DRAINAGE STUDY
FOR
SANTEE SCHOOLYARD

Preliminary Engineering

Job Number 19644

July 29, 2022
Revised: December 16, 2022
Revised: April 21, 2023

RICK ENGINEERING COMPANY

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Preliminary Engineering

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Revision Page

April 21, 2023

This Priority Development Project Storm Water Quality Management Plan (PDP SWQMP) presents a revision to the December 16, 2022 report pursuant to the City of San Diego's plan check comments received December 16, 2022. The following text identifies the plan check comments along with the responses in bold.

<u>City of Santee Comments</u>

3. Provide two copies of a preliminary drainage study prepared by a registered Civil Engineer, with demonstrated expertise in drainage analysis and experience in fluvial geomorphology and water resources management. Storm drainage shall be designed to adequately convey storm water runoff without damage or flooding of surrounding properties or degradation of water quality.

   Two copies of a preliminary drainage study have been provided alongside the PDP SWQMP.

4.a The drainage study shall identify and calculate storm water runoff quantities expected from the site and upstream of the site and verify the adequacy of all on-site or off-site facilities necessary to discharge this runoff. The drainage system design shall be capable of collecting and conveying all surface water originating within the site, and surface water that may flow onto the site from upstream lands and shall be in accordance with the latest adopted Master Drainage Plan, the requirements of the City of Santee Public Works Standards, including analysis of the 10-year, 50-year and 100- year frequency storms, and be based on full development of upstream areas.

   Current design is based on 100-year storm event. 10-year and 50-year frequency storms will be provided in final engineering. Peak flows will be detained and are anticipated to be less than pre-project flows. The reduction of post-project flows to below pre-project flows is not expected to contribute to a worsening of downstream drainage conditions.

4.b The drainage study shall compute rainfall runoff characteristics from the project area including, at a minimum, peak flow rate, flow velocity, runoff volume, time of concentration, and retention volume. These characteristics shall be developed for the 10-year, 50-year and 100-year frequency six-hour storm during critical hydrologic conditions for soil and vegetative cover. Storm events shall be developed using isopluvial maps and in accordance with the San Diego County Hydrology Manual.

Detailed hydraulics will be provided in final engineering. 10-year and 50-year storm event analysis will be provided in final engineering.

Volume detained in the pore space of the biofiltration basin can be found in the PDPSWQMP, Attachment 1E. Detention storage and stage-discharge curves can be found in the PDPSWQMP, Attachment 2D.

4.c. The existing downstream drainage system is identified as both needing rehabilitation and deficient. Demonstrate the proposed improvements to the drainage system to a suitable outfall.

The 100-year post-project peak flow rate will be detained to below pre-project levels. The proposed project is not expected to contribute to a worsening of the downstream drainage conditions.

4.d Include in the study an analysis of the existing downstream facilities, specifically the inlet opening located at the NW corner of the site and how the widening of Cottonwood Avenue and increase in impermeable area will affect the required opening length.

A hydraulic analysis of the curb inlet along Cottonwood Ave. has been provided in Appendix D of the Drainage study.

4.e Demonstrate the effects that the current deficient downstream facilities will have on the proposed development, including if one travel lane of major or collector streets would be obstructed by storm water based on a 10-year storm.

Peak flows will be detained and are anticipated to be less than pre-project flows. The reduction of post-project flows to below pre-project flows is not expected to contribute to a worsening of downstream drainage conditions. A hydraulic analysis of the runoff spread on Cottonwood Avenue has been included in Appendix D of the drainage study alongside the hydraulic analysis of the curb inlet.

1.0 INTRODUCTION

1.1 Project Description

This drainage study presents hydrologic and hydraulic analyses for the proposed Santee Schoolyard Project (herein referred to as the "project"). The project is located within the City of Santee, just southeast of the intersection between Mission Gorge Road and Cottonwood Ave. (See Figure 1, Vicinity Map). The proposed project is a redevelopment project that proposes to grade the site and construct auto dealerships that include auto dealership and auto repair buildings, roadways, water quality features, and parking. The site is approximately thirteen (13) acres and currently consists of concrete pads and open pervious area that was associated with a previously existing school that has been demolished.

1.2 Drainage Characteristics

<u>Pre-Project Condition</u>

The pre-project site drains generally northwest to a single point of compliance (POC). The POC consists of a curb inlet located along the eastern edge of Cottonwood Ave., just south of the intersection of Cottonwood Ave. and Mission Gorge Rd. Runoff from the southern part of Basin 100 flows from the eastern boundary of the site to the west along Happy Ln. before it rounds the corner at Cottonwood Ave. and flows north along the street where it is collected by the curb inlet. Runoff from the northern part of Basin 100 flows north to Mission Gorge Rd. then concentrates and flows west along the street until it rounds the corner and travels south at Cottonwood Ave. where it is collected by the curb inlet. After entering the curb inlet, runoff from the project site drains to the San Diego River which flows approximately west and ultimately to the Pacific Ocean.

Post-Project Condition

Drainage patterns for the proposed condition will remain similar to drainage patterns in the pre-project condition. In the post-project condition, the project area is divided into three lots which each drain drains to a separate underground storage vault and proprietary compact biofiltration system. It is anticipated that peak flows from a 100-year, 6-hour storm event on the post-project site will remain lower than peak flows from the pre-project site. After exiting the vaults and compact biofiltration system, the stormwater is conveyed via a private storm drain to a connection with the public storm drain system located at the curb inlet which is on the southeast corner of the intersection of Cottonwood Ave. and Mission Gorge Rd. After connecting to the public storm drain system, flows from the site are conveyed to the San Diego River.

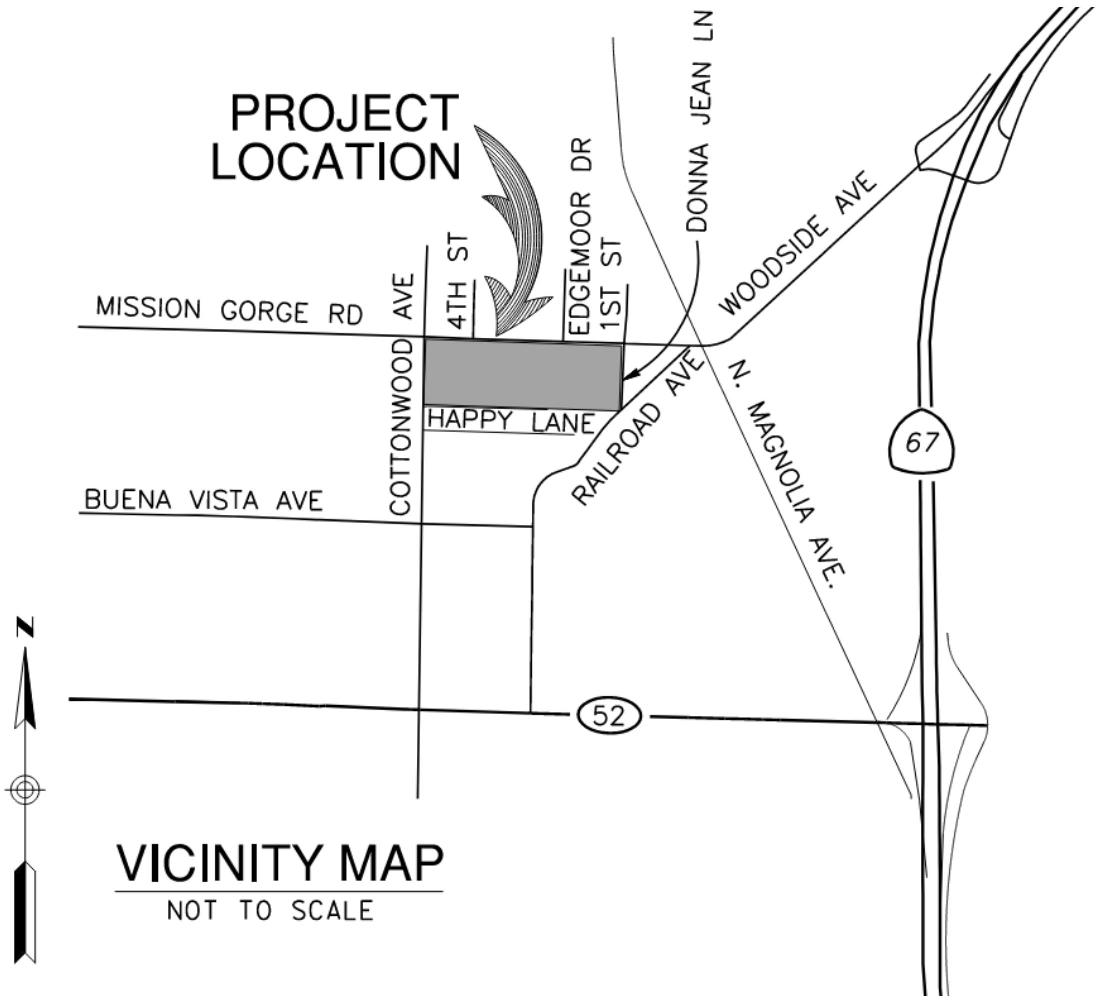
1.3 Hydrology, Hydraulics, and Detention

Hydrology, hydraulics, and detention are discussed in Sections 2.0, 3.0, and 4.0 respectively of this report.

1.4 Water Quality

Post-project storm water runoff will be managed via underground storage vaults and proprietary compact biofiltration BMPs, designed pursuant to the guidelines from the City of Santee BMP Design Manual, dated February 2016. The PDP SWQMP specific to the Santee Schoolyard project is dated December 16th, 2022 (or any revision made thereafter) and prepared by Rick Engineering Company.

Figure 1: Vicinity Map



2.0 HYDROLOGY

The hydrologic conditions were analyzed in accordance with the June 2003 San Diego County *Hydrology Manual*.

2.1 Methodology

To determine the peak flows at the point of compliance (POC) identified on the provided drainage study exhibits, Advance Engineering Software (AES) 2014 Rational Method computer software version 21.0 was used. The hydrologic model was developed by first dividing each major drainage basin into several subareas. The delineation of each subarea was determined so that area within each subarea is comprised of similar hydrologic features, including topography, land use, and storm drain conveyance system (e.g., urban open channel, pipe, natural open channel, etc.). Nodes were identified at the upstream and downstream extents of each subarea, and subarea hydrologic data was determined, such as the land use(s) and drainage facility geometry, elevations, and lengths. Hydrologic backup information is included in Appendix C and AES output is provided in Appendix A and B for pre and post-project conditions respectively.

Next, the hydrologic data describing each subarea were incorporated into the AES software in order to create a node-link model for each watershed. For each subarea the AES software performs calculations for the specific hydrologic process occurring in the subarea. There are 15 different hydrologic processes programmed into the software, and each process is assigned a code number that is presented on the model results. The AES Rational Method computer software hydrologic processes code numbers are described in Table 1.

Table 1: Subarea Hydrologic Processes (Codes)

Code	Subarea Type
Code 1	Confluence analysis at a node
Code 2	Initial subarea analysis
Code 3	Pipe flow travel time (computer-estimated pipe sizes)
Code 4	Pipe flow travel time (user-specified pipe size)
Code 5	Trapezoidal channel travel time
Code 6	Street flow analysis through a subarea
Code 7	User-specified information at a node

Table 1: Subarea Hydrologic Processes (Codes)

Code	Subarea Type
Code 8	Addition of the subarea runoff to mainline
Code 9	V-Gutter flow through subarea
Code 10	Copy mainstream data onto a memory bank
Code 11	Confluence a memory bank with the mainstream memory
Code 12	Clear a memory bank
Code 13	Clear the mainstream memory
Code 14	Copy a memory bank onto the mainstream memory
Code 15	Hydrologic data bank storage functions

The hydrologic conditions were analyzed in accordance with the County of San Diego's design criteria as follows:

San Diego County Hydrology Manual, June 2003:

Design Storm:	100-year. 6-hour (for storm drain systems)
Runoff Coefficients:	Weighted Runoff Coefficients (1)
0% Impervious Areas	C=0.30 for Type-C soils
	C=0.35 for Type-D soils
100% Impervious Areas	C=0.9
Soil Type (Conservatively Applied)	"D"
Design Storm Precipitation[2]	100-year, 6-hour, P=2.4 inches
Rainfall Intensity:	Based on time-intensity criteria per Section 3.0 of the County Hydrology Manual (San Diego County, 2003)

(1) Utilized to calculate composite 'C' values based on percent impervious.

(2) Isopluvial map provided in Appendix C.

2.2 Hydrologic Results

Rational Method Results

The 100-year peak flow rates for the Pre- and Post-Project conditions are summarized in Table 2.1 below.

Table 2.1: Summary of Hydrologic Conditions

Drainage Basin ID	POC	Project Condition	Tributary Area (ac)	Time of Concentration (minutes)	Q_{100} (cfs)
100	1	Pre-Project	17.4	17.6	23.1
		Post-Project	17.4	9.2	41.7

Based on the Rational Method result and a comparison of the pre-and post-project POC, it can be observed that the peak discharge rate and tributary areas to POC 1 has increased. This is due to the increase in impervious area to this POC. Detention will be provided with three proposed underground storage vaults located under the proposed parking area and as discussed in Section 4.0 of this report. Ultimately, the existing and the proposed condition flows from the site drain in northwesterly direction where they are connected to an existing storm drain system at the corner of Mission Gorge Road and Cottonwood Ave. These flows are then conveyed north and discharged into the San Diego River. Refer to Appendix A and Appendix B of this report for pre- and post-project Rational Method calculations respectively and Appendix C for backup documentation.

The location of the POC, drainage boundaries, flow patterns, and pervious/impervious areas can be found on the work maps titled, "Pre-project Drainage Study Map for Santee Schoolyard" located in Map Pocket 1 and "Post-project Drainage Study Map for Santee Schoolyard," located in Map Pocket 2.

3.0 HYDRAULICS

3.1 Hydraulic Methodology and Criteria

The 100-year post-project peak flow rates determined using the Modified Rational Method was used to size the on-site storm drain system. In addition, hydraulic analyses regarding inlet sizing calculations are included in Appendix D.

3.1.1 Storm Drain Sizing

Storm drain pipe sizes were determined based on a normal depth calculation to verify storm drain capacity based on Manning's equation.

$$Q= (1.486/n)\ A\ R^{2/3}\ S^{1/2}$$

Where:

Q = Discharge (cfs)

n = Manning's roughness coefficient

A = Cross-sectional Area of flow (sq. ft.)

R = Hydraulic radius (ft.) (where hydraulic radius is defined as the cross-section area of flow divided by the wetted perimeter, R= A/P)

S = Slope of pipe (ft./ft.)

The Manning's roughness coefficient "n" of 0.013 was used for the hydraulic calculations. This value is typically used for reinforced concrete pipe (RCP), polyvinyl chloride (PVC), and high-density polyethylene pipe (HDPE). The pipe sizes were evaluated based on the Rational Method flow rates with a 30% "bump up" sizing factor to account for hydraulic losses within the system.

Please refer to Appendix E for the storm drain sizes. The AES rational method results for the post-project condition are located in Appendix B of this report may be referenced for further information concerning pipe flow.

3.1.2 Inlet Design

Inlet design calculations were completed using a computer program based on the following equations for inlets on a grade and inlets in a sump:

Type B Inlets on a Grade

$$Q = 0.7\ L\ (a + y)^{3/2}$$

Where: y = depth of flow approaching the curb inlet, in feet (ft)

a = depth of depression of curb at inlet, in feet (ft)

L = length of clear opening of inlet for total interception, in feet (ft)

Q = interception capacity of the curb inlet, in cubic feet per second (cfs)

Type B Inlets in a Sump

$$Q/L = 1.5\ \text{cfs/ft}$$

Where: Q = inlet capacity, in cubic feet per second (cfs)

L = length of clear opening of inlet for total interception, in feet (ft)

<u>Inlet Results</u>

Inlet locations have been identified for all of the basins within this project. Inlets will be sized for the 100-year, 6-hour storm event. Each inlet will be sized to provide 100% capture of the flow draining to the inlet. The inlet design calculations along with back up information will be presented in Appendix D during a final engineering. Refer to the drainage study map provided in Map Pocket 2 for the location of each inlet.

4.0 DETENTION ANALYSES

For the design of detention facilities, the modified rational method hydrologic analysis was performed to determine the 100-year flow rates for both the pre-project condition and the post-project condition. Detention was determined to be required for POC 1. Pre-project and post-project rational method output for the project is provided in Appendices A and B of this report.

4.1 Hydrograph Development

The sizing of a detention facility requires an inflow hydrograph to obtain the necessary storage volume. The modified rational method only yields a peak discharge and time of concentration and does not yield a hydrograph. In order to convert the peak discharge and time of concentration into a hydrograph, Rick Engineering's program, RatHydro was used. RatHydro generates a hydrograph from the following inputs: Time of concentration, 6-Hour Precipitation depth, basin area, rational method runoff coefficient, and peak discharge rate. The generated hydrograph can then be used as the inflow hydrograph for basin sizing within HEC-1.

4.3 HEC-1 Methodology and Criteria

100-year hydrographs and elevation-storage-outflow rating curves were used in the HEC-1 hydrologic model to perform routing calculations for the detention basin, and to determine the 100-year detention volumes required for the basin to reduce the post-project peak discharge rate back to the pre-project peak discharge rate. Actual storage and rating curves will be provided during final engineering along with detailed outlet-works designs for each BMP.

4.4 Detention Results

The 100-year, 6-hour post-project peak discharge rates were routed using the HEC-1 hydrologic model to determine the detention volume required for the vaults to reduce post-project peak discharge rates back to the pre-project peak discharge rates for select storm events. The HEC-1 detention analyses computer output is located in Appendix F of this report.

The proposed detention vaults are designed to include volume to comply with water quality volume. Water quality treatment will be provided by the downstream biofiltration basin. Detention volume sizing is provided within the proposed vault. The vaults are designed to route the post-project peak discharge rate back to pre-project conditions at POC 1. Post-Project mitigated hydrologic analysis that reflects detention occurring upstream from the project's POC is included in Appendix B following the un-detained analysis. Refer to Map Pocket 2 of this report for an exhibit of the vault and the POC locations. Table 4.1 provides a summary of the detention analysis.

Table 4.1 Detention Analysis Summary for POC 1

POC 1	Pre-Project	Post-Project (Un-Mitigated)	Post-Project (Mitigated)
Area (ac)	17.4	17.4	17.4
Time of Concentration (min)	17.6	9.2	> 17.6
Q_{100} (cfs)	23.1	41.7	< 23.1

Refer to Appendix F for results from the HEC-1 detention analyses. It should be noted that the peak discharge rate from POC 1 with mitigation is less than the pre-project peak discharge rate; therefore, the 100-year detention requirements have been met.

5.0 CONCLUSION

This drainage study presents the hydrologic and hydraulic analyses for the Santee Schoolyard project. The project is a redevelopment project located in the City of Santee. The post-project condition peak discharge rates were determined using the Rational Method based on the hydrologic methodology and criteria described in the County of San Diego Hydrology Manual, dated June 2003.

Post-project flows will be treated per the City of Santee's BMP Design Manual, dated February 2016. For more information on water quality sizing, please refer to the separate report titled, "Priority Development Project Storm Water Quality Management Plan (PDP SWQMP) for Santee Schoolyard," dated December 16th, 2022 or any revisions thereafter, and prepared by Rick Engineering Company.

Based on the Rational Method result and a comparison of the pre- and post-project POC, it can be observed that the post-project peak discharge rate and tributary area to POC 1 has increased. Detention sizing for Basin 100 is provided for the 100-year, 6-hour storm event so that post-project peak discharge rates are routed back to pre-project conditions at POC 1 using the HEC-1 hydrologic model. Therefore, it is anticipated that there will be no adverse effects to downstream drainage characteristics/systems as a result of the project.

APPENDIX A

Modified Rational Method Output
[Pre-project]

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             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2014 Advanced Engineering Software (aes)
              Ver. 21.0 Release Date: 06/01/2014  License ID 1261

                            Analysis prepared by:

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                               5620 Friars Road
                          San Diego, California 92110
                        619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* SANTEE SCHOOLYARD                                                        *
* RATIONAL METHOD FOR PRE-PROJECT 100 YEAR 6 HOUR STORM                    *
* J-19644                                                                  *
 **************************************************************************

  FILE NAME: SS00E00.RAT
  TIME/DATE OF STUDY: 16:25 04/19/2023
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  RAINFALL-INTENSITY ADJUSTMENT FACTOR = 1.000
  *USER SPECIFIED:
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  9
   1)   5.000;  4.400
   2)  10.000;  3.450
   3)  15.000;  2.900
   4)  20.000;  2.500
   5)  25.000;  2.200
   6)  30.000;  2.000
   7)  40.000;  1.700
   8)  50.000;  1.500
   9)  60.000;  1.300
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150
```

```
  2   20.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.50 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    52.00
  UPSTREAM ELEVATION(FEET) =    376.00
  DOWNSTREAM ELEVATION(FEET) =    371.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  URBAN SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.578
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.400
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    371.00  DOWNSTREAM(FEET) =    359.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   638.00   CHANNEL SLOPE =  0.0188
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.567
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4300
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.21
  AVERAGE FLOW DEPTH(FEET) =   0.21   TRAVEL TIME(MIN.) =   4.81
  Tc(MIN.) =    9.38
  SUBAREA AREA(ACRES) =     5.30       SUBAREA RUNOFF(CFS) =    8.13
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.429
  TOTAL AREA(ACRES) =        5.4         PEAK FLOW RATE(CFS) =       8.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =   2.81
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    105.00 =     690.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    107.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  359.00  DOWNSTREAM ELEVATION(FEET) =  349.80
  STREET LENGTH(FEET) =   695.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   18.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   3.83   Tc(MIN.) =   13.21
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.097
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .5400
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.462
  SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    3.85
  TOTAL AREA(ACRES) =        7.7        PEAK FLOW RATE(CFS) =      11.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  18.62
  FLOW VELOCITY(FEET/SEC.) =  3.10   DEPTH*VELOCITY(FT*FT/SEC.) =   1.48
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    150.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  349.80  DOWNSTREAM ELEVATION(FEET) =  349.20
  STREET LENGTH(FEET) =   333.00   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   21.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.66
  STREET FLOW TRAVEL TIME(MIN.) =   4.40   Tc(MIN.) =   17.61
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.691
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.470
  SUBAREA AREA(ACRES) =    0.30      SUBAREA RUNOFF(CFS) =    0.55
  TOTAL AREA(ACRES) =        8.0        PEAK FLOW RATE(CFS) =      11.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  21.01
  FLOW VELOCITY(FEET/SEC.) =  1.25   DEPTH*VELOCITY(FT*FT/SEC.) =   0.65
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    150.00 =    1718.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    150.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.691
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4652
  SUBAREA AREA(ACRES) =    7.30   SUBAREA RUNOFF(CFS) =    9.04
  TOTAL AREA(ACRES) =       15.3   TOTAL RUNOFF(CFS) =      19.15
  TC(MIN.) =   17.61

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    150.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.61
  RAINFALL INTENSITY(INCH/HR) =   2.69
  TOTAL STREAM AREA(ACRES) =    15.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.15

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    112.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  USER SPECIFIED Tc(MIN.) =    5.000
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.400
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    115.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    371.00  DOWNSTREAM(FEET) =    364.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   155.00   CHANNEL SLOPE =  0.0452
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.103
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.65
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   1.56
  Tc(MIN.) =    6.56
  SUBAREA AREA(ACRES) =     0.80       SUBAREA RUNOFF(CFS) =    1.51
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.448
  TOTAL AREA(ACRES) =        0.9         PEAK FLOW RATE(CFS) =       1.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   2.07
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    115.00 =     488.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    115.00 TO NODE    150.00 IS CODE =  62
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  364.00  DOWNSTREAM ELEVATION(FEET) =  349.20
  STREET LENGTH(FEET) =  1264.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.16
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   10.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.89
  STREET FLOW TRAVEL TIME(MIN.) =   8.47   Tc(MIN.) =   15.03
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.897
  *USER SPECIFIED(SUBAREA):
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.689
  SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    3.02
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =       4.19

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  12.46
  FLOW VELOCITY(FEET/SEC.) =  2.65   DEPTH*VELOCITY(FT*FT/SEC.) =   1.02
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    150.00 =    1752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    150.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.03
  RAINFALL INTENSITY(INCH/HR) =   2.90
  TOTAL STREAM AREA(ACRES) =     2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.19

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       19.15    17.61        2.691        15.30
      2        4.19    15.03        2.897         2.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       20.54    15.03       2.897
      2       23.05    17.61       2.691

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.05   Tc(MIN.) =   17.61
  TOTAL AREA(ACRES) =       17.4
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    150.00 =    1752.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       17.4  TC(MIN.) =     17.61
  PEAK FLOW RATE(CFS)   =      23.05
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS

↑
```

APPENDIX B

Modified Rational Method Output
[Post-project Un-detained]

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2014 Advanced Engineering Software (aes)
             Ver. 21.0 Release Date: 06/01/2014  License ID 1261

                           Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                        San Diego, California 92110
                      619-291-0707   Fax 619-291-4165

 ************************** DESCRIPTION OF STUDY **************************
* SANTEE SCHOOLYARD                                                        *
* RATIONAL METHOD FOR POST-PROJECT 100 YEAR 6 HOUR STORM                   *
* J-19644                                                                  *
 **************************************************************************

  FILE NAME: SS00P00.RAT
  TIME/DATE OF STUDY: 16:25 04/19/2023
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  RAINFALL-INTENSITY ADJUSTMENT FACTOR = 1.000
  *USER SPECIFIED:
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  9
   1)   5.000;  4.400
   2)  10.000;  3.450
   3)  15.000;  2.900
   4)  20.000;  2.500
   5)  25.000;  2.200
   6)  30.000;  2.000
   7)  40.000;  1.700
   8)  50.000;  1.500
   9)  60.000;  1.300
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===   =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150
```

```
  2   20.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0100 0.125 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.50 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  82
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    375.00
  DOWNSTREAM ELEVATION(FEET) =    370.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  URBAN SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.264
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.970
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  CHANNEL LENGTH THRU SUBAREA(FEET) =   380.00
  REPRESENTATIVE CHANNEL SLOPE =  0.0210
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.079
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.04
  AVERAGE FLOW DEPTH(FEET) =   0.06   TRAVEL TIME(MIN.) =   6.11
  Tc(MIN.) =   13.37
  SUBAREA AREA(ACRES) =     0.70       SUBAREA RUNOFF(CFS) =    0.88
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =       0.8         PEAK FLOW RATE(CFS) =       1.01

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.08   FLOW VELOCITY(FEET/SEC.) =   1.20
```

```
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =     480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    199.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0110
  STREET LENGTH(FEET) =  1145.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =   10.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.60
  STREET FLOW TRAVEL TIME(MIN.) =   9.79   Tc(MIN.) =   23.17
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.310
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.467
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    2.26
  TOTAL AREA(ACRES) =        2.8        PEAK FLOW RATE(CFS) =       3.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  11.59
  FLOW VELOCITY(FEET/SEC.) =  2.11   DEPTH*VELOCITY(FT*FT/SEC.) =   0.71
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    199.00 =    1625.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    199.00 TO NODE    199.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   23.17
  RAINFALL INTENSITY(INCH/HR) =   2.31
```

```
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.02

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    502.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  82
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   110.00
  UPSTREAM ELEVATION(FEET) =    368.00
  DOWNSTREAM ELEVATION(FEET) =    364.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  URBAN SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.077
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.815
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    199.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0110
  STREET LENGTH(FEET) =  1291.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.62
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    8.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =  10.22   Tc(MIN.) =   18.30
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.636
 STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  98
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.837
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    2.98
 TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =      3.09

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.05
 FLOW VELOCITY(FEET/SEC.) =  2.40   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    199.00 =    1401.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    199.00 TO NODE    199.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   18.30
 RAINFALL INTENSITY(INCH/HR) =   2.64
 TOTAL STREAM AREA(ACRES) =     1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.09

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.02    23.17        2.310          2.80
     2        3.09    18.30        2.636          1.40

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        5.48    18.30       2.636
     2        5.73    23.17       2.310

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       5.73   Tc(MIN.) =   23.17
 TOTAL AREA(ACRES) =        4.2
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    199.00 =    1625.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    199.00 TO NODE    199.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    372.00
  DOWNSTREAM ELEVATION(FEET) =    371.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  URBAN SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.904
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.400
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.36
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.36

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    204.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  CHANNEL LENGTH THRU SUBAREA(FEET) =   320.00
  REPRESENTATIVE CHANNEL SLOPE =  0.0100
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.016   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.238
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.74
  AVERAGE FLOW DEPTH(FEET) =   0.18   TRAVEL TIME(MIN.) =   1.95
  Tc(MIN.) =    5.85
  SUBAREA AREA(ACRES) =     3.00       SUBAREA RUNOFF(CFS) =   10.43
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  TOTAL AREA(ACRES) =        3.1         PEAK FLOW RATE(CFS) =      10.77

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   3.40
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    204.00 =     420.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    399.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0070
  FLOW LENGTH(FEET) =   780.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.88
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.77
  PIPE TRAVEL TIME(MIN.) =   2.21    Tc(MIN.) =    8.06
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    399.00 =    1200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    399.00 TO NODE    399.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.06
  RAINFALL INTENSITY(INCH/HR) =   3.82
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.77

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    365.00
  DOWNSTREAM ELEVATION(FEET) =    364.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  URBAN SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.904
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.400
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.36
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.36

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    302.00 TO NODE    399.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0070
  FLOW LENGTH(FEET) =   740.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.36
  PIPE TRAVEL TIME(MIN.) =   5.19    Tc(MIN.) =    9.09
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    399.00 =     840.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    399.00 TO NODE    399.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.09
  RAINFALL INTENSITY(INCH/HR) =   3.62
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.36

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       10.77     8.06        3.818          3.10
     2        0.36     9.09        3.623          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       11.09     8.06       3.818
     2       10.58     9.09       3.623

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.09   Tc(MIN.) =    8.06
  TOTAL AREA(ACRES) =        3.2
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    399.00 =    1200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    399.00 TO NODE    399.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.818
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8200
  SUBAREA AREA(ACRES) =    4.10   SUBAREA RUNOFF(CFS) =   12.84
  TOTAL AREA(ACRES) =        7.3   TOTAL RUNOFF(CFS) =      22.85
  TC(MIN.) =    8.06

****************************************************************************
  FLOW PROCESS FROM NODE    399.00 TO NODE    499.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0100
  FLOW LENGTH(FEET) =   450.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.17
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      22.85
  PIPE TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =    8.98
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    499.00 =    1650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    499.00 TO NODE    499.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.98
  RAINFALL INTENSITY(INCH/HR) =   3.64
  TOTAL STREAM AREA(ACRES) =     7.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.85

****************************************************************************
  FLOW PROCESS FROM NODE    400.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    359.00
  DOWNSTREAM ELEVATION(FEET) =    358.00
```

```
  ELEVATION DIFFERENCE(FEET) =      1.00
  URBAN SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.904
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.400
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.36
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.36

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    499.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0070
  FLOW LENGTH(FEET) =   850.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.36
  PIPE TRAVEL TIME(MIN.) =   5.96    Tc(MIN.) =    9.86
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    499.00 =     950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    499.00 TO NODE    499.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.86
  RAINFALL INTENSITY(INCH/HR) =   3.48
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.36

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       22.85     8.98        3.644         7.30
      2        0.36     9.86        3.476         0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       23.18     8.98       3.644
      2       22.17     9.86       3.476

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.18   Tc(MIN.) =    8.98
  TOTAL AREA(ACRES) =        7.4
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    499.00 =    1650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    499.00 TO NODE    499.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.644
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  95
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8200
  SUBAREA AREA(ACRES) =    5.80   SUBAREA RUNOFF(CFS) =   17.33
  TOTAL AREA(ACRES) =       13.2   TOTAL RUNOFF(CFS) =      39.44
  TC(MIN.) =    8.98

****************************************************************************
  FLOW PROCESS FROM NODE    499.00 TO NODE    199.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0070
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.03
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      39.44
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    9.15
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    199.00 =    1730.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    199.00 TO NODE    199.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       39.44     9.15       3.612       13.20
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    199.00 =    1730.00 FEET.
```

```
  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        5.73    23.17       2.310        4.20
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    199.00 =    1625.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      41.70       9.15        3.612
      2      30.95      23.17        2.310

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      41.70   Tc(MIN.) =    9.15
  TOTAL AREA(ACRES) =       17.4

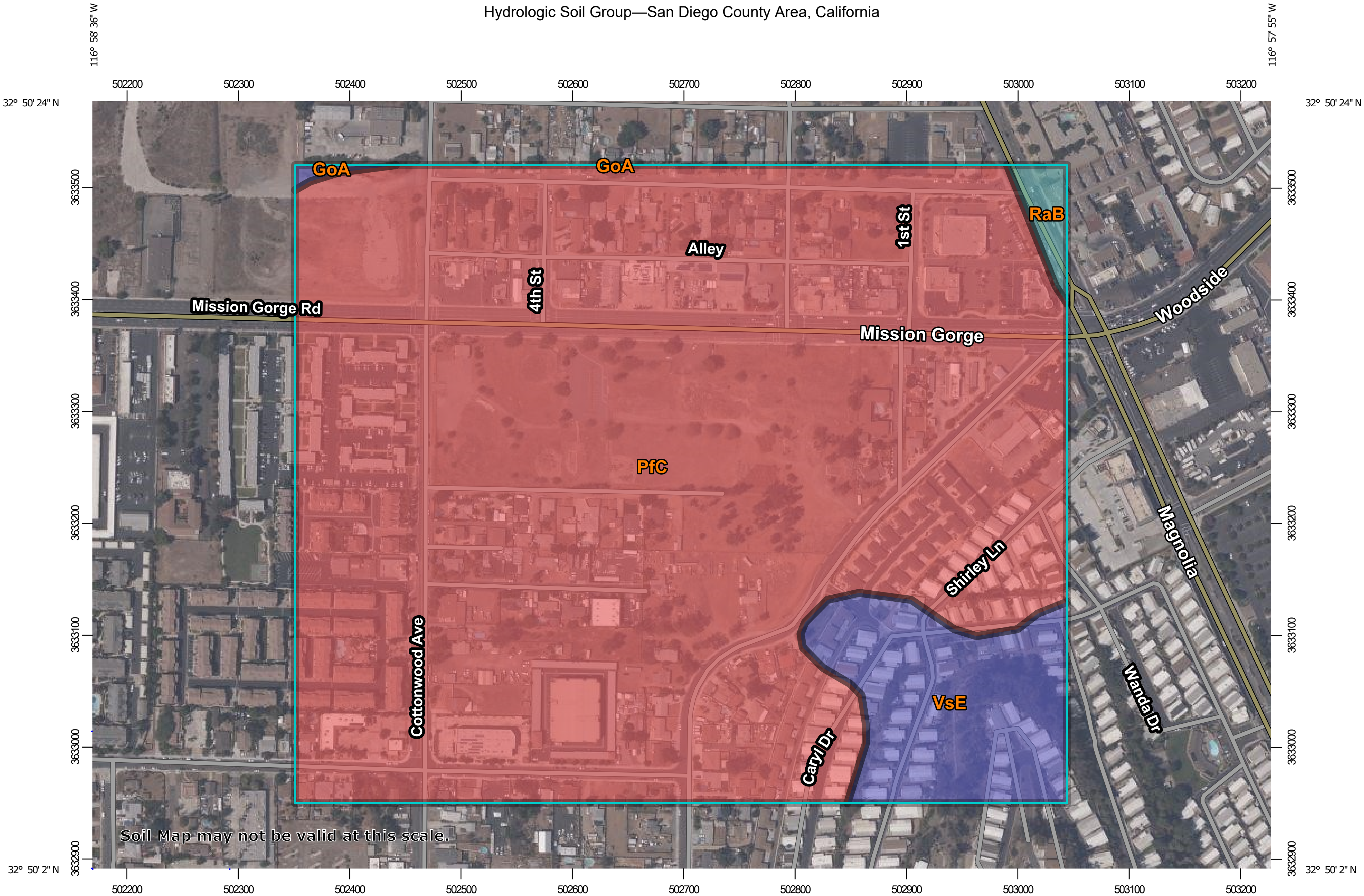
****************************************************************************
  FLOW PROCESS FROM NODE    199.00 TO NODE    199.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       17.4  TC(MIN.) =      9.15
  PEAK FLOW RATE(CFS)   =      41.70
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Modified Rational Method Output
[Post-project Mitigated]

TO BE PROVIDED IN FINAL ENGINEERING

APPENDIX C

Backup for Weighted Runoff Coefficients



Map Scale: 1:4,840 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 50, 100, 200, 300

Feet: 0, 200, 400, 800, 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 16, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 18, 2018—Aug 22, 2018

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
GoA	Grangeville fine sandy loam, 0 to 2 percent slopes	B	0.2	0.2%
PfC	Placentia sandy loam, thick surface, 2 to 9 percent slo pes	D	88.5	90.2%
RaB	Ramona sandy loam, 2 to 5 percent slopes	C	0.9	0.9%
VsE	Vista coarse sandy loam, 15 to 30 percent slopes, MLRA 20	B	8.5	8.7%
Totals for Area of Interest			**98.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX D

Inlet Sizing Calculations

Will be provided during Final Engineering.

Santee Schoolyard
19644
12/16/2022

Overflow Weir Sizing - BMP A1

Weir coefficient, C_w	3.0
Available head, h (feet)	1.00
Weir Length (ft)	8.00

Inlet type	**Capacity Based on Weir Equation[1,2], Qcap (CFS[3])**
Weir (20' * 0.5')	24.00

1. A reduction factor of 50% assumed for clogging.
2. Weir equation, $Q = C_w L_e (h)^{3/2}$; Orifice equation, $Q = C_o A_e (2gh)^{1/2}$

Santee Schoolyard
19644
12/16/2022

Grate Inlet Sizing (Weir vs. Orifice) - BMP B1

Weir coefficient, C_w	3.0
Orifice coefficient, C_o	0.60
Available head, h (feet)	0.85

Inlet Type	Capacity based on Weir Equation[3, 4], Q_{cap} (cfs[5])	Capacity based on Orifice Equation[3, 4], Q_{cap} (cfs[5])	Governing Equation
1212 Series - 12"x12" Catch Basin[1]	5.01	2.48	Orifice
1218 Series - 12"x18" Catch Basin[1]	5.80	3.31	Orifice
1818 Series - 18"x18" Catch Basin[1]	6.57	4.20	Orifice
2424 Series - 24"x24" Catch Basin[1]	8.49	7.03	Orifice
3636 Series - 36"x36" Catch Basin[1]	12.38	14.68	Weir
Type 'I' Catch Basin[2]	10.85	10.78	Orifice

Note:

1. Based on Brooks Products, Inc. - H 20-44 Traffic, Steel Grate, not Parkway, Cast-iron grate
2. Based on Drawing Number D-13 & D-15 in the City of San Diego Regional Standard Drawings, dated April 2003
3. A reduction factor of 50% assumed for clogging.
4. Weir equation, $Q = C_w L_e (h)^{3/2}$; Orifice equation, $Q = C_o A_e (2gh)^{1/2}$
5. "cfs" = cubic feet per second

Santee Schoolyard
19644
12/16/2022

Grate Inlet Sizing (Weir vs. Orifice) - BMP B2

Weir coefficient, C_w	3.0
Orifice coefficient, C_o	0.60
Available head, h (feet)	0.33

Inlet Type	Capacity based on Weir Equation[3, 4], Q_{cap} (cfs[5])	Capacity based on Orifice Equation[3, 4], Q_{cap} (cfs[5])	Governing Equation
1212 Series - 12"x12" Catch Basin[1]	1.21	1.54	Weir
1218 Series - 12"x18" Catch Basin[1]	1.40	2.06	Weir
1818 Series - 18"x18" Catch Basin[1]	1.59	2.62	Weir
2424 Series - 24"x24" Catch Basin[1]	2.05	4.38	Weir
3636 Series - 36"x36" Catch Basin[1]	2.99	9.15	Weir
Type 'I' Catch Basin[2]	2.62	6.72	Weir

Note:

1. Based on Brooks Products, Inc. - H 20-44 Traffic, Steel Grate, not Parkway, Cast-iron grate
2. Based on Drawing Number D-13 & D-15 in the City of San Diego Regional Standard Drawings, dated April 2003
3. A reduction factor of 50% assumed for clogging.
4. Weir equation, $Q = C_w L_e (h)^{3/2}$; Orifice equation, $Q = C_o A_e (2gh)^{1/2}$

Santee Schoolyard
19644
12/16/2022

Grate Inlet Sizing (Weir vs. Orifice) - BMP C1

Weir coefficient, C_w	3.0
Orifice coefficient, C_o	0.60
Available head, h (feet)	0.35

Inlet Type	Capacity based on Weir Equation[3, 4], Q_{cap} (cfs[5])	Capacity based on Orifice Equation[3, 4], Q_{cap} (cfs[5])	Governing Equation
1212 Series - 12"x12" Catch Basin[1]	1.32	1.59	Weir
1218 Series - 12"x18" Catch Basin[1]	1.53	2.12	Weir
1818 Series - 18"x18" Catch Basin[1]	1.74	2.70	Weir
2424 Series - 24"x24" Catch Basin[1]	2.24	4.51	Weir
3636 Series - 36"x36" Catch Basin[1]	3.27	9.42	Weir

Type 'I' Catch Basin[2]	2.87	6.92	Weir

Note:

1. Based on Brooks Products, Inc. - H 20-44 Traffic, Steel Grate, not Parkway, Cast-iron grate
2. Based on Drawing Number D-13 & D-15 in the City of San Diego Regional Standard Drawings, dated April 2003
3. A reduction factor of 50% assumed for clogging.
4. Weir equation, $Q = C_w L_e (h)^{3/2}$; Orifice equation, $Q = C_o A_e (2gh)^{1/2}$
5. "cfs" = cubic feet per second

Santee Schoolyard
19644
12/16/2022

Grate Inlet Sizing (Weir vs. Orifice) - BMP C2

Weir coefficient, C_w	3.0
Orifice coefficient, C_o	0.60
Available head, h (feet)	0.70

Inlet Type	Capacity based on Weir Equation[3, 4], Q_{cap} (cfs[5])	Capacity based on Orifice Equation[3, 4], Q_{cap} (cfs[5])	Governing Equation
1212 Series - 12"x12" Catch Basin[1]	3.75	2.25	Orifice
1218 Series - 12"x18" Catch Basin[1]	4.33	3.00	Orifice
1818 Series - 18"x18" Catch Basin[1]	4.91	3.82	Orifice
2424 Series - 24"x24" Catch Basin[1]	6.35	6.38	Weir
3636 Series - 36"x36" Catch Basin[1]	9.25	13.32	Weir

Type 'I' Catch Basin[2]	8.11	9.79	Weir

Note:

