
20+40       0.7435      0.09  Q          |          |          |        V |
20+45       0.7441      0.09  Q          |          |          |        V |
20+50       0.7446      0.07  Q          |          |          |         V|
20+55       0.7451      0.06  Q          |          |          |         V|
21+ 0       0.7455      0.06  Q          |          |          |         V|
21+ 5       0.7461      0.09  Q          |          |          |         V|
21+10       0.7468      0.09  Q          |          |          |         V|
21+15       0.7474      0.09  Q          |          |          |         V|
21+20       0.7479      0.07  Q          |          |          |         V|
21+25       0.7483      0.06  Q          |          |          |         V|
21+30       0.7488      0.06  Q          |          |          |         V|
21+35       0.7494      0.09  Q          |          |          |         V|
21+40       0.7500      0.09  Q          |          |          |         V|
21+45       0.7507      0.09  Q          |          |          |         V|
21+50       0.7512      0.07  Q          |          |          |         V|
21+55       0.7516      0.06  Q          |          |          |         V|
22+ 0       0.7520      0.06  Q          |          |          |         V|
22+ 5       0.7527      0.09  Q          |          |          |         V|
22+10       0.7533      0.09  Q          |          |          |         V|
22+15       0.7540      0.09  Q          |          |          |         V|
22+20       0.7544      0.07  Q          |          |          |         V|
22+25       0.7549      0.06  Q          |          |          |         V|
22+30       0.7553      0.06  Q          |          |          |         V|
22+35       0.7558      0.06  Q          |          |          |         V|
22+40       0.7562      0.06  Q          |          |          |         V|
22+45       0.7566      0.06  Q          |          |          |         V|
22+50       0.7571      0.06  Q          |          |          |         V|
22+55       0.7575      0.06  Q          |          |          |         V|
23+ 0       0.7579      0.06  Q          |          |          |         V|
23+ 5       0.7584      0.06  Q          |          |          |         V|
23+10       0.7588      0.06  Q          |          |          |         V|
23+15       0.7592      0.06  Q          |          |          |         V|
23+20       0.7597      0.06  Q          |          |          |         V|
23+25       0.7601      0.06  Q          |          |          |         V|
23+30       0.7606      0.06  Q          |          |          |         V|
23+35       0.7610      0.06  Q          |          |          |         V|
23+40       0.7614      0.06  Q          |          |          |         V|
23+45       0.7619      0.06  Q          |          |          |         V|
23+50       0.7623      0.06  Q          |          |          |         V|
23+55       0.7627      0.06  Q          |          |          |         V|
24+ 0       0.7632      0.06  Q          |          |          |         V|
```

```
   24+ 5       0.7633      0.02  Q         |         |         |         V
-----------------------------------------------------------------------
```

Appendix

H

BASIN ROUTING ANALYSIS

10-YEAR 24 HR BASIN ROUTING

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018
                        Study date: 12/13/23

------------------------------------------------------------------


Beyond Food Mart Perris Service Station
Basin Routing
10 yr
24 hr
------------------------------------------------------------------


Program License Serial Number 6481

------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION *********************

                From study/file name: 162POSTUH2410.rte
****************************HYDROGRAPH DATA***************************
                Number of intervals =   289
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =        0.782 (CFS)
                Total volume =       0.431 (Ac.Ft)
        Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*******************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------
Total number of inflow hydrograph intervals = 289
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------
------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
```

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.099	0.010	0.010
1.500	0.055	0.099	0.055	0.055
2.500	0.099	0.099	0.099	0.099
3.500	0.144	0.099	0.144	0.144
4.500	0.188	0.099	0.188	0.188
5.500	0.233	0.099	0.233	0.233
6.500	0.277	0.099	0.277	0.277
7.500	0.322	0.099	0.322	0.322
8.167	0.351	0.099	0.351	0.351
8.333	0.359	0.471	0.357	0.361
8.500	0.366	1.043	0.362	0.370
9.000	0.376	1.043	0.372	0.380

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.2	0.39	0.59	0.78	Depth (Ft.)
0.083	0.03	0.00	0.000	OI	|	|	|	|	0.01
0.167	0.04	0.00	0.000	OI	|	|	|	|	0.02
0.250	0.04	0.01	0.001	OI	|	|	|	|	0.03
0.333	0.06	0.01	0.001	O I	|	|	|	|	0.04
0.417	0.06	0.01	0.001	O I	|	|	|	|	0.06
0.500	0.06	0.02	0.002	O I	|	|	|	|	0.08
0.583	0.06	0.02	0.002	O I	|	|	|	|	0.09
0.667	0.06	0.02	0.002	O I	|	|	|	|	0.11
0.750	0.06	0.02	0.002	O I	|	|	|	|	0.12
0.833	0.08	0.03	0.003	|O I	|	|	|	|	0.13
0.917	0.08	0.03	0.003	|O I	|	|	|	|	0.15
1.000	0.08	0.03	0.003	|O I	|	|	|	|	0.17
1.083	0.07	0.04	0.004	|OI	|	|	|	|	0.18
1.167	0.06	0.04	0.004	|OI	|	|	|	|	0.19
1.250	0.06	0.04	0.004	|OI	|	|	|	|	0.20
1.333	0.06	0.04	0.004	|OI	|	|	|	|	0.20
1.417	0.06	0.04	0.004	|OI	|	|	|	|	0.21
1.500	0.06	0.04	0.004	|OI	|	|	|	|	0.22
1.583	0.06	0.04	0.004	|OI	|	|	|	|	0.22
1.667	0.06	0.05	0.005	|OI	|	|	|	|	0.23
1.750	0.06	0.05	0.005	|OI	|	|	|	|	0.23
1.833	0.08	0.05	0.005	|O I	|	|	|	|	0.24
1.917	0.08	0.05	0.005	| OI	|	|	|	|	0.25

2.000	0.08	0.05	0.005	OI				0.26
2.083	0.08	0.05	0.005	OI				0.27
2.167	0.08	0.06	0.006	OI				0.28
2.250	0.08	0.06	0.006	OI				0.29
2.333	0.08	0.06	0.006	OI				0.30
2.417	0.08	0.06	0.006	OI				0.30
2.500	0.08	0.06	0.006	OI				0.31
2.583	0.10	0.06	0.006	OI				0.32
2.667	0.10	0.07	0.007	O I				0.33
2.750	0.10	0.07	0.007	O I				0.34
2.833	0.10	0.07	0.007	O I				0.35
2.917	0.10	0.07	0.007	O I				0.36
3.000	0.10	0.07	0.007	OI				0.37
3.083	0.10	0.08	0.008	OI				0.38
3.167	0.10	0.08	0.008	OI				0.39
3.250	0.10	0.08	0.008	OI				0.40
3.333	0.10	0.08	0.008	OI				0.41
3.417	0.10	0.08	0.008	OI				0.41
3.500	0.10	0.08	0.008	OI				0.42
3.583	0.10	0.08	0.009	OI				0.43
3.667	0.10	0.09	0.009	OI				0.43
3.750	0.10	0.09	0.009	OI				0.44
3.833	0.12	0.09	0.009	OI				0.44
3.917	0.12	0.09	0.009	OI				0.45
4.000	0.12	0.09	0.009	OI				0.46
4.083	0.12	0.09	0.009	OI				0.47
4.167	0.12	0.10	0.010	OI				0.48
4.250	0.12	0.10	0.010	OI				0.49
4.333	0.14	0.10	0.010	OI				0.50
4.417	0.14	0.10	0.010	OI				0.51
4.500	0.14	0.10	0.011	OI				0.51
4.583	0.14	0.10	0.011	OI				0.52
4.667	0.14	0.10	0.011	OI				0.53
4.750	0.14	0.10	0.011	OI				0.53
4.833	0.16	0.10	0.012	O I				0.54
4.917	0.16	0.10	0.012	O I				0.55
5.000	0.16	0.10	0.013	O I				0.56
5.083	0.13	0.10	0.013	OI				0.57
5.167	0.12	0.10	0.013	O				0.57
5.250	0.12	0.10	0.013	O				0.57
5.333	0.14	0.10	0.014	OI				0.58
5.417	0.14	0.10	0.014	OI				0.58
5.500	0.14	0.10	0.014	OI				0.59
5.583	0.16	0.10	0.014	O I				0.60
5.667	0.16	0.10	0.015	O I				0.61
5.750	0.16	0.10	0.015	O I				0.62
5.833	0.16	0.10	0.016	O I				0.63
5.917	0.16	0.10	0.016	O I				0.64
6.000	0.16	0.10	0.017	O I				0.65
6.083	0.18	0.10	0.017	O I				0.66

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 6.167    0.18    0.10      0.018  |   O  I|       |       |       |     0.67
 6.250    0.18    0.10      0.018  |   O  I|       |       |       |     0.68
 6.333    0.18    0.10      0.019  |   O  I|       |       |       |     0.69
 6.417    0.18    0.10      0.019  |   O  I|       |       |       |     0.71
 6.500    0.18    0.10      0.020  |   O  I|       |       |       |     0.72
 6.583    0.20    0.10      0.021  |   O   I       |       |       |     0.73
 6.667    0.20    0.10      0.021  |   O   I       |       |       |     0.75
 6.750    0.20    0.10      0.022  |   O   I       |       |       |     0.77
 6.833    0.20    0.10      0.023  |   O   I       |       |       |     0.78
 6.917    0.20    0.10      0.023  |   O   I       |       |       |     0.80
 7.000    0.20    0.10      0.024  |   O   I       |       |       |     0.81
 7.083    0.20    0.10      0.025  |   O   I       |       |       |     0.83
 7.167    0.20    0.10      0.025  |   O   I       |       |       |     0.84
 7.250    0.20    0.10      0.026  |   O   I       |       |       |     0.86
 7.333    0.22    0.10      0.027  |   O   I       |       |       |     0.88
 7.417    0.22    0.10      0.028  |   O   |I      |       |       |     0.90
 7.500    0.22    0.10      0.029  |   O   |I      |       |       |     0.91
 7.583    0.24    0.10      0.030  |   O   |I      |       |       |     0.93
 7.667    0.24    0.10      0.030  |   O   |I      |       |       |     0.96
 7.750    0.24    0.10      0.031  |   O   |I      |       |       |     0.98
 7.833    0.26    0.10      0.033  |   O   | I     |       |       |     1.00
 7.917    0.26    0.10      0.034  |   O   | I     |       |       |     1.03
 8.000    0.26    0.10      0.035  |   O   | I     |       |       |     1.05
 8.083    0.29    0.10      0.036  |   O   |   I   |       |       |     1.08
 8.167    0.30    0.10      0.037  |   O   |   I   |       |       |     1.11
 8.250    0.30    0.10      0.039  |   O   |   I   |       |       |     1.14
 8.333    0.30    0.10      0.040  |   O   |   I   |       |       |     1.17
 8.417    0.30    0.10      0.042  |   O   |   I   |       |       |     1.20
 8.500    0.30    0.10      0.043  |   O   |   I   |       |       |     1.23
 8.583    0.32    0.10      0.044  |   O   |    I  |       |       |     1.27
 8.667    0.32    0.10      0.046  |   O   |    I  |       |       |     1.30
 8.750    0.32    0.10      0.048  |   O   |    I  |       |       |     1.33
 8.833    0.34    0.10      0.049  |   O   |    I  |       |       |     1.37
 8.917    0.34    0.10      0.051  |   O   |     I |       |       |     1.41
 9.000    0.34    0.10      0.052  |   O   |     I |       |       |     1.44
 9.083    0.37    0.10      0.054  |   O   |      I|       |       |     1.48
 9.167    0.38    0.10      0.056  |   O   |      I|       |       |     1.53
 9.250    0.38    0.10      0.058  |   O   |      I|       |       |     1.57
 9.333    0.40    0.10      0.060  |   O   |       I       |       |     1.62
 9.417    0.40    0.10      0.062  |   O   |       I       |       |     1.66
 9.500    0.40    0.10      0.064  |   O   |       I       |       |     1.71
 9.583    0.42    0.10      0.066  |   O   |       |I      |       |     1.76
 9.667    0.42    0.10      0.069  |   O   |       |I      |       |     1.81
 9.750    0.42    0.10      0.071  |   O   |       |I      |       |     1.86
 9.833    0.44    0.10      0.073  |   O   |       |I      |       |     1.91
 9.917    0.44    0.10      0.076  |   O   |       | I     |       |     1.97
10.000    0.44    0.10      0.078  |   O   |       | I     |       |     2.02
10.083    0.34    0.10      0.080  |   O   |    I  |       |       |     2.07
10.167    0.30    0.10      0.081  |   O   |   I   |       |       |     2.10
10.250    0.30    0.10      0.083  |   O   |   I   |       |       |     2.13
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10.333	0.30	0.10	0.084	O	I				2.17
10.417	0.30	0.10	0.086	O	I				2.20
10.500	0.30	0.10	0.087	O	I				2.23
10.583	0.38	0.10	0.089	O		I			2.27
10.667	0.40	0.10	0.091	O		I			2.31
10.750	0.40	0.10	0.093	O		I			2.36
10.833	0.40	0.10	0.095	O		I			2.41
10.917	0.40	0.10	0.097	O		I			2.46
11.000	0.40	0.10	0.099	O		I			2.50
11.083	0.39	0.10	0.101	O		I			2.55
11.167	0.38	0.10	0.103	O		I			2.59
11.250	0.38	0.10	0.105	O		I			2.64
11.333	0.38	0.10	0.107	O		I			2.68
11.417	0.38	0.10	0.109	O		I			2.72
11.500	0.38	0.10	0.111	O		I			2.77
11.583	0.35	0.10	0.113	O		I			2.81
11.667	0.34	0.10	0.115	O		I			2.85
11.750	0.34	0.10	0.116	O		I			2.88
11.833	0.36	0.10	0.118	O		I			2.92
11.917	0.36	0.10	0.120	O		I			2.96
12.000	0.36	0.10	0.122	O		I			3.00
12.083	0.49	0.10	0.124	O			I		3.05
12.167	0.52	0.10	0.127	O			I		3.12
12.250	0.52	0.10	0.130	O			I		3.18
12.333	0.55	0.10	0.133	O			I		3.25
12.417	0.55	0.10	0.136	O			I		3.32
12.500	0.55	0.10	0.139	O			I		3.39
12.583	0.60	0.10	0.142	O			I		3.46
12.667	0.61	0.10	0.146	O			I		3.54
12.750	0.61	0.10	0.149	O			I		3.62
12.833	0.63	0.10	0.153	O			I		3.70
12.917	0.64	0.10	0.156	O			I		3.78
13.000	0.64	0.10	0.160	O			I		3.87
13.083	0.75	0.10	0.164	O				I	3.96
13.167	0.78	0.10	0.169	O				I	4.06
13.250	0.78	0.10	0.174	O				I	4.17
13.333	0.78	0.10	0.178	O				I	4.28
13.417	0.78	0.10	0.183	O				I	4.38
13.500	0.78	0.10	0.188	O				I	4.49
13.583	0.55	0.10	0.192	O			I		4.58
13.667	0.48	0.10	0.194	O		I			4.64
13.750	0.48	0.10	0.197	O		I			4.70
13.833	0.48	0.10	0.200	O		I			4.76
13.917	0.49	0.10	0.202	O		I			4.82
14.000	0.49	0.10	0.205	O		I			4.88
14.083	0.57	0.10	0.208	O			I		4.94
14.167	0.60	0.10	0.211	O			I		5.02
14.250	0.60	0.10	0.215	O			I		5.09
14.333	0.58	0.10	0.218	O			I		5.17
14.417	0.57	0.10	0.221	O			I		5.24

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14.500    0.57    0.10      0.225  |   O   |        |       I|        |     5.31
14.583    0.57    0.10      0.228  |   O   |        |       I|        |     5.39
14.667    0.57    0.10      0.231  |   O   |        |       I|        |     5.46
14.750    0.57    0.10      0.234  |   O   |        |       I|        |     5.53
14.833    0.55    0.10      0.238  |   O   |        |      I |        |     5.61
14.917    0.55    0.10      0.241  |   O   |        |      I |        |     5.68
15.000    0.55    0.10      0.244  |   O   |        |      I |        |     5.75
15.083    0.53    0.10      0.247  |   O   |        |    I   |        |     5.82
15.167    0.52    0.10      0.250  |   O   |        |    I   |        |     5.88
15.250    0.52    0.10      0.253  |   O   |        |    I   |        |     5.95
15.333    0.50    0.10      0.256  |   O   |        |   I    |        |     6.01
15.417    0.50    0.10      0.258  |   O   |        |   I    |        |     6.08
15.500    0.50    0.10      0.261  |   O   |        |   I    |        |     6.14
15.583    0.42    0.10      0.264  |   O   |        |I       |        |     6.19
15.667    0.39    0.10      0.266  |   O   |       I|        |        |     6.24
15.750    0.39    0.10      0.268  |   O   |        I       |        |     6.29
15.833    0.39    0.10      0.270  |   O   |        I       |        |     6.33
15.917    0.39    0.10      0.272  |   O   |        I       |        |     6.38
16.000    0.39    0.10      0.274  |   O   |        I       |        |     6.43
16.083    0.15    0.10      0.275  |   O I |        |       |        |     6.45
16.167    0.08    0.10      0.275  |  IO   |        |       |        |     6.46
16.250    0.08    0.10      0.275  |  IO   |        |       |        |     6.45
16.333    0.08    0.10      0.275  |  IO   |        |       |        |     6.45
16.417    0.08    0.10      0.275  |  IO   |        |       |        |     6.45
16.500    0.08    0.10      0.275  |  IO   |        |       |        |     6.44
16.583    0.07    0.10      0.274  | I O   |        |       |        |     6.44
16.667    0.06    0.10      0.274  | I O   |        |       |        |     6.44
16.750    0.06    0.10      0.274  | I O   |        |       |        |     6.43
16.833    0.06    0.10      0.274  | I O   |        |       |        |     6.42
16.917    0.06    0.10      0.273  | I O   |        |       |        |     6.42
17.000    0.06    0.10      0.273  | I O   |        |       |        |     6.41
17.083    0.09    0.10      0.273  |  IO   |        |       |        |     6.41
17.167    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.250    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.333    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.417    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.500    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.583    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.667    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.750    0.10    0.10      0.273  |   O   |        |       |        |     6.41
17.833    0.09    0.10      0.273  |  IO   |        |       |        |     6.41
17.917    0.08    0.10      0.273  |  IO   |        |       |        |     6.41
18.000    0.08    0.10      0.273  |  IO   |        |       |        |     6.40
18.083    0.08    0.10      0.273  |  IO   |        |       |        |     6.40
18.167    0.08    0.10      0.272  |  IO   |        |       |        |     6.40
18.250    0.08    0.10      0.272  |  IO   |        |       |        |     6.39
18.333    0.08    0.10      0.272  |  IO   |        |       |        |     6.39
18.417    0.08    0.10      0.272  |  IO   |        |       |        |     6.39
18.500    0.08    0.10      0.272  |  IO   |        |       |        |     6.39
18.583    0.07    0.10      0.272  | I O   |        |       |        |     6.38
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18.667    0.06    0.10      0.272  | I O   |       |       |       |     6.38
18.750    0.06    0.10      0.271  | I O   |       |       |       |     6.37
18.833    0.05    0.10      0.271  |I  O   |       |       |       |     6.36
18.917    0.04    0.10      0.271  |I  O   |       |       |       |     6.35
19.000    0.04    0.10      0.270  |I  O   |       |       |       |     6.35
19.083    0.06    0.10      0.270  | I O   |       |       |       |     6.34
19.167    0.06    0.10      0.270  | I O   |       |       |       |     6.33
19.250    0.06    0.10      0.269  | I O   |       |       |       |     6.32
19.333    0.08    0.10      0.269  |  IO   |       |       |       |     6.32
19.417    0.08    0.10      0.269  |  IO   |       |       |       |     6.32
19.500    0.08    0.10      0.269  |  IO   |       |       |       |     6.31
19.583    0.07    0.10      0.269  | I O   |       |       |       |     6.31
19.667    0.06    0.10      0.268  | I O   |       |       |       |     6.30
19.750    0.06    0.10      0.268  | I O   |       |       |       |     6.30
19.833    0.05    0.10      0.268  |I  O   |       |       |       |     6.29
19.917    0.04    0.10      0.267  |I  O   |       |       |       |     6.28
20.000    0.04    0.10      0.267  |I  O   |       |       |       |     6.27
20.083    0.06    0.10      0.267  | I O   |       |       |       |     6.26
20.167    0.06    0.10      0.266  | I O   |       |       |       |     6.26
20.250    0.06    0.10      0.266  | I O   |       |       |       |     6.25
20.333    0.06    0.10      0.266  | I O   |       |       |       |     6.25
20.417    0.06    0.10      0.266  | I O   |       |       |       |     6.24
20.500    0.06    0.10      0.265  | I O   |       |       |       |     6.23
20.583    0.06    0.10      0.265  | I O   |       |       |       |     6.23
20.667    0.06    0.10      0.265  | I O   |       |       |       |     6.22
20.750    0.06    0.10      0.265  | I O   |       |       |       |     6.22
20.833    0.05    0.10      0.264  |I  O   |       |       |       |     6.21
20.917    0.04    0.10      0.264  |I  O   |       |       |       |     6.20
21.000    0.04    0.10      0.263  |I  O   |       |       |       |     6.19
21.083    0.06    0.10      0.263  | I O   |       |       |       |     6.18
21.167    0.06    0.10      0.263  | I O   |       |       |       |     6.18
21.250    0.06    0.10      0.263  | I O   |       |       |       |     6.17
21.333    0.05    0.10      0.262  |I  O   |       |       |       |     6.16
21.417    0.04    0.10      0.262  |I  O   |       |       |       |     6.15
21.500    0.04    0.10      0.261  |I  O   |       |       |       |     6.15
21.583    0.06    0.10      0.261  | I O   |       |       |       |     6.14
21.667    0.06    0.10      0.261  | I O   |       |       |       |     6.13
21.750    0.06    0.10      0.261  | I O   |       |       |       |     6.13
21.833    0.05    0.10      0.260  |I  O   |       |       |       |     6.12
21.917    0.04    0.10      0.260  |I  O   |       |       |       |     6.11
22.000    0.04    0.10      0.259  |I  O   |       |       |       |     6.10
22.083    0.06    0.10      0.259  | I O   |       |       |       |     6.09
22.167    0.06    0.10      0.259  | I O   |       |       |       |     6.09
22.250    0.06    0.10      0.259  | I O   |       |       |       |     6.08
22.333    0.05    0.10      0.258  |I  O   |       |       |       |     6.07
22.417    0.04    0.10      0.258  |I  O   |       |       |       |     6.06
22.500    0.04    0.10      0.257  |I  O   |       |       |       |     6.05
22.583    0.04    0.10      0.257  |I  O   |       |       |       |     6.05
22.667    0.04    0.10      0.257  |I  O   |       |       |       |     6.04
22.750    0.04    0.10      0.256  |I  O   |       |       |       |     6.03
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22.833	0.04	0.10	0.256	|I	O	|	|	|	6.02
22.917	0.04	0.10	0.255	|I	O	|	|	|	6.01
23.000	0.04	0.10	0.255	|I	O	|	|	|	6.00
23.083	0.04	0.10	0.255	|I	O	|	|	|	5.99
23.167	0.04	0.10	0.254	|I	O	|	|	|	5.98
23.250	0.04	0.10	0.254	|I	O	|	|	|	5.97
23.333	0.04	0.10	0.253	|I	O	|	|	|	5.96
23.417	0.04	0.10	0.253	|I	O	|	|	|	5.95
23.500	0.04	0.10	0.253	|I	O	|	|	|	5.94
23.583	0.04	0.10	0.252	|I	O	|	|	|	5.94
23.667	0.04	0.10	0.252	|I	O	|	|	|	5.93
23.750	0.04	0.10	0.251	|I	O	|	|	|	5.92
23.833	0.04	0.10	0.251	|I	O	|	|	|	5.91
23.917	0.04	0.10	0.251	|I	O	|	|	|	5.90
24.000	0.04	0.10	0.250	|I	O	|	|	|	5.89
24.083	0.01	0.10	0.250	I	O	|	|	|	5.88
24.167	0.00	0.10	0.249	I	O	|	|	|	5.86
24.250	0.00	0.10	0.248	I	O	|	|	|	5.85
24.333	0.00	0.10	0.248	I	O	|	|	|	5.83
24.417	0.00	0.10	0.247	I	O	|	|	|	5.82
24.500	0.00	0.10	0.246	I	O	|	|	|	5.80
24.583	0.00	0.10	0.246	I	O	|	|	|	5.79
24.667	0.00	0.10	0.245	I	O	|	|	|	5.77
24.750	0.00	0.10	0.244	I	O	|	|	|	5.75
24.833	0.00	0.10	0.244	I	O	|	|	|	5.74
24.917	0.00	0.10	0.243	I	O	|	|	|	5.72
25.000	0.00	0.10	0.242	I	O	|	|	|	5.71
25.083	0.00	0.10	0.241	I	O	|	|	|	5.69
25.167	0.00	0.10	0.241	I	O	|	|	|	5.68
25.250	0.00	0.10	0.240	I	O	|	|	|	5.66
25.333	0.00	0.10	0.239	I	O	|	|	|	5.65
25.417	0.00	0.10	0.239	I	O	|	|	|	5.63
25.500	0.00	0.10	0.238	I	O	|	|	|	5.62
25.583	0.00	0.10	0.237	I	O	|	|	|	5.60
25.667	0.00	0.10	0.237	I	O	|	|	|	5.58
25.750	0.00	0.10	0.236	I	O	|	|	|	5.57
25.833	0.00	0.10	0.235	I	O	|	|	|	5.55
25.917	0.00	0.10	0.235	I	O	|	|	|	5.54
26.000	0.00	0.10	0.234	I	O	|	|	|	5.52
26.083	0.00	0.10	0.233	I	O	|	|	|	5.51
26.167	0.00	0.10	0.233	I	O	|	|	|	5.49
26.250	0.00	0.10	0.232	I	O	|	|	|	5.48
26.333	0.00	0.10	0.231	I	O	|	|	|	5.46
26.417	0.00	0.10	0.231	I	O	|	|	|	5.45
26.500	0.00	0.10	0.230	I	O	|	|	|	5.43
26.583	0.00	0.10	0.229	I	O	|	|	|	5.42
26.667	0.00	0.10	0.229	I	O	|	|	|	5.40
26.750	0.00	0.10	0.228	I	O	|	|	|	5.39
26.833	0.00	0.10	0.227	I	O	|	|	|	5.37
26.917	0.00	0.10	0.226	I	O	|	|	|	5.35

27.000	0.00	0.10	0.226	I	O				5.34
27.083	0.00	0.10	0.225	I	O				5.32
27.167	0.00	0.10	0.224	I	O				5.31
27.250	0.00	0.10	0.224	I	O				5.29
27.333	0.00	0.10	0.223	I	O				5.28
27.417	0.00	0.10	0.222	I	O				5.26
27.500	0.00	0.10	0.222	I	O				5.25
27.583	0.00	0.10	0.221	I	O				5.23
27.667	0.00	0.10	0.220	I	O				5.22
27.750	0.00	0.10	0.220	I	O				5.20
27.833	0.00	0.10	0.219	I	O				5.19
27.917	0.00	0.10	0.218	I	O				5.17
28.000	0.00	0.10	0.218	I	O				5.16
28.083	0.00	0.10	0.217	I	O				5.14
28.167	0.00	0.10	0.216	I	O				5.13
28.250	0.00	0.10	0.216	I	O				5.11
28.333	0.00	0.10	0.215	I	O				5.10
28.417	0.00	0.10	0.214	I	O				5.08
28.500	0.00	0.10	0.214	I	O				5.07
28.583	0.00	0.10	0.213	I	O				5.05
28.667	0.00	0.10	0.212	I	O				5.04
28.750	0.00	0.10	0.211	I	O				5.02
28.833	0.00	0.10	0.211	I	O				5.01
28.917	0.00	0.10	0.210	I	O				4.99
29.000	0.00	0.10	0.209	I	O				4.98
29.083	0.00	0.10	0.209	I	O				4.96
29.167	0.00	0.10	0.208	I	O				4.95
29.250	0.00	0.10	0.207	I	O				4.93
29.333	0.00	0.10	0.207	I	O				4.92
29.417	0.00	0.10	0.206	I	O				4.90
29.500	0.00	0.10	0.205	I	O				4.89
29.583	0.00	0.10	0.205	I	O				4.87
29.667	0.00	0.10	0.204	I	O				4.85
29.750	0.00	0.10	0.203	I	O				4.84
29.833	0.00	0.10	0.203	I	O				4.82
29.917	0.00	0.10	0.202	I	O				4.81
30.000	0.00	0.10	0.201	I	O				4.79
30.083	0.00	0.10	0.201	I	O				4.78
30.167	0.00	0.10	0.200	I	O				4.76
30.250	0.00	0.10	0.199	I	O				4.75
30.333	0.00	0.10	0.199	I	O				4.73
30.417	0.00	0.10	0.198	I	O				4.72
30.500	0.00	0.10	0.197	I	O				4.70
30.583	0.00	0.10	0.196	I	O				4.69
30.667	0.00	0.10	0.196	I	O				4.67
30.750	0.00	0.10	0.195	I	O				4.66
30.833	0.00	0.10	0.194	I	O				4.64
30.917	0.00	0.10	0.194	I	O				4.63
31.000	0.00	0.10	0.193	I	O				4.61
31.083	0.00	0.10	0.192	I	O				4.60

31.167	0.00	0.10	0.192	I	O				4.58
31.250	0.00	0.10	0.191	I	O				4.57
31.333	0.00	0.10	0.190	I	O				4.55
31.417	0.00	0.10	0.190	I	O				4.54
31.500	0.00	0.10	0.189	I	O				4.52
31.583	0.00	0.10	0.188	I	O				4.51
31.667	0.00	0.10	0.188	I	O				4.49
31.750	0.00	0.10	0.187	I	O				4.48
31.833	0.00	0.10	0.186	I	O				4.46
31.917	0.00	0.10	0.186	I	O				4.44
32.000	0.00	0.10	0.185	I	O				4.43
32.083	0.00	0.10	0.184	I	O				4.41
32.167	0.00	0.10	0.184	I	O				4.40
32.250	0.00	0.10	0.183	I	O				4.38
32.333	0.00	0.10	0.182	I	O				4.37
32.417	0.00	0.10	0.181	I	O				4.35
32.500	0.00	0.10	0.181	I	O				4.34
32.583	0.00	0.10	0.180	I	O				4.32
32.667	0.00	0.10	0.179	I	O				4.31
32.750	0.00	0.10	0.179	I	O				4.29
32.833	0.00	0.10	0.178	I	O				4.27
32.917	0.00	0.10	0.177	I	O				4.26
33.000	0.00	0.10	0.177	I	O				4.24
33.083	0.00	0.10	0.176	I	O				4.23
33.167	0.00	0.10	0.175	I	O				4.21
33.250	0.00	0.10	0.175	I	O				4.20
33.333	0.00	0.10	0.174	I	O				4.18
33.417	0.00	0.10	0.173	I	O				4.17
33.500	0.00	0.10	0.173	I	O				4.15
33.583	0.00	0.10	0.172	I	O				4.13
33.667	0.00	0.10	0.171	I	O				4.12
33.750	0.00	0.10	0.171	I	O				4.10
33.833	0.00	0.10	0.170	I	O				4.09
33.917	0.00	0.10	0.169	I	O				4.07
34.000	0.00	0.10	0.169	I	O				4.06
34.083	0.00	0.10	0.168	I	O				4.04
34.167	0.00	0.10	0.167	I	O				4.03
34.250	0.00	0.10	0.166	I	O				4.01
34.333	0.00	0.10	0.166	I	O				4.00
34.417	0.00	0.10	0.165	I	O				3.98
34.500	0.00	0.10	0.164	I	O				3.96
34.583	0.00	0.10	0.164	I	O				3.95
34.667	0.00	0.10	0.163	I	O				3.93
34.750	0.00	0.10	0.162	I	O				3.92
34.833	0.00	0.10	0.162	I	O				3.90
34.917	0.00	0.10	0.161	I	O				3.89
35.000	0.00	0.10	0.160	I	O				3.87
35.083	0.00	0.10	0.160	I	O				3.86
35.167	0.00	0.10	0.159	I	O				3.84
35.250	0.00	0.10	0.158	I	O				3.82

35.333	0.00	0.10	0.158	I	O				3.81
35.417	0.00	0.10	0.157	I	O				3.79
35.500	0.00	0.10	0.156	I	O				3.78
35.583	0.00	0.10	0.156	I	O				3.76
35.667	0.00	0.10	0.155	I	O				3.75
35.750	0.00	0.10	0.154	I	O				3.73
35.833	0.00	0.10	0.154	I	O				3.72
35.917	0.00	0.10	0.153	I	O				3.70
36.000	0.00	0.10	0.152	I	O				3.69
36.083	0.00	0.10	0.151	I	O				3.67
36.167	0.00	0.10	0.151	I	O				3.65
36.250	0.00	0.10	0.150	I	O				3.64
36.333	0.00	0.10	0.149	I	O				3.62
36.417	0.00	0.10	0.149	I	O				3.61
36.500	0.00	0.10	0.148	I	O				3.59
36.583	0.00	0.10	0.147	I	O				3.58
36.667	0.00	0.10	0.147	I	O				3.56
36.750	0.00	0.10	0.146	I	O				3.55
36.833	0.00	0.10	0.145	I	O				3.53
36.917	0.00	0.10	0.145	I	O				3.51
37.000	0.00	0.10	0.144	I	O				3.50
37.083	0.00	0.10	0.143	I	O				3.48
37.167	0.00	0.10	0.143	I	O				3.47
37.250	0.00	0.10	0.142	I	O				3.45
37.333	0.00	0.10	0.141	I	O				3.44
37.417	0.00	0.10	0.141	I	O				3.42
37.500	0.00	0.10	0.140	I	O				3.41
37.583	0.00	0.10	0.139	I	O				3.39
37.667	0.00	0.10	0.139	I	O				3.38
37.750	0.00	0.10	0.138	I	O				3.36
37.833	0.00	0.10	0.137	I	O				3.35
37.917	0.00	0.10	0.136	I	O				3.33
38.000	0.00	0.10	0.136	I	O				3.32
38.083	0.00	0.10	0.135	I	O				3.30
38.167	0.00	0.10	0.134	I	O				3.29
38.250	0.00	0.10	0.134	I	O				3.27
38.333	0.00	0.10	0.133	I	O				3.26
38.417	0.00	0.10	0.132	I	O				3.24
38.500	0.00	0.10	0.132	I	O				3.23
38.583	0.00	0.10	0.131	I	O				3.21
38.667	0.00	0.10	0.130	I	O				3.20
38.750	0.00	0.10	0.130	I	O				3.18
38.833	0.00	0.10	0.129	I	O				3.17
38.917	0.00	0.10	0.128	I	O				3.15
39.000	0.00	0.10	0.128	I	O				3.14
39.083	0.00	0.10	0.127	I	O				3.12
39.167	0.00	0.10	0.126	I	O				3.11
39.250	0.00	0.10	0.126	I	O				3.09
39.333	0.00	0.10	0.125	I	O				3.08
39.417	0.00	0.10	0.124	I	O				3.06

39.500	0.00	0.10	0.124	I	O				3.04
39.583	0.00	0.10	0.123	I	O				3.03
39.667	0.00	0.10	0.122	I	O				3.01
39.750	0.00	0.10	0.121	I	O				3.00
39.833	0.00	0.10	0.121	I	O				2.98
39.917	0.00	0.10	0.120	I	O				2.97
40.000	0.00	0.10	0.119	I	O				2.95
40.083	0.00	0.10	0.119	I	O				2.94
40.167	0.00	0.10	0.118	I	O				2.92
40.250	0.00	0.10	0.117	I	O				2.91
40.333	0.00	0.10	0.117	I	O				2.89
40.417	0.00	0.10	0.116	I	O				2.88
40.500	0.00	0.10	0.115	I	O				2.86
40.583	0.00	0.10	0.115	I	O				2.85
40.667	0.00	0.10	0.114	I	O				2.83
40.750	0.00	0.10	0.113	I	O				2.82
40.833	0.00	0.10	0.113	I	O				2.80
40.917	0.00	0.10	0.112	I	O				2.79
41.000	0.00	0.10	0.111	I	O				2.77
41.083	0.00	0.10	0.111	I	O				2.76
41.167	0.00	0.10	0.110	I	O				2.74
41.250	0.00	0.10	0.109	I	O				2.73
41.333	0.00	0.10	0.109	I	O				2.71
41.417	0.00	0.10	0.108	I	O				2.70
41.500	0.00	0.10	0.107	I	O				2.68
41.583	0.00	0.10	0.106	I	O				2.67
41.667	0.00	0.10	0.106	I	O				2.65
41.750	0.00	0.10	0.105	I	O				2.64
41.833	0.00	0.10	0.104	I	O				2.62
41.917	0.00	0.10	0.104	I	O				2.61
42.000	0.00	0.10	0.103	I	O				2.59
42.083	0.00	0.10	0.102	I	O				2.58
42.167	0.00	0.10	0.102	I	O				2.56
42.250	0.00	0.10	0.101	I	O				2.54
42.333	0.00	0.10	0.100	I	O				2.53
42.417	0.00	0.10	0.100	I	O				2.51
42.500	0.00	0.10	0.099	I	O				2.50
42.583	0.00	0.10	0.098	I	O				2.48
42.667	0.00	0.10	0.098	I	O				2.47
42.750	0.00	0.10	0.097	I	O				2.45
42.833	0.00	0.10	0.096	I	O				2.44
42.917	0.00	0.10	0.096	I	O				2.42
43.000	0.00	0.10	0.095	I	O				2.41
43.083	0.00	0.10	0.094	I	O				2.39
43.167	0.00	0.10	0.094	I	O				2.38
43.250	0.00	0.10	0.093	I	O				2.36
43.333	0.00	0.10	0.092	I	O				2.34
43.417	0.00	0.10	0.091	I	O				2.33
43.500	0.00	0.10	0.091	I	O				2.31
43.583	0.00	0.10	0.090	I	O				2.30

43.667	0.00	0.10	0.089	I	O				2.28
43.750	0.00	0.10	0.089	I	O				2.27
43.833	0.00	0.10	0.088	I	O				2.25
43.917	0.00	0.10	0.087	I	O				2.24
44.000	0.00	0.10	0.087	I	O				2.22
44.083	0.00	0.10	0.086	I	O				2.20
44.167	0.00	0.10	0.085	I	O				2.19
44.250	0.00	0.10	0.085	I	O				2.17
44.333	0.00	0.10	0.084	I	O				2.16
44.417	0.00	0.10	0.083	I	O				2.14
44.500	0.00	0.10	0.083	I	O				2.13
44.583	0.00	0.10	0.082	I	O				2.11
44.667	0.00	0.10	0.081	I	O				2.10
44.750	0.00	0.10	0.081	I	O				2.08
44.833	0.00	0.10	0.080	I	O				2.07
44.917	0.00	0.10	0.079	I	O				2.05
45.000	0.00	0.10	0.079	I	O				2.03
45.083	0.00	0.10	0.078	I	O				2.02
45.167	0.00	0.10	0.077	I	O				2.00
45.250	0.00	0.10	0.076	I	O				1.99
45.333	0.00	0.10	0.076	I	O				1.97
45.417	0.00	0.10	0.075	I	O				1.96
45.500	0.00	0.10	0.074	I	O				1.94
45.583	0.00	0.10	0.074	I	O				1.93
45.667	0.00	0.10	0.073	I	O				1.91
45.750	0.00	0.10	0.072	I	O				1.90
45.833	0.00	0.10	0.072	I	O				1.88
45.917	0.00	0.10	0.071	I	O				1.86
46.000	0.00	0.10	0.070	I	O				1.85
46.083	0.00	0.10	0.070	I	O				1.83
46.167	0.00	0.10	0.069	I	O				1.82
46.250	0.00	0.10	0.068	I	O				1.80
46.333	0.00	0.10	0.068	I	O				1.79
46.417	0.00	0.10	0.067	I	O				1.77
46.500	0.00	0.10	0.066	I	O				1.76
46.583	0.00	0.10	0.066	I	O				1.74
46.667	0.00	0.10	0.065	I	O				1.72
46.750	0.00	0.10	0.064	I	O				1.71
46.833	0.00	0.10	0.064	I	O				1.69
46.917	0.00	0.10	0.063	I	O				1.68
47.000	0.00	0.10	0.062	I	O				1.66
47.083	0.00	0.10	0.061	I	O				1.65
47.167	0.00	0.10	0.061	I	O				1.63
47.250	0.00	0.10	0.060	I	O				1.62
47.333	0.00	0.10	0.059	I	O				1.60
47.417	0.00	0.10	0.059	I	O				1.59
47.500	0.00	0.10	0.058	I	O				1.57
47.583	0.00	0.10	0.057	I	O				1.55
47.667	0.00	0.10	0.057	I	O				1.54
47.750	0.00	0.10	0.056	I	O				1.52

47.833	0.00	0.10	0.055	I	O				1.51
47.917	0.00	0.10	0.055	I	O				1.49
48.000	0.00	0.10	0.054	I	O				1.48
48.083	0.00	0.10	0.053	I	O				1.46
48.167	0.00	0.10	0.053	I	O				1.45
48.250	0.00	0.10	0.052	I	O				1.43
48.333	0.00	0.10	0.051	I	O				1.42
48.417	0.00	0.10	0.051	I	O				1.40
48.500	0.00	0.10	0.050	I	O				1.39
48.583	0.00	0.10	0.049	I	O				1.37
48.667	0.00	0.10	0.049	I	O				1.36
48.750	0.00	0.10	0.048	I	O				1.34
48.833	0.00	0.10	0.047	I	O				1.33
48.917	0.00	0.10	0.046	I	O				1.31
49.000	0.00	0.10	0.046	I	O				1.30
49.083	0.00	0.10	0.045	I	O				1.28
49.167	0.00	0.10	0.044	I	O				1.27
49.250	0.00	0.10	0.044	I	O				1.25
49.333	0.00	0.10	0.043	I	O				1.23
49.417	0.00	0.10	0.042	I	O				1.22
49.500	0.00	0.10	0.042	I	O				1.20
49.583	0.00	0.10	0.041	I	O				1.19
49.667	0.00	0.10	0.040	I	O				1.17
49.750	0.00	0.10	0.040	I	O				1.16
49.833	0.00	0.10	0.039	I	O				1.14
49.917	0.00	0.10	0.038	I	O				1.13
50.000	0.00	0.10	0.038	I	O				1.11
50.083	0.00	0.10	0.037	I	O				1.10
50.167	0.00	0.10	0.036	I	O				1.08
50.250	0.00	0.10	0.036	I	O				1.07
50.333	0.00	0.10	0.035	I	O				1.05
50.417	0.00	0.10	0.034	I	O				1.04
50.500	0.00	0.10	0.034	I	O				1.02
50.583	0.00	0.10	0.033	I	O				1.01
50.667	0.00	0.10	0.032	I	O				0.99
50.750	0.00	0.10	0.031	I	O				0.98
50.833	0.00	0.10	0.031	I	O				0.96
50.917	0.00	0.10	0.030	I	O				0.95
51.000	0.00	0.10	0.029	I	O				0.93
51.083	0.00	0.10	0.029	I	O				0.92
51.167	0.00	0.10	0.028	I	O				0.90
51.250	0.00	0.10	0.027	I	O				0.89
51.333	0.00	0.10	0.027	I	O				0.87
51.417	0.00	0.10	0.026	I	O				0.86
51.500	0.00	0.10	0.025	I	O				0.84
51.583	0.00	0.10	0.025	I	O				0.83
51.667	0.00	0.10	0.024	I	O				0.81
51.750	0.00	0.10	0.023	I	O				0.80
51.833	0.00	0.10	0.023	I	O				0.78
51.917	0.00	0.10	0.022	I	O				0.77

52.000	0.00	0.10	0.021	I	O				0.75
52.083	0.00	0.10	0.021	I	O				0.73
52.167	0.00	0.10	0.020	I	O				0.72
52.250	0.00	0.10	0.019	I	O				0.70
52.333	0.00	0.10	0.019	I	O				0.69
52.417	0.00	0.10	0.018	I	O				0.67
52.500	0.00	0.10	0.017	I	O				0.66
52.583	0.00	0.10	0.016	I	O				0.64
52.667	0.00	0.10	0.016	I	O				0.63
52.750	0.00	0.10	0.015	I	O				0.61
52.833	0.00	0.10	0.014	I	O				0.60
52.917	0.00	0.10	0.014	I	O				0.58
53.000	0.00	0.10	0.013	I	O				0.57
53.083	0.00	0.10	0.012	I	O				0.55
53.167	0.00	0.10	0.012	I	O				0.54
53.250	0.00	0.10	0.011	I	O				0.52
53.333	0.00	0.10	0.010	I	O				0.51
53.417	0.00	0.10	0.010	I	O				0.48
53.500	0.00	0.09	0.009	I	O				0.45
53.583	0.00	0.08	0.008	I	O				0.42
53.667	0.00	0.08	0.008	I	O				0.39
53.750	0.00	0.07	0.007	I	O				0.37
53.833	0.00	0.07	0.007	I	O				0.34
53.917	0.00	0.06	0.006	I	O				0.32
54.000	0.00	0.06	0.006	I	O				0.30
54.083	0.00	0.06	0.006	I	O				0.28
54.167	0.00	0.05	0.005	I	O				0.26
54.250	0.00	0.05	0.005	IO					0.24
54.333	0.00	0.05	0.005	IO					0.23
54.417	0.00	0.04	0.004	IO					0.21
54.500	0.00	0.04	0.004	IO					0.20
54.583	0.00	0.04	0.004	IO					0.19
54.667	0.00	0.03	0.003	IO					0.17
54.750	0.00	0.03	0.003	IO					0.16
54.833	0.00	0.03	0.003	IO					0.15
54.917	0.00	0.03	0.003	IO					0.14
55.000	0.00	0.03	0.003	IO					0.13
55.083	0.00	0.02	0.002	IO					0.12
55.167	0.00	0.02	0.002	O					0.12
55.250	0.00	0.02	0.002	O					0.11
55.333	0.00	0.02	0.002	O					0.10
55.417	0.00	0.02	0.002	O					0.09
55.500	0.00	0.02	0.002	O					0.09
55.583	0.00	0.02	0.002	O					0.08
55.667	0.00	0.02	0.002	O					0.08
55.750	0.00	0.01	0.001	O					0.07
55.833	0.00	0.01	0.001	O					0.07
55.917	0.00	0.01	0.001	O					0.06
56.000	0.00	0.01	0.001	O					0.06
56.083	0.00	0.01	0.001	O					0.05

56.167	0.00	0.01	0.001	O	|	|	|	|	0.05
56.250	0.00	0.01	0.001	O	|	|	|	|	0.05
56.333	0.00	0.01	0.001	O	|	|	|	|	0.04
56.417	0.00	0.01	0.001	O	|	|	|	|	0.04
56.500	0.00	0.01	0.001	O	|	|	|	|	0.04
56.583	0.00	0.01	0.001	O	|	|	|	|	0.04
56.667	0.00	0.01	0.001	O	|	|	|	|	0.03
56.750	0.00	0.01	0.001	O	|	|	|	|	0.03
56.833	0.00	0.01	0.001	O	|	|	|	|	0.03
56.917	0.00	0.01	0.001	O	|	|	|	|	0.03
57.000	0.00	0.01	0.001	O	|	|	|	|	0.03
57.083	0.00	0.00	0.000	O	|	|	|	|	0.02
57.167	0.00	0.00	0.000	O	|	|	|	|	0.02
57.250	0.00	0.00	0.000	O	|	|	|	|	0.02
57.333	0.00	0.00	0.000	O	|	|	|	|	0.02
57.417	0.00	0.00	0.000	O	|	|	|	|	0.02
57.500	0.00	0.00	0.000	O	|	|	|	|	0.02
57.583	0.00	0.00	0.000	O	|	|	|	|	0.02
57.667	0.00	0.00	0.000	O	|	|	|	|	0.01
57.750	0.00	0.00	0.000	O	|	|	|	|	0.01
57.833	0.00	0.00	0.000	O	|	|	|	|	0.01
57.917	0.00	0.00	0.000	O	|	|	|	|	0.01
58.000	0.00	0.00	0.000	O	|	|	|	|	0.01
58.083	0.00	0.00	0.000	O	|	|	|	|	0.01
58.167	0.00	0.00	0.000	O	|	|	|	|	0.01
58.250	0.00	0.00	0.000	O	|	|	|	|	0.01
58.333	0.00	0.00	0.000	O	|	|	|	|	0.01
58.417	0.00	0.00	0.000	O	|	|	|	|	0.01
58.500	0.00	0.00	0.000	O	|	|	|	|	0.01
58.583	0.00	0.00	0.000	O	|	|	|	|	0.01
58.667	0.00	0.00	0.000	O	|	|	|	|	0.01
58.750	0.00	0.00	0.000	O	|	|	|	|	0.01
58.833	0.00	0.00	0.000	O	|	|	|	|	0.01
58.917	0.00	0.00	0.000	O	|	|	|	|	0.01
59.000	0.00	0.00	0.000	O	|	|	|	|	0.01

```
****************************HYDROGRAPH DATA****************************
                Number of intervals =   708
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =        0.099 (CFS)
                Total volume =       0.431 (Ac.Ft)
        Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*********************************************************************

---------------------------------------------------------------------
```

100-YEAR 24 HR BASIN ROUTING

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018
                        Study date: 12/13/23

------------------------------------------------------------------


Beyond Food Mart Perris Service Station
Basin Routing
100 yr
24 hr
------------------------------------------------------------------


Program License Serial Number 6481

------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION *********************

                From study/file name: 162POSTUH24100.rte
****************************HYDROGRAPH DATA***************************
                Number of intervals =   289
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =        1.381 (CFS)
                Total volume =       0.763 (Ac.Ft)
        Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*******************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** RETARDING BASIN ROUTING ****
______________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------
Total number of inflow hydrograph intervals = 289
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------
------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
```

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.099	0.010	0.010
1.500	0.055	0.099	0.055	0.055
2.500	0.099	0.099	0.099	0.099
3.500	0.144	0.099	0.144	0.144
4.500	0.188	0.099	0.188	0.188
5.500	0.233	0.099	0.233	0.233
6.500	0.277	0.099	0.277	0.277
7.500	0.322	0.099	0.322	0.322
8.167	0.351	0.099	0.351	0.351
8.333	0.359	0.471	0.357	0.361
8.500	0.366	1.043	0.362	0.370
9.000	0.376	1.043	0.372	0.380

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.3	0.69	1.04	1.38	Depth (Ft.)
0.083	0.05	0.00	0.000	OI	|	|	|	|	0.01
0.167	0.06	0.01	0.001	OI	|	|	|	|	0.03
0.250	0.06	0.01	0.001	OI	|	|	|	|	0.05
0.333	0.09	0.01	0.001	O I	|	|	|	|	0.07
0.417	0.09	0.02	0.002	O I	|	|	|	|	0.09
0.500	0.09	0.02	0.002	O I	|	|	|	|	0.12
0.583	0.09	0.03	0.003	O I	|	|	|	|	0.14
0.667	0.09	0.03	0.003	O I	|	|	|	|	0.16
0.750	0.09	0.04	0.004	O I	|	|	|	|	0.19
0.833	0.12	0.04	0.004	O I	|	|	|	|	0.21
0.917	0.13	0.05	0.005	|OI	|	|	|	|	0.24
1.000	0.13	0.05	0.005	|OI	|	|	|	|	0.26
1.083	0.10	0.06	0.006	|OI	|	|	|	|	0.28
1.167	0.09	0.06	0.006	|OI	|	|	|	|	0.30
1.250	0.09	0.06	0.006	|OI	|	|	|	|	0.31
1.333	0.09	0.06	0.006	|OI	|	|	|	|	0.32
1.417	0.09	0.07	0.007	|OI	|	|	|	|	0.33
1.500	0.09	0.07	0.007	|OI	|	|	|	|	0.34
1.583	0.09	0.07	0.007	|OI	|	|	|	|	0.35
1.667	0.09	0.07	0.007	|OI	|	|	|	|	0.36
1.750	0.09	0.07	0.007	|OI	|	|	|	|	0.37
1.833	0.12	0.07	0.008	|OI	|	|	|	|	0.38
1.917	0.13	0.08	0.008	|OI	|	|	|	|	0.39

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2.000    0.13    0.08      0.008  |OI     |        |        |        |     0.41
2.083    0.13    0.08      0.009  |OI     |        |        |        |     0.43
2.167    0.13    0.09      0.009  | O     |        |        |        |     0.44
2.250    0.13    0.09      0.009  | O     |        |        |        |     0.45
2.333    0.13    0.09      0.009  | O     |        |        |        |     0.47
2.417    0.13    0.09      0.010  | O     |        |        |        |     0.48
2.500    0.13    0.10      0.010  | O     |        |        |        |     0.49
2.583    0.15    0.10      0.010  | OI    |        |        |        |     0.50
2.667    0.16    0.10      0.010  | OI    |        |        |        |     0.51
2.750    0.16    0.10      0.011  | OI    |        |        |        |     0.52
2.833    0.16    0.10      0.011  | OI    |        |        |        |     0.53
2.917    0.16    0.10      0.012  | OI    |        |        |        |     0.54
3.000    0.16    0.10      0.012  | OI    |        |        |        |     0.55
3.083    0.16    0.10      0.012  | OI    |        |        |        |     0.55
3.167    0.16    0.10      0.013  | OI    |        |        |        |     0.56
3.250    0.16    0.10      0.013  | OI    |        |        |        |     0.57
3.333    0.16    0.10      0.014  | OI    |        |        |        |     0.58
3.417    0.16    0.10      0.014  | OI    |        |        |        |     0.59
3.500    0.16    0.10      0.014  | OI    |        |        |        |     0.60
3.583    0.16    0.10      0.015  | OI    |        |        |        |     0.61
3.667    0.16    0.10      0.015  | OI    |        |        |        |     0.62
3.750    0.16    0.10      0.016  | OI    |        |        |        |     0.63
3.833    0.18    0.10      0.016  | O I   |        |        |        |     0.64
3.917    0.19    0.10      0.017  | O I   |        |        |        |     0.65
4.000    0.19    0.10      0.017  | O I   |        |        |        |     0.67
4.083    0.19    0.10      0.018  | O I   |        |        |        |     0.68
4.167    0.19    0.10      0.019  | O I   |        |        |        |     0.69
4.250    0.19    0.10      0.019  | O I   |        |        |        |     0.71
4.333    0.21    0.10      0.020  | O I   |        |        |        |     0.72
4.417    0.22    0.10      0.021  | O  I  |        |        |        |     0.74
4.500    0.22    0.10      0.022  | O  I  |        |        |        |     0.76
4.583    0.22    0.10      0.023  | O  I  |        |        |        |     0.78
4.667    0.22    0.10      0.023  | O  I  |        |        |        |     0.80
4.750    0.22    0.10      0.024  | O  I  |        |        |        |     0.82
4.833    0.25    0.10      0.025  | O  I  |        |        |        |     0.84
4.917    0.25    0.10      0.026  | O  I  |        |        |        |     0.86
5.000    0.25    0.10      0.027  | O  I  |        |        |        |     0.88
5.083    0.20    0.10      0.028  | O I   |        |        |        |     0.90
5.167    0.19    0.10      0.029  | O I   |        |        |        |     0.92
5.250    0.19    0.10      0.029  | O I   |        |        |        |     0.93
5.333    0.21    0.10      0.030  | O I   |        |        |        |     0.95
5.417    0.22    0.10      0.031  | O  I  |        |        |        |     0.97
5.500    0.22    0.10      0.032  | O  I  |        |        |        |     0.98
5.583    0.25    0.10      0.033  | O  I  |        |        |        |     1.01
5.667    0.25    0.10      0.034  | O  I  |        |        |        |     1.03
5.750    0.25    0.10      0.035  | O  I  |        |        |        |     1.05
5.833    0.25    0.10      0.036  | O  I  |        |        |        |     1.08
5.917    0.25    0.10      0.037  | O  I  |        |        |        |     1.10
6.000    0.25    0.10      0.038  | O  I  |        |        |        |     1.12
6.083    0.28    0.10      0.039  | O   I |        |        |        |     1.15
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6.167	0.28	0.10	0.040	O	I					1.18
6.250	0.28	0.10	0.042	O	I					1.20
6.333	0.28	0.10	0.043	O	I					1.23
6.417	0.28	0.10	0.044	O	I					1.26
6.500	0.28	0.10	0.046	O	I					1.29
6.583	0.31	0.10	0.047	O	I					1.32
6.667	0.32	0.10	0.048	O	I					1.35
6.750	0.32	0.10	0.050	O	I					1.39
6.833	0.32	0.10	0.051	O	I					1.42
6.917	0.32	0.10	0.053	O	I					1.45
7.000	0.32	0.10	0.054	O	I					1.49
7.083	0.32	0.10	0.056	O	I					1.52
7.167	0.32	0.10	0.058	O	I					1.56
7.250	0.32	0.10	0.059	O	I					1.59
7.333	0.35	0.10	0.061	O	I					1.63
7.417	0.37	0.10	0.063	O	I					1.67
7.500	0.37	0.10	0.064	O	I					1.71
7.583	0.40	0.10	0.066	O	I					1.76
7.667	0.41	0.10	0.068	O	I					1.80
7.750	0.41	0.10	0.071	O	I					1.85
7.833	0.44	0.10	0.073	O	I					1.90
7.917	0.45	0.10	0.075	O	I					1.96
8.000	0.45	0.10	0.078	O	I					2.01
8.083	0.52	0.10	0.080	O	I					2.08
8.167	0.54	0.10	0.083	O	I					2.14
8.250	0.54	0.10	0.086	O	I					2.21
8.333	0.54	0.10	0.089	O	I					2.28
8.417	0.54	0.10	0.092	O	I					2.35
8.500	0.54	0.10	0.096	O	I					2.42
8.583	0.58	0.10	0.099	O	I					2.49
8.667	0.59	0.10	0.102	O	I					2.57
8.750	0.59	0.10	0.105	O	I					2.64
8.833	0.62	0.10	0.109	O	I					2.72
8.917	0.63	0.10	0.112	O	I					2.80
9.000	0.63	0.10	0.116	O	I					2.88
9.083	0.70	0.10	0.120	O	I					2.97
9.167	0.72	0.10	0.124	O	I					3.06
9.250	0.72	0.10	0.128	O	I					3.15
9.333	0.75	0.10	0.133	O	I					3.25
9.417	0.76	0.10	0.137	O	I					3.35
9.500	0.76	0.10	0.142	O	I					3.45
9.583	0.80	0.10	0.147	O	I					3.56
9.667	0.81	0.10	0.151	O	I					3.67
9.750	0.81	0.10	0.156	O	I					3.78
9.833	0.84	0.10	0.161	O	I					3.89
9.917	0.85	0.10	0.166	O	I					4.01
10.000	0.85	0.10	0.172	O	I					4.13
10.083	0.62	0.10	0.176	O	I					4.23
10.167	0.55	0.10	0.179	O	I					4.30
10.250	0.55	0.10	0.182	O	I					4.37

```
10.333    0.55    0.10      0.186  | O     |   I   |       |       |     4.45
10.417    0.55    0.10      0.189  | O     |   I   |       |       |     4.52
10.500    0.55    0.10      0.192  | O     |   I   |       |       |     4.59
10.583    0.72    0.10      0.196  | O     |       I       |       |     4.67
10.667    0.77    0.10      0.200  | O     |       |I      |       |     4.77
10.750    0.77    0.10      0.205  | O     |       |I      |       |     4.87
10.833    0.77    0.10      0.209  | O     |       |I      |       |     4.97
10.917    0.77    0.10      0.214  | O     |       |I      |       |     5.07
11.000    0.77    0.10      0.218  | O     |       |I      |       |     5.18
11.083    0.74    0.10      0.223  | O     |       |I      |       |     5.28
11.167    0.73    0.10      0.227  | O     |       I       |       |     5.37
11.250    0.73    0.10      0.232  | O     |       I       |       |     5.47
11.333    0.73    0.10      0.236  | O     |       I       |       |     5.57
11.417    0.73    0.10      0.240  | O     |       I       |       |     5.67
11.500    0.73    0.10      0.245  | O     |       I       |       |     5.77
11.583    0.66    0.10      0.249  | O     |      I|       |       |     5.86
11.667    0.64    0.10      0.253  | O     |     I |       |       |     5.95
11.750    0.65    0.10      0.256  | O     |     I |       |       |     6.03
11.833    0.68    0.10      0.260  | O     |      I|       |       |     6.12
11.917    0.69    0.10      0.264  | O     |      I|       |       |     6.21
12.000    0.69    0.10      0.268  | O     |      I|       |       |     6.30
12.083    0.92    0.10      0.273  | O     |       |    I  |       |     6.41
12.167    0.99    0.10      0.279  | O     |       |     I |       |     6.55
12.250    0.99    0.10      0.285  | O     |       |     I |       |     6.68
12.333    1.02    0.10      0.291  | O     |       |      I|       |     6.82
12.417    1.03    0.10      0.298  | O     |       |      I|       |     6.96
12.500    1.03    0.10      0.304  | O     |       |      I|       |     7.11
12.583    1.10    0.10      0.311  | O     |       |       |I      |     7.26
12.667    1.12    0.10      0.318  | O     |       |       |I      |     7.41
12.750    1.12    0.10      0.325  | O     |       |       |I      |     7.57
12.833    1.15    0.10      0.332  | O     |       |       | I     |     7.73
12.917    1.16    0.10      0.339  | O     |       |       | I     |     7.90
13.000    1.16    0.10      0.347  | O     |       |       | I     |     8.07
13.083    1.33    0.25      0.354  |    O  |       |       |     I |     8.23
13.167    1.38    0.60      0.361  |       |    O  |       |      I|     8.37
13.250    1.38    0.94      0.365  |       |       |    O  |      I|     8.47
13.333    1.38    1.04      0.367  |       |       |       O      I|     8.57
13.417    1.38    1.04      0.370  |       |       |       O      I|     8.69
13.500    1.38    1.04      0.372  |       |       |       O       I     8.80
13.583    1.02    1.04      0.373  |       |       |      IO       |     8.86
13.667    0.91    1.04      0.373  |       |       |    I  O       |     8.83
13.750    0.91    1.04      0.372  |       |       |    I  O       |     8.79
13.833    0.91    1.04      0.371  |       |       |    I  O       |     8.74
13.917    0.91    1.04      0.370  |       |       |    I  O       |     8.70
14.000    0.91    1.04      0.369  |       |       |    I  O       |     8.65
14.083    1.04    1.04      0.369  |       |       |       O       |     8.63
14.167    1.08    1.04      0.369  |       |       |       OI      |     8.64
14.250    1.08    1.04      0.369  |       |       |       OI      |     8.65
14.333    1.05    1.04      0.369  |       |       |       O       |     8.66
14.417    1.04    1.04      0.369  |       |       |       O       |     8.66
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14.500    1.04    1.04      0.369  |       |       |       O       |     8.66
14.583    1.04    1.04      0.369  |       |       |       O       |     8.66
14.667    1.04    1.04      0.369  |       |       |       O       |     8.66
14.750    1.04    1.04      0.369  |       |       |       O       |     8.66
14.833    1.01    1.04      0.369  |       |       |      IO       |     8.66
14.917    1.00    1.04      0.369  |       |       |      IO       |     8.64
15.000    1.00    1.04      0.369  |       |       |      IO       |     8.63
15.083    0.97    1.04      0.368  |       |       |     I O       |     8.61
15.167    0.96    1.04      0.368  |       |       |     I O       |     8.58
15.250    0.96    1.04      0.367  |       |       |     I O       |     8.56
15.333    0.93    1.04      0.366  |       |       |    I  O       |     8.52
15.417    0.92    1.02      0.366  |       |       |    I O|       |     8.49
15.500    0.92    0.97      0.365  |       |       |    IO |       |     8.48
15.583    0.79    0.92      0.365  |       |       | I  O  |       |     8.46
15.667    0.75    0.85      0.364  |       |       |I O    |       |     8.44
15.750    0.75    0.81      0.363  |       |       |IO     |       |     8.43
15.833    0.75    0.78      0.363  |       |       |IO     |       |     8.42
15.917    0.75    0.77      0.363  |       |       |O      |       |     8.42
16.000    0.75    0.76      0.363  |       |       |O      |       |     8.42
16.083    0.27    0.65      0.361  |     I |       O|       |       |     8.39
16.167    0.13    0.46      0.359  | I     | O     |       |       |     8.33
16.250    0.13    0.37      0.357  | I     O       |       |       |     8.29
16.333    0.13    0.30      0.355  | I   O |       |       |       |     8.26
16.417    0.13    0.25      0.354  | I  O  |       |       |       |     8.24
16.500    0.13    0.22      0.354  | I  O  |       |       |       |     8.22
16.583    0.10    0.19      0.353  | I O   |       |       |       |     8.21
16.667    0.09    0.16      0.352  | IO    |       |       |       |     8.20
16.750    0.09    0.15      0.352  | IO    |       |       |       |     8.19
16.833    0.09    0.13      0.352  | IO    |       |       |       |     8.18
16.917    0.09    0.12      0.351  | O     |       |       |       |     8.18
17.000    0.09    0.11      0.351  | O     |       |       |       |     8.17
17.083    0.14    0.12      0.351  | OI    |       |       |       |     8.17
17.167    0.16    0.13      0.352  | OI    |       |       |       |     8.18
17.250    0.16    0.13      0.352  |  O    |       |       |       |     8.18
17.333    0.16    0.14      0.352  |  O    |       |       |       |     8.19
17.417    0.16    0.15      0.352  |  O    |       |       |       |     8.19
17.500    0.16    0.15      0.352  |  O    |       |       |       |     8.19
17.583    0.16    0.15      0.352  |  O    |       |       |       |     8.19
17.667    0.16    0.15      0.352  |  O    |       |       |       |     8.19
17.750    0.16    0.15      0.352  |  O    |       |       |       |     8.19
17.833    0.13    0.15      0.352  |  O    |       |       |       |     8.19
17.917    0.13    0.15      0.352  | IO    |       |       |       |     8.19
18.000    0.13    0.14      0.352  | IO    |       |       |       |     8.19
18.083    0.13    0.14      0.352  | IO    |       |       |       |     8.18
18.167    0.13    0.13      0.352  | IO    |       |       |       |     8.18
18.250    0.13    0.13      0.352  | IO    |       |       |       |     8.18
18.333    0.13    0.13      0.352  | IO    |       |       |       |     8.18
18.417    0.13    0.13      0.352  | IO    |       |       |       |     8.18
18.500    0.13    0.13      0.352  | O     |       |       |       |     8.18
18.583    0.10    0.12      0.352  | O     |       |       |       |     8.18
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18.667	0.09	0.12	0.351	O				8.18
18.750	0.09	0.11	0.351	O				8.17
18.833	0.07	0.10	0.351	IO				8.17
18.917	0.06	0.10	0.351	IO				8.16
19.000	0.06	0.10	0.351	IO				8.16
19.083	0.09	0.10	0.350	O				8.15
19.167	0.09	0.10	0.350	O				8.15
19.250	0.09	0.10	0.350	O				8.15
19.333	0.12	0.10	0.350	O				8.15
19.417	0.13	0.10	0.351	O				8.16
19.500	0.13	0.10	0.351	O				8.16
19.583	0.10	0.10	0.351	O				8.16
19.667	0.09	0.10	0.351	O				8.16
19.750	0.09	0.10	0.351	O				8.16
19.833	0.07	0.10	0.351	IO				8.16
19.917	0.06	0.10	0.351	IO				8.16
20.000	0.06	0.10	0.350	IO				8.15
20.083	0.09	0.10	0.350	O				8.15
20.167	0.09	0.10	0.350	O				8.15
20.250	0.09	0.10	0.350	O				8.14
20.333	0.09	0.10	0.350	O				8.14
20.417	0.09	0.10	0.350	O				8.14
20.500	0.09	0.10	0.350	O				8.14
20.583	0.09	0.10	0.350	O				8.14
20.667	0.09	0.10	0.350	O				8.14
20.750	0.09	0.10	0.350	O				8.14
20.833	0.07	0.10	0.350	IO				8.14
20.917	0.06	0.10	0.350	IO				8.13
21.000	0.06	0.10	0.349	IO				8.13
21.083	0.09	0.10	0.349	O				8.12
21.167	0.09	0.10	0.349	O				8.12
21.250	0.09	0.10	0.349	O				8.12
21.333	0.07	0.10	0.349	IO				8.12
21.417	0.06	0.10	0.349	IO				8.11
21.500	0.06	0.10	0.348	IO				8.11
21.583	0.09	0.10	0.348	O				8.11
21.667	0.09	0.10	0.348	O				8.10
21.750	0.09	0.10	0.348	O				8.10
21.833	0.07	0.10	0.348	IO				8.10
21.917	0.06	0.10	0.348	IO				8.10
22.000	0.06	0.10	0.348	IO				8.09
22.083	0.09	0.10	0.347	O				8.09
22.167	0.09	0.10	0.347	O				8.09
22.250	0.09	0.10	0.347	O				8.08
22.333	0.07	0.10	0.347	IO				8.08
22.417	0.06	0.10	0.347	IO				8.08
22.500	0.06	0.10	0.347	IO				8.07
22.583	0.06	0.10	0.347	IO				8.07
22.667	0.06	0.10	0.346	IO				8.06
22.750	0.06	0.10	0.346	IO				8.05

22.833	0.06	0.10	0.346	IO				8.05
22.917	0.06	0.10	0.346	IO				8.04
23.000	0.06	0.10	0.345	IO				8.04
23.083	0.06	0.10	0.345	IO				8.03
23.167	0.06	0.10	0.345	IO				8.03
23.250	0.06	0.10	0.345	IO				8.02
23.333	0.06	0.10	0.344	IO				8.01
23.417	0.06	0.10	0.344	IO				8.01
23.500	0.06	0.10	0.344	IO				8.00
23.583	0.06	0.10	0.344	IO				8.00
23.667	0.06	0.10	0.343	IO				7.99
23.750	0.06	0.10	0.343	IO				7.99
23.833	0.06	0.10	0.343	IO				7.98
23.917	0.06	0.10	0.343	IO				7.98
24.000	0.06	0.10	0.342	IO				7.97
24.083	0.02	0.10	0.342	I O				7.96
24.167	0.00	0.10	0.341	I O				7.95
24.250	0.00	0.10	0.341	I O				7.93
24.333	0.00	0.10	0.340	I O				7.91
24.417	0.00	0.10	0.339	I O				7.90
24.500	0.00	0.10	0.339	I O				7.88
24.583	0.00	0.10	0.338	I O				7.87
24.667	0.00	0.10	0.337	I O				7.85
24.750	0.00	0.10	0.337	I O				7.84
24.833	0.00	0.10	0.336	I O				7.82
24.917	0.00	0.10	0.335	I O				7.80
25.000	0.00	0.10	0.335	I O				7.79
25.083	0.00	0.10	0.334	I O				7.77
25.167	0.00	0.10	0.333	I O				7.76
25.250	0.00	0.10	0.333	I O				7.74
25.333	0.00	0.10	0.332	I O				7.73
25.417	0.00	0.10	0.331	I O				7.71
25.500	0.00	0.10	0.330	I O				7.69
25.583	0.00	0.10	0.330	I O				7.68
25.667	0.00	0.10	0.329	I O				7.66
25.750	0.00	0.10	0.328	I O				7.65
25.833	0.00	0.10	0.328	I O				7.63
25.917	0.00	0.10	0.327	I O				7.62
26.000	0.00	0.10	0.326	I O				7.60
26.083	0.00	0.10	0.326	I O				7.58
26.167	0.00	0.10	0.325	I O				7.57
26.250	0.00	0.10	0.324	I O				7.55
26.333	0.00	0.10	0.324	I O				7.54
26.417	0.00	0.10	0.323	I O				7.52
26.500	0.00	0.10	0.322	I O				7.51
26.583	0.00	0.10	0.322	I O				7.49
26.667	0.00	0.10	0.321	I O				7.48
26.750	0.00	0.10	0.320	I O				7.46
26.833	0.00	0.10	0.320	I O				7.45
26.917	0.00	0.10	0.319	I O				7.43

27.000	0.00	0.10	0.318	I O	|	|	|	7.42
27.083	0.00	0.10	0.318	I O	|	|	|	7.40
27.167	0.00	0.10	0.317	I O	|	|	|	7.38
27.250	0.00	0.10	0.316	I O	|	|	|	7.37
27.333	0.00	0.10	0.315	I O	|	|	|	7.35
27.417	0.00	0.10	0.315	I O	|	|	|	7.34
27.500	0.00	0.10	0.314	I O	|	|	|	7.32
27.583	0.00	0.10	0.313	I O	|	|	|	7.31
27.667	0.00	0.10	0.313	I O	|	|	|	7.29
27.750	0.00	0.10	0.312	I O	|	|	|	7.28
27.833	0.00	0.10	0.311	I O	|	|	|	7.26
27.917	0.00	0.10	0.311	I O	|	|	|	7.25
28.000	0.00	0.10	0.310	I O	|	|	|	7.23
28.083	0.00	0.10	0.309	I O	|	|	|	7.22
28.167	0.00	0.10	0.309	I O	|	|	|	7.20
28.250	0.00	0.10	0.308	I O	|	|	|	7.19
28.333	0.00	0.10	0.307	I O	|	|	|	7.17
28.417	0.00	0.10	0.307	I O	|	|	|	7.16
28.500	0.00	0.10	0.306	I O	|	|	|	7.14
28.583	0.00	0.10	0.305	I O	|	|	|	7.13
28.667	0.00	0.10	0.305	I O	|	|	|	7.11
28.750	0.00	0.10	0.304	I O	|	|	|	7.10
28.833	0.00	0.10	0.303	I O	|	|	|	7.08
28.917	0.00	0.10	0.303	I O	|	|	|	7.07
29.000	0.00	0.10	0.302	I O	|	|	|	7.05
29.083	0.00	0.10	0.301	I O	|	|	|	7.04
29.167	0.00	0.10	0.300	I O	|	|	|	7.02
29.250	0.00	0.10	0.300	I O	|	|	|	7.01
29.333	0.00	0.10	0.299	I O	|	|	|	6.99
29.417	0.00	0.10	0.298	I O	|	|	|	6.98
29.500	0.00	0.10	0.298	I O	|	|	|	6.96
29.583	0.00	0.10	0.297	I O	|	|	|	6.95
29.667	0.00	0.10	0.296	I O	|	|	|	6.93
29.750	0.00	0.10	0.296	I O	|	|	|	6.92
29.833	0.00	0.10	0.295	I O	|	|	|	6.90
29.917	0.00	0.10	0.294	I O	|	|	|	6.88
30.000	0.00	0.10	0.294	I O	|	|	|	6.87
30.083	0.00	0.10	0.293	I O	|	|	|	6.85
30.167	0.00	0.10	0.292	I O	|	|	|	6.84
30.250	0.00	0.10	0.292	I O	|	|	|	6.82
30.333	0.00	0.10	0.291	I O	|	|	|	6.81
30.417	0.00	0.10	0.290	I O	|	|	|	6.79
30.500	0.00	0.10	0.290	I O	|	|	|	6.78
30.583	0.00	0.10	0.289	I O	|	|	|	6.76
30.667	0.00	0.10	0.288	I O	|	|	|	6.75
30.750	0.00	0.10	0.288	I O	|	|	|	6.73
30.833	0.00	0.10	0.287	I O	|	|	|	6.72
30.917	0.00	0.10	0.286	I O	|	|	|	6.70
31.000	0.00	0.10	0.285	I O	|	|	|	6.69
31.083	0.00	0.10	0.285	I O	|	|	|	6.67

31.167	0.00	0.10	0.284	I O	|	|	|	|	6.66
31.250	0.00	0.10	0.283	I O	|	|	|	|	6.64
31.333	0.00	0.10	0.283	I O	|	|	|	|	6.63
31.417	0.00	0.10	0.282	I O	|	|	|	|	6.61
31.500	0.00	0.10	0.281	I O	|	|	|	|	6.60
31.583	0.00	0.10	0.281	I O	|	|	|	|	6.58
31.667	0.00	0.10	0.280	I O	|	|	|	|	6.57
31.750	0.00	0.10	0.279	I O	|	|	|	|	6.55
31.833	0.00	0.10	0.279	I O	|	|	|	|	6.54
31.917	0.00	0.10	0.278	I O	|	|	|	|	6.52
32.000	0.00	0.10	0.277	I O	|	|	|	|	6.51
32.083	0.00	0.10	0.277	I O	|	|	|	|	6.49
32.167	0.00	0.10	0.276	I O	|	|	|	|	6.48
32.250	0.00	0.10	0.275	I O	|	|	|	|	6.46
32.333	0.00	0.10	0.275	I O	|	|	|	|	6.44
32.417	0.00	0.10	0.274	I O	|	|	|	|	6.43
32.500	0.00	0.10	0.273	I O	|	|	|	|	6.41
32.583	0.00	0.10	0.273	I O	|	|	|	|	6.40
32.667	0.00	0.10	0.272	I O	|	|	|	|	6.38
32.750	0.00	0.10	0.271	I O	|	|	|	|	6.37
32.833	0.00	0.10	0.270	I O	|	|	|	|	6.35
32.917	0.00	0.10	0.270	I O	|	|	|	|	6.34
33.000	0.00	0.10	0.269	I O	|	|	|	|	6.32
33.083	0.00	0.10	0.268	I O	|	|	|	|	6.30
33.167	0.00	0.10	0.268	I O	|	|	|	|	6.29
33.250	0.00	0.10	0.267	I O	|	|	|	|	6.27
33.333	0.00	0.10	0.266	I O	|	|	|	|	6.26
33.417	0.00	0.10	0.266	I O	|	|	|	|	6.24
33.500	0.00	0.10	0.265	I O	|	|	|	|	6.23
33.583	0.00	0.10	0.264	I O	|	|	|	|	6.21
33.667	0.00	0.10	0.264	I O	|	|	|	|	6.20
33.750	0.00	0.10	0.263	I O	|	|	|	|	6.18
33.833	0.00	0.10	0.262	I O	|	|	|	|	6.17
33.917	0.00	0.10	0.262	I O	|	|	|	|	6.15
34.000	0.00	0.10	0.261	I O	|	|	|	|	6.13
34.083	0.00	0.10	0.260	I O	|	|	|	|	6.12
34.167	0.00	0.10	0.260	I O	|	|	|	|	6.10
34.250	0.00	0.10	0.259	I O	|	|	|	|	6.09
34.333	0.00	0.10	0.258	I O	|	|	|	|	6.07
34.417	0.00	0.10	0.258	I O	|	|	|	|	6.06
34.500	0.00	0.10	0.257	I O	|	|	|	|	6.04
34.583	0.00	0.10	0.256	I O	|	|	|	|	6.03
34.667	0.00	0.10	0.255	I O	|	|	|	|	6.01
34.750	0.00	0.10	0.255	I O	|	|	|	|	5.99
34.833	0.00	0.10	0.254	I O	|	|	|	|	5.98
34.917	0.00	0.10	0.253	I O	|	|	|	|	5.96
35.000	0.00	0.10	0.253	I O	|	|	|	|	5.95
35.083	0.00	0.10	0.252	I O	|	|	|	|	5.93
35.167	0.00	0.10	0.251	I O	|	|	|	|	5.92
35.250	0.00	0.10	0.251	I O	|	|	|	|	5.90

35.333	0.00	0.10	0.250	I O				5.89
35.417	0.00	0.10	0.249	I O				5.87
35.500	0.00	0.10	0.249	I O				5.86
35.583	0.00	0.10	0.248	I O				5.84
35.667	0.00	0.10	0.247	I O				5.82
35.750	0.00	0.10	0.247	I O				5.81
35.833	0.00	0.10	0.246	I O				5.79
35.917	0.00	0.10	0.245	I O				5.78
36.000	0.00	0.10	0.245	I O				5.76
36.083	0.00	0.10	0.244	I O				5.75
36.167	0.00	0.10	0.243	I O				5.73
36.250	0.00	0.10	0.243	I O				5.72
36.333	0.00	0.10	0.242	I O				5.70
36.417	0.00	0.10	0.241	I O				5.69
36.500	0.00	0.10	0.240	I O				5.67
36.583	0.00	0.10	0.240	I O				5.65
36.667	0.00	0.10	0.239	I O				5.64
36.750	0.00	0.10	0.238	I O				5.62
36.833	0.00	0.10	0.238	I O				5.61
36.917	0.00	0.10	0.237	I O				5.59
37.000	0.00	0.10	0.236	I O				5.58
37.083	0.00	0.10	0.236	I O				5.56
37.167	0.00	0.10	0.235	I O				5.55
37.250	0.00	0.10	0.234	I O				5.53
37.333	0.00	0.10	0.234	I O				5.51
37.417	0.00	0.10	0.233	I O				5.50
37.500	0.00	0.10	0.232	I O				5.48
37.583	0.00	0.10	0.232	I O				5.47
37.667	0.00	0.10	0.231	I O				5.45
37.750	0.00	0.10	0.230	I O				5.44
37.833	0.00	0.10	0.230	I O				5.42
37.917	0.00	0.10	0.229	I O				5.41
38.000	0.00	0.10	0.228	I O				5.39
38.083	0.00	0.10	0.228	I O				5.38
38.167	0.00	0.10	0.227	I O				5.36
38.250	0.00	0.10	0.226	I O				5.35
38.333	0.00	0.10	0.225	I O				5.33
38.417	0.00	0.10	0.225	I O				5.32
38.500	0.00	0.10	0.224	I O				5.30
38.583	0.00	0.10	0.223	I O				5.29
38.667	0.00	0.10	0.223	I O				5.27
38.750	0.00	0.10	0.222	I O				5.26
38.833	0.00	0.10	0.221	I O				5.24
38.917	0.00	0.10	0.221	I O				5.23
39.000	0.00	0.10	0.220	I O				5.21
39.083	0.00	0.10	0.219	I O				5.20
39.167	0.00	0.10	0.219	I O				5.18
39.250	0.00	0.10	0.218	I O				5.17
39.333	0.00	0.10	0.217	I O				5.15
39.417	0.00	0.10	0.217	I O				5.14

39.500	0.00	0.10	0.216	I O	|	|	|	|	5.12
39.583	0.00	0.10	0.215	I O	|	|	|	|	5.11
39.667	0.00	0.10	0.215	I O	|	|	|	|	5.09
39.750	0.00	0.10	0.214	I O	|	|	|	|	5.07
39.833	0.00	0.10	0.213	I O	|	|	|	|	5.06
39.917	0.00	0.10	0.213	I O	|	|	|	|	5.04
40.000	0.00	0.10	0.212	I O	|	|	|	|	5.03
40.083	0.00	0.10	0.211	I O	|	|	|	|	5.01
40.167	0.00	0.10	0.210	I O	|	|	|	|	5.00
40.250	0.00	0.10	0.210	I O	|	|	|	|	4.98
40.333	0.00	0.10	0.209	I O	|	|	|	|	4.97
40.417	0.00	0.10	0.208	I O	|	|	|	|	4.95
40.500	0.00	0.10	0.208	I O	|	|	|	|	4.94
40.583	0.00	0.10	0.207	I O	|	|	|	|	4.92
40.667	0.00	0.10	0.206	I O	|	|	|	|	4.91
40.750	0.00	0.10	0.206	I O	|	|	|	|	4.89
40.833	0.00	0.10	0.205	I O	|	|	|	|	4.88
40.917	0.00	0.10	0.204	I O	|	|	|	|	4.86
41.000	0.00	0.10	0.204	I O	|	|	|	|	4.85
41.083	0.00	0.10	0.203	I O	|	|	|	|	4.83
41.167	0.00	0.10	0.202	I O	|	|	|	|	4.82
41.250	0.00	0.10	0.202	I O	|	|	|	|	4.80
41.333	0.00	0.10	0.201	I O	|	|	|	|	4.79
41.417	0.00	0.10	0.200	I O	|	|	|	|	4.77
41.500	0.00	0.10	0.200	I O	|	|	|	|	4.76
41.583	0.00	0.10	0.199	I O	|	|	|	|	4.74
41.667	0.00	0.10	0.198	I O	|	|	|	|	4.73
41.750	0.00	0.10	0.198	I O	|	|	|	|	4.71
41.833	0.00	0.10	0.197	I O	|	|	|	|	4.70
41.917	0.00	0.10	0.196	I O	|	|	|	|	4.68
42.000	0.00	0.10	0.195	I O	|	|	|	|	4.67
42.083	0.00	0.10	0.195	I O	|	|	|	|	4.65
42.167	0.00	0.10	0.194	I O	|	|	|	|	4.64
42.250	0.00	0.10	0.193	I O	|	|	|	|	4.62
42.333	0.00	0.10	0.193	I O	|	|	|	|	4.61
42.417	0.00	0.10	0.192	I O	|	|	|	|	4.59
42.500	0.00	0.10	0.191	I O	|	|	|	|	4.57
42.583	0.00	0.10	0.191	I O	|	|	|	|	4.56
42.667	0.00	0.10	0.190	I O	|	|	|	|	4.54
42.750	0.00	0.10	0.189	I O	|	|	|	|	4.53
42.833	0.00	0.10	0.189	I O	|	|	|	|	4.51
42.917	0.00	0.10	0.188	I O	|	|	|	|	4.50
43.000	0.00	0.10	0.187	I O	|	|	|	|	4.48
43.083	0.00	0.10	0.187	I O	|	|	|	|	4.47
43.167	0.00	0.10	0.186	I O	|	|	|	|	4.45
43.250	0.00	0.10	0.185	I O	|	|	|	|	4.44
43.333	0.00	0.10	0.185	I O	|	|	|	|	4.42
43.417	0.00	0.10	0.184	I O	|	|	|	|	4.41
43.500	0.00	0.10	0.183	I O	|	|	|	|	4.39
43.583	0.00	0.10	0.183	I O	|	|	|	|	4.38

43.667	0.00	0.10	0.182	I O	|	|	|	4.36
43.750	0.00	0.10	0.181	I O	|	|	|	4.34
43.833	0.00	0.10	0.180	I O	|	|	|	4.33
43.917	0.00	0.10	0.180	I O	|	|	|	4.31
44.000	0.00	0.10	0.179	I O	|	|	|	4.30
44.083	0.00	0.10	0.178	I O	|	|	|	4.28
44.167	0.00	0.10	0.178	I O	|	|	|	4.27
44.250	0.00	0.10	0.177	I O	|	|	|	4.25
44.333	0.00	0.10	0.176	I O	|	|	|	4.24
44.417	0.00	0.10	0.176	I O	|	|	|	4.22
44.500	0.00	0.10	0.175	I O	|	|	|	4.20
44.583	0.00	0.10	0.174	I O	|	|	|	4.19
44.667	0.00	0.10	0.174	I O	|	|	|	4.17
44.750	0.00	0.10	0.173	I O	|	|	|	4.16
44.833	0.00	0.10	0.172	I O	|	|	|	4.14
44.917	0.00	0.10	0.172	I O	|	|	|	4.13
45.000	0.00	0.10	0.171	I O	|	|	|	4.11
45.083	0.00	0.10	0.170	I O	|	|	|	4.10
45.167	0.00	0.10	0.170	I O	|	|	|	4.08
45.250	0.00	0.10	0.169	I O	|	|	|	4.07
45.333	0.00	0.10	0.168	I O	|	|	|	4.05
45.417	0.00	0.10	0.168	I O	|	|	|	4.03
45.500	0.00	0.10	0.167	I O	|	|	|	4.02
45.583	0.00	0.10	0.166	I O	|	|	|	4.00
45.667	0.00	0.10	0.165	I O	|	|	|	3.99
45.750	0.00	0.10	0.165	I O	|	|	|	3.97
45.833	0.00	0.10	0.164	I O	|	|	|	3.96
45.917	0.00	0.10	0.163	I O	|	|	|	3.94
46.000	0.00	0.10	0.163	I O	|	|	|	3.93
46.083	0.00	0.10	0.162	I O	|	|	|	3.91
46.167	0.00	0.10	0.161	I O	|	|	|	3.89
46.250	0.00	0.10	0.161	I O	|	|	|	3.88
46.333	0.00	0.10	0.160	I O	|	|	|	3.86
46.417	0.00	0.10	0.159	I O	|	|	|	3.85
46.500	0.00	0.10	0.159	I O	|	|	|	3.83
46.583	0.00	0.10	0.158	I O	|	|	|	3.82
46.667	0.00	0.10	0.157	I O	|	|	|	3.80
46.750	0.00	0.10	0.157	I O	|	|	|	3.79
46.833	0.00	0.10	0.156	I O	|	|	|	3.77
46.917	0.00	0.10	0.155	I O	|	|	|	3.76
47.000	0.00	0.10	0.155	I O	|	|	|	3.74
47.083	0.00	0.10	0.154	I O	|	|	|	3.72
47.167	0.00	0.10	0.153	I O	|	|	|	3.71
47.250	0.00	0.10	0.153	I O	|	|	|	3.69
47.333	0.00	0.10	0.152	I O	|	|	|	3.68
47.417	0.00	0.10	0.151	I O	|	|	|	3.66
47.500	0.00	0.10	0.150	I O	|	|	|	3.65
47.583	0.00	0.10	0.150	I O	|	|	|	3.63
47.667	0.00	0.10	0.149	I O	|	|	|	3.62
47.750	0.00	0.10	0.148	I O	|	|	|	3.60

47.833	0.00	0.10	0.148	I	O	|	|	|	|	3.58
47.917	0.00	0.10	0.147	I	O	|	|	|	|	3.57
48.000	0.00	0.10	0.146	I	O	|	|	|	|	3.55
48.083	0.00	0.10	0.146	I	O	|	|	|	|	3.54
48.167	0.00	0.10	0.145	I	O	|	|	|	|	3.52
48.250	0.00	0.10	0.144	I	O	|	|	|	|	3.51
48.333	0.00	0.10	0.144	I	O	|	|	|	|	3.49
48.417	0.00	0.10	0.143	I	O	|	|	|	|	3.48
48.500	0.00	0.10	0.142	I	O	|	|	|	|	3.46
48.583	0.00	0.10	0.142	I	O	|	|	|	|	3.45
48.667	0.00	0.10	0.141	I	O	|	|	|	|	3.43
48.750	0.00	0.10	0.140	I	O	|	|	|	|	3.42
48.833	0.00	0.10	0.140	I	O	|	|	|	|	3.40
48.917	0.00	0.10	0.139	I	O	|	|	|	|	3.39
49.000	0.00	0.10	0.138	I	O	|	|	|	|	3.37
49.083	0.00	0.10	0.138	I	O	|	|	|	|	3.36
49.167	0.00	0.10	0.137	I	O	|	|	|	|	3.34
49.250	0.00	0.10	0.136	I	O	|	|	|	|	3.33
49.333	0.00	0.10	0.135	I	O	|	|	|	|	3.31
49.417	0.00	0.10	0.135	I	O	|	|	|	|	3.30
49.500	0.00	0.10	0.134	I	O	|	|	|	|	3.28
49.583	0.00	0.10	0.133	I	O	|	|	|	|	3.26
49.667	0.00	0.10	0.133	I	O	|	|	|	|	3.25
49.750	0.00	0.10	0.132	I	O	|	|	|	|	3.23
49.833	0.00	0.10	0.131	I	O	|	|	|	|	3.22
49.917	0.00	0.10	0.131	I	O	|	|	|	|	3.20
50.000	0.00	0.10	0.130	I	O	|	|	|	|	3.19
50.083	0.00	0.10	0.129	I	O	|	|	|	|	3.17
50.167	0.00	0.10	0.129	I	O	|	|	|	|	3.16
50.250	0.00	0.10	0.128	I	O	|	|	|	|	3.14
50.333	0.00	0.10	0.127	I	O	|	|	|	|	3.13
50.417	0.00	0.10	0.127	I	O	|	|	|	|	3.11
50.500	0.00	0.10	0.126	I	O	|	|	|	|	3.10
50.583	0.00	0.10	0.125	I	O	|	|	|	|	3.08
50.667	0.00	0.10	0.125	I	O	|	|	|	|	3.07
50.750	0.00	0.10	0.124	I	O	|	|	|	|	3.05
50.833	0.00	0.10	0.123	I	O	|	|	|	|	3.04
50.917	0.00	0.10	0.123	I	O	|	|	|	|	3.02
51.000	0.00	0.10	0.122	I	O	|	|	|	|	3.01
51.083	0.00	0.10	0.121	I	O	|	|	|	|	2.99
51.167	0.00	0.10	0.120	I	O	|	|	|	|	2.98
51.250	0.00	0.10	0.120	I	O	|	|	|	|	2.96
51.333	0.00	0.10	0.119	I	O	|	|	|	|	2.95
51.417	0.00	0.10	0.118	I	O	|	|	|	|	2.93
51.500	0.00	0.10	0.118	I	O	|	|	|	|	2.92
51.583	0.00	0.10	0.117	I	O	|	|	|	|	2.90
51.667	0.00	0.10	0.116	I	O	|	|	|	|	2.89
51.750	0.00	0.10	0.116	I	O	|	|	|	|	2.87
51.833	0.00	0.10	0.115	I	O	|	|	|	|	2.86
51.917	0.00	0.10	0.114	I	O	|	|	|	|	2.84

52.000	0.00	0.10	0.114	I O	|	|	|	2.83
52.083	0.00	0.10	0.113	I O	|	|	|	2.81
52.167	0.00	0.10	0.112	I O	|	|	|	2.80
52.250	0.00	0.10	0.112	I O	|	|	|	2.78
52.333	0.00	0.10	0.111	I O	|	|	|	2.76
52.417	0.00	0.10	0.110	I O	|	|	|	2.75
52.500	0.00	0.10	0.110	I O	|	|	|	2.73
52.583	0.00	0.10	0.109	I O	|	|	|	2.72
52.667	0.00	0.10	0.108	I O	|	|	|	2.70
52.750	0.00	0.10	0.108	I O	|	|	|	2.69
52.833	0.00	0.10	0.107	I O	|	|	|	2.67
52.917	0.00	0.10	0.106	I O	|	|	|	2.66
53.000	0.00	0.10	0.105	I O	|	|	|	2.64
53.083	0.00	0.10	0.105	I O	|	|	|	2.63
53.167	0.00	0.10	0.104	I O	|	|	|	2.61
53.250	0.00	0.10	0.103	I O	|	|	|	2.60
53.333	0.00	0.10	0.103	I O	|	|	|	2.58
53.417	0.00	0.10	0.102	I O	|	|	|	2.57
53.500	0.00	0.10	0.101	I O	|	|	|	2.55
53.583	0.00	0.10	0.101	I O	|	|	|	2.54
53.667	0.00	0.10	0.100	I O	|	|	|	2.52
53.750	0.00	0.10	0.099	I O	|	|	|	2.51
53.833	0.00	0.10	0.099	I O	|	|	|	2.49
53.917	0.00	0.10	0.098	I O	|	|	|	2.48
54.000	0.00	0.10	0.097	I O	|	|	|	2.46
54.083	0.00	0.10	0.097	I O	|	|	|	2.45
54.167	0.00	0.10	0.096	I O	|	|	|	2.43
54.250	0.00	0.10	0.095	I O	|	|	|	2.41
54.333	0.00	0.10	0.095	I O	|	|	|	2.40
54.417	0.00	0.10	0.094	I O	|	|	|	2.38
54.500	0.00	0.10	0.093	I O	|	|	|	2.37
54.583	0.00	0.10	0.093	I O	|	|	|	2.35
54.667	0.00	0.10	0.092	I O	|	|	|	2.34
54.750	0.00	0.10	0.091	I O	|	|	|	2.32
54.833	0.00	0.10	0.090	I O	|	|	|	2.31
54.917	0.00	0.10	0.090	I O	|	|	|	2.29
55.000	0.00	0.10	0.089	I O	|	|	|	2.27
55.083	0.00	0.10	0.088	I O	|	|	|	2.26
55.167	0.00	0.10	0.088	I O	|	|	|	2.24
55.250	0.00	0.10	0.087	I O	|	|	|	2.23
55.333	0.00	0.10	0.086	I O	|	|	|	2.21
55.417	0.00	0.10	0.086	I O	|	|	|	2.20
55.500	0.00	0.10	0.085	I O	|	|	|	2.18
55.583	0.00	0.10	0.084	I O	|	|	|	2.17
55.667	0.00	0.10	0.084	I O	|	|	|	2.15
55.750	0.00	0.10	0.083	I O	|	|	|	2.14
55.833	0.00	0.10	0.082	I O	|	|	|	2.12
55.917	0.00	0.10	0.082	I O	|	|	|	2.10
56.000	0.00	0.10	0.081	I O	|	|	|	2.09
56.083	0.00	0.10	0.080	I O	|	|	|	2.07

56.167	0.00	0.10	0.080	I O	|	|	|	2.06
56.250	0.00	0.10	0.079	I O	|	|	|	2.04
56.333	0.00	0.10	0.078	I O	|	|	|	2.03
56.417	0.00	0.10	0.078	I O	|	|	|	2.01
56.500	0.00	0.10	0.077	I O	|	|	|	2.00
56.583	0.00	0.10	0.076	I O	|	|	|	1.98
56.667	0.00	0.10	0.075	I O	|	|	|	1.96
56.750	0.00	0.10	0.075	I O	|	|	|	1.95
56.833	0.00	0.10	0.074	I O	|	|	|	1.93
56.917	0.00	0.10	0.073	I O	|	|	|	1.92
57.000	0.00	0.10	0.073	I O	|	|	|	1.90
57.083	0.00	0.10	0.072	I O	|	|	|	1.89
57.167	0.00	0.10	0.071	I O	|	|	|	1.87
57.250	0.00	0.10	0.071	I O	|	|	|	1.86
57.333	0.00	0.10	0.070	I O	|	|	|	1.84
57.417	0.00	0.10	0.069	I O	|	|	|	1.83
57.500	0.00	0.10	0.069	I O	|	|	|	1.81
57.583	0.00	0.10	0.068	I O	|	|	|	1.79
57.667	0.00	0.10	0.067	I O	|	|	|	1.78
57.750	0.00	0.10	0.067	I O	|	|	|	1.76
57.833	0.00	0.10	0.066	I O	|	|	|	1.75
57.917	0.00	0.10	0.065	I O	|	|	|	1.73
58.000	0.00	0.10	0.065	I O	|	|	|	1.72
58.083	0.00	0.10	0.064	I O	|	|	|	1.70
58.167	0.00	0.10	0.063	I O	|	|	|	1.69
58.250	0.00	0.10	0.063	I O	|	|	|	1.67
58.333	0.00	0.10	0.062	I O	|	|	|	1.66
58.417	0.00	0.10	0.061	I O	|	|	|	1.64
58.500	0.00	0.10	0.060	I O	|	|	|	1.62
58.583	0.00	0.10	0.060	I O	|	|	|	1.61
58.667	0.00	0.10	0.059	I O	|	|	|	1.59
58.750	0.00	0.10	0.058	I O	|	|	|	1.58
58.833	0.00	0.10	0.058	I O	|	|	|	1.56
58.917	0.00	0.10	0.057	I O	|	|	|	1.55
59.000	0.00	0.10	0.056	I O	|	|	|	1.53
59.083	0.00	0.10	0.056	I O	|	|	|	1.52
59.167	0.00	0.10	0.055	I O	|	|	|	1.50
59.250	0.00	0.10	0.054	I O	|	|	|	1.48
59.333	0.00	0.10	0.054	I O	|	|	|	1.47
59.417	0.00	0.10	0.053	I O	|	|	|	1.45
59.500	0.00	0.10	0.052	I O	|	|	|	1.44
59.583	0.00	0.10	0.052	I O	|	|	|	1.42
59.667	0.00	0.10	0.051	I O	|	|	|	1.41
59.750	0.00	0.10	0.050	I O	|	|	|	1.39
59.833	0.00	0.10	0.050	I O	|	|	|	1.38
59.917	0.00	0.10	0.049	I O	|	|	|	1.36
60.000	0.00	0.10	0.048	I O	|	|	|	1.35
60.083	0.00	0.10	0.048	I O	|	|	|	1.33
60.167	0.00	0.10	0.047	I O	|	|	|	1.32
60.250	0.00	0.10	0.046	I O	|	|	|	1.30

60.333	0.00	0.10	0.045	I O	|	|	|	1.29
60.417	0.00	0.10	0.045	I O	|	|	|	1.27
60.500	0.00	0.10	0.044	I O	|	|	|	1.26
60.583	0.00	0.10	0.043	I O	|	|	|	1.24
60.667	0.00	0.10	0.043	I O	|	|	|	1.23
60.750	0.00	0.10	0.042	I O	|	|	|	1.21
60.833	0.00	0.10	0.041	I O	|	|	|	1.20
60.917	0.00	0.10	0.041	I O	|	|	|	1.18
61.000	0.00	0.10	0.040	I O	|	|	|	1.17
61.083	0.00	0.10	0.039	I O	|	|	|	1.15
61.167	0.00	0.10	0.039	I O	|	|	|	1.14
61.250	0.00	0.10	0.038	I O	|	|	|	1.12
61.333	0.00	0.10	0.037	I O	|	|	|	1.11
61.417	0.00	0.10	0.037	I O	|	|	|	1.09
61.500	0.00	0.10	0.036	I O	|	|	|	1.08
61.583	0.00	0.10	0.035	I O	|	|	|	1.06
61.667	0.00	0.10	0.035	I O	|	|	|	1.05
61.750	0.00	0.10	0.034	I O	|	|	|	1.03
61.833	0.00	0.10	0.033	I O	|	|	|	1.02
61.917	0.00	0.10	0.033	I O	|	|	|	1.00
62.000	0.00	0.10	0.032	I O	|	|	|	0.98
62.083	0.00	0.10	0.031	I O	|	|	|	0.97
62.167	0.00	0.10	0.030	I O	|	|	|	0.95
62.250	0.00	0.10	0.030	I O	|	|	|	0.94
62.333	0.00	0.10	0.029	I O	|	|	|	0.92
62.417	0.00	0.10	0.028	I O	|	|	|	0.91
62.500	0.00	0.10	0.028	I O	|	|	|	0.89
62.583	0.00	0.10	0.027	I O	|	|	|	0.88
62.667	0.00	0.10	0.026	I O	|	|	|	0.86
62.750	0.00	0.10	0.026	I O	|	|	|	0.85
62.833	0.00	0.10	0.025	I O	|	|	|	0.83
62.917	0.00	0.10	0.024	I O	|	|	|	0.82
63.000	0.00	0.10	0.024	I O	|	|	|	0.80
63.083	0.00	0.10	0.023	I O	|	|	|	0.79
63.167	0.00	0.10	0.022	I O	|	|	|	0.77
63.250	0.00	0.10	0.022	I O	|	|	|	0.76
63.333	0.00	0.10	0.021	I O	|	|	|	0.74
63.417	0.00	0.10	0.020	I O	|	|	|	0.73
63.500	0.00	0.10	0.020	I O	|	|	|	0.71
63.583	0.00	0.10	0.019	I O	|	|	|	0.70
63.667	0.00	0.10	0.018	I O	|	|	|	0.68
63.750	0.00	0.10	0.018	I O	|	|	|	0.67
63.833	0.00	0.10	0.017	I O	|	|	|	0.65
63.917	0.00	0.10	0.016	I O	|	|	|	0.64
64.000	0.00	0.10	0.015	I O	|	|	|	0.62
64.083	0.00	0.10	0.015	I O	|	|	|	0.61
64.167	0.00	0.10	0.014	I O	|	|	|	0.59
64.250	0.00	0.10	0.013	I O	|	|	|	0.58
64.333	0.00	0.10	0.013	I O	|	|	|	0.56
64.417	0.00	0.10	0.012	I O	|	|	|	0.55

64.500	0.00	0.10	0.011	I O				0.53
64.583	0.00	0.10	0.011	I O				0.52
64.667	0.00	0.10	0.010	I O				0.50
64.750	0.00	0.09	0.009	I O				0.47
64.833	0.00	0.09	0.009	I O				0.44
64.917	0.00	0.08	0.008	IO				0.41
65.000	0.00	0.08	0.008	IO				0.38
65.083	0.00	0.07	0.007	IO				0.36
65.167	0.00	0.07	0.007	IO				0.33
65.250	0.00	0.06	0.006	IO				0.31
65.333	0.00	0.06	0.006	IO				0.29
65.417	0.00	0.05	0.005	IO				0.27
65.500	0.00	0.05	0.005	IO				0.25
65.583	0.00	0.05	0.005	IO				0.24
65.667	0.00	0.04	0.004	IO				0.22
65.750	0.00	0.04	0.004	O				0.21
65.833	0.00	0.04	0.004	O				0.19
65.917	0.00	0.04	0.004	O				0.18
66.000	0.00	0.03	0.003	O				0.17
66.083	0.00	0.03	0.003	O				0.16
66.167	0.00	0.03	0.003	O				0.15
66.250	0.00	0.03	0.003	O				0.14
66.333	0.00	0.03	0.003	O				0.13
66.417	0.00	0.02	0.002	O				0.12
66.500	0.00	0.02	0.002	O				0.11
66.583	0.00	0.02	0.002	O				0.10
66.667	0.00	0.02	0.002	O				0.10
66.750	0.00	0.02	0.002	O				0.09
66.833	0.00	0.02	0.002	O				0.08
66.917	0.00	0.02	0.002	O				0.08
67.000	0.00	0.01	0.001	O				0.07
67.083	0.00	0.01	0.001	O				0.07
67.167	0.00	0.01	0.001	O				0.06
67.250	0.00	0.01	0.001	O				0.06
67.333	0.00	0.01	0.001	O				0.06
67.417	0.00	0.01	0.001	O				0.05
67.500	0.00	0.01	0.001	O				0.05
67.583	0.00	0.01	0.001	O				0.05
67.667	0.00	0.01	0.001	O				0.04
67.750	0.00	0.01	0.001	O				0.04
67.833	0.00	0.01	0.001	O				0.04
67.917	0.00	0.01	0.001	O				0.03
68.000	0.00	0.01	0.001	O				0.03
68.083	0.00	0.01	0.001	O				0.03
68.167	0.00	0.01	0.001	O				0.03
68.250	0.00	0.01	0.001	O				0.03
68.333	0.00	0.00	0.000	O				0.02
68.417	0.00	0.00	0.000	O				0.02
68.500	0.00	0.00	0.000	O				0.02
68.583	0.00	0.00	0.000	O				0.02

```
68.667    0.00    0.00      0.000  O       |       |       |       |     0.02
68.750    0.00    0.00      0.000  O       |       |       |       |     0.02
68.833    0.00    0.00      0.000  O       |       |       |       |     0.02
68.917    0.00    0.00      0.000  O       |       |       |       |     0.02
69.000    0.00    0.00      0.000  O       |       |       |       |     0.01
69.083    0.00    0.00      0.000  O       |       |       |       |     0.01
69.167    0.00    0.00      0.000  O       |       |       |       |     0.01
69.250    0.00    0.00      0.000  O       |       |       |       |     0.01
69.333    0.00    0.00      0.000  O       |       |       |       |     0.01
69.417    0.00    0.00      0.000  O       |       |       |       |     0.01
69.500    0.00    0.00      0.000  O       |       |       |       |     0.01
69.583    0.00    0.00      0.000  O       |       |       |       |     0.01
69.667    0.00    0.00      0.000  O       |       |       |       |     0.01
69.750    0.00    0.00      0.000  O       |       |       |       |     0.01
69.833    0.00    0.00      0.000  O       |       |       |       |     0.01
69.917    0.00    0.00      0.000  O       |       |       |       |     0.01
70.000    0.00    0.00      0.000  O       |       |       |       |     0.01
70.083    0.00    0.00      0.000  O       |       |       |       |     0.01
70.167    0.00    0.00      0.000  O       |       |       |       |     0.01
70.250    0.00    0.00      0.000  O       |       |       |       |     0.01
70.333    0.00    0.00      0.000  O       |       |       |       |     0.00

****************************HYDROGRAPH DATA****************************
                Number of intervals =   844
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =        1.043 (CFS)
                Total volume =       0.763 (Ac.Ft)
        Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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I

FEMA FIRM PANELS

NOTES TO USERS

ap is for use in administering the National Flood Insurance Program. It does cessarily identify all areas subject to flooding, particularly from local drainage s of small size. The **community map repository** should be consulted for e updated or additional flood hazard information.

ain more detailed information in areas where **Base Flood Elevations** and/or **floodways** have been determined, users are encouraged to consult od Profiles and Floodway Data and/or Summary of Stillwater Elevations contained within the Flood Insurance Study (FIS) report that accompanies RM. Users should be aware that BFEs shown on the FIRM represent d whole-foot elevations. These BFEs are intended for flood insurance purposes only and should not be used as the sole source of flood elevation ation. Accordingly, flood elevation data presented in the FIS report should ized in conjunction with the FIRM for purposes of construction and/or ain management.

al Base Flood Elevations (BFEs) shown on this map apply only landward North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM be aware that coastal flood elevations are also provided in the Summary of ter Elevations table in the Flood Insurance Study report for this jurisdiction. ons shown in the Summary of Stillwater Elevations table should be used for ction and/or floodplain management purposes when they are higher than vations shown on this FIRM.

aries of the **floodways** were computed at cross sections and interpolated n cross sections. The floodways were based on hydraulic considerations gard to requirements of the National Flood Insurance Program. Floodway and other pertinent floodway data are provided in the Flood Insurance eport for this jurisdiction.

n areas not in Special Flood Hazard Areas may be protected by **flood d structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood nce Study report for information on flood control structures for this tion.

rojection used in the preparation of this map was Universal Transverse or (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. nces in datum, spheroid, projection or State Plane zones used in the tion of FIRMs for adjacent jurisdictions may result in slight positional nces in map features across jurisdiction boundaries. These differences do ect the accuracy of this FIRM.

elevations on this map are referenced to the North American Vertical Datum 8. These flood elevations must be compared to structure and ground ons referenced to the same **vertical datum**. For information regarding sion between the National Geodetic Vertical Datum of 1929 and the North an Vertical Datum of 1988, visit the National Geodetic Survey website at ww.ngs.noaa.gov/ or contact the National Geodetic Survey at the following s:

formation Services
NNGS12
al Geodetic Survey
3, #9202
east-West Highway
Spring, Maryland 20910-3282
713-3242

ain current elevation, description, and/or location information for **bench** shown on this map, please contact the Information Services Branch of the al Geodetic Survey at **(301) 713-3242** or visit its website at ww.ngs.noaa.gov/.

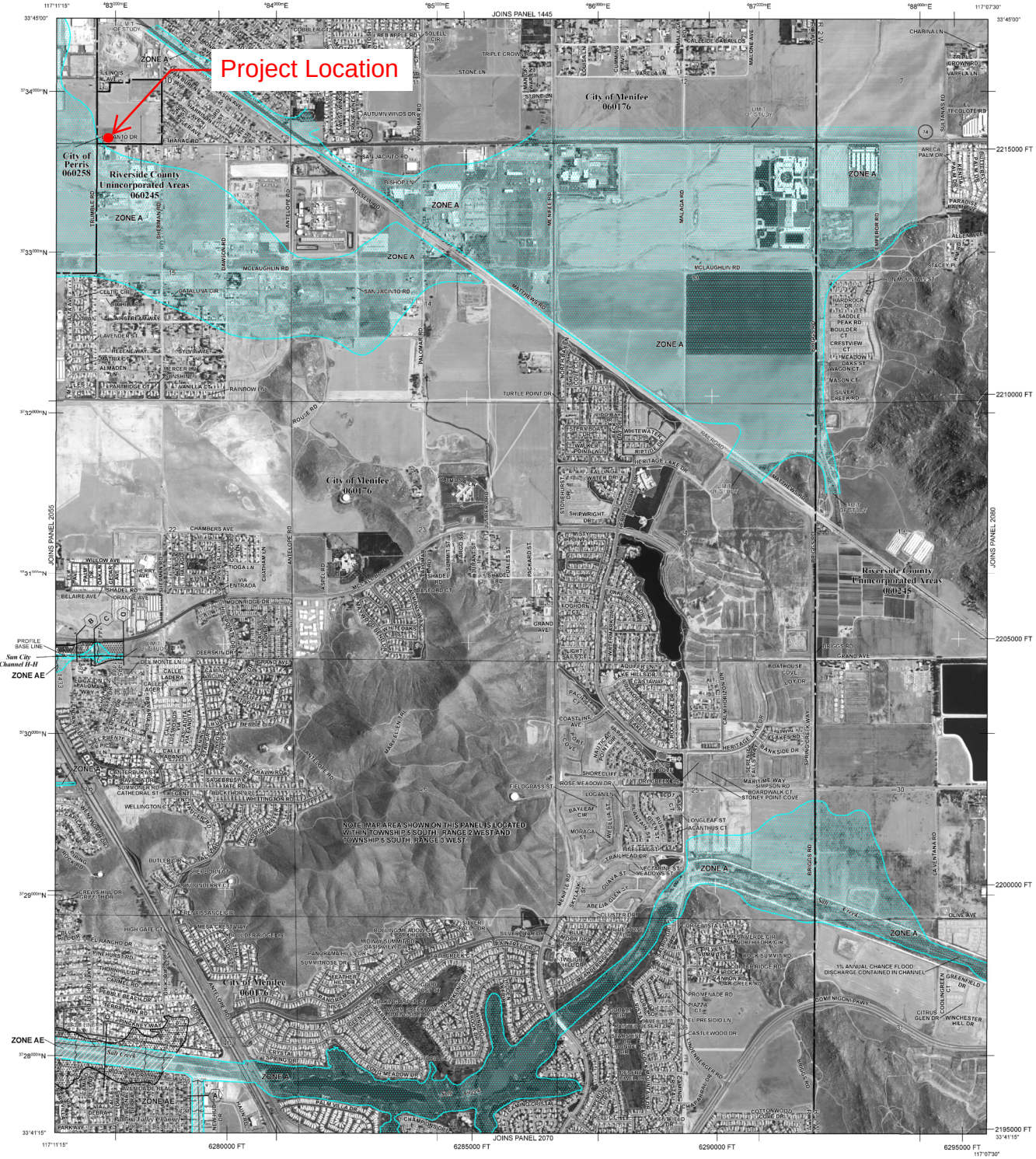
map information shown on this FIRM was derived from multiple sources ng the Riverside County, CA effective database, and the National Geodetic r. Base map imagery for Riverside County, CA is a mosaic of the NAIP 2009 s, 1 meter resolution.

rofile base lines" depicted on this map represent the hydraulic modeling nes that match the flood profiles in the FIS report. As a result of improved aphic data, the "profile base line", in some cases, may deviate significantly e channel centerline or appear outside the SFHA.

rate limits shown on this map are based on the best data available at the publication. Because changes due to annexations or de-annexations may ccurred after this map was published, map users should contact appropriate unity officials to verify current corporate limit locations.

refer to the separately printed **Map Index** for an overview map of the showing the layout of map panels; community map repository addresses; Listing of Communities table containing National Flood Insurance Program for each community as well as a listing of the panels on which each unity is located.

ormation and questions about this map, available products associated with RM including historic versions of this FIRM, how to order products or the al Flood Insurance Program in general, please call the FEMA Map ation eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Service Center website at http://msc.fema.gov. Available products may previously issued Letters of Map Change, a Flood Insurance Study report, digital versions of this map. Many of these products can be ordered or ed directly from the website. Users may determine the current map date for IRM panel by visiting the FEMA Map Service Center website or by calling MA Map Information eXchange.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard A area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard incl A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevat 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); avera determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chanc a flood control system that was subsequently decertified. Zone AR ind the former flood control system is being restored to provide protection 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Fed protection system under construction; no Base Flood Elevations determin

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be k encroachment so that the 1% annual chance flood can be carried without substantial ir flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood wi depths of less than 1 foot or with drainage areas less than 1 square areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Z boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths, or flood velocities
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone in feet*

* Referenced to the North American Vertical Datum of 1988

(A)—(A) Cross section line
(23)---(23) Transect line
97°07'30", 32°22'30" Geographic coordinates referenced to the North Datum of 1983 (NAD 83), Western Hemisphere
4275000mE 1000-meter Universal Transverse Mercator grid ticks, z
6000000 FT 5000-foot grid values: California State Plane coordina Zone VI (FIPS0406 = 406), Lambert projection
DX5510 × Bench mark (see explanation in Notes to Users sect FIRM panel)
● M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 18, 2014: for a description of revisions, see Notice to Users page in the Flood Ins Study report.

For community map revision history prior to countywide mapping, refer to the Comm History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 206

FIRM
FLOOD INSURANCE RATE M
RIVERSIDE COUNTY
CALIFORNIA
AND INCORPORATED AR

PANEL 2060 OF 3805

(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
MENIFEE, CITY OF	060176	2060
PERRIS, CITY OF	060258	2060
RIVERSIDE COUNTY UNINCORPORATED AREAS	060245	2060

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

MAP NUM
06065C2

MAP REV
AUGUST 18

Federal Emergency Management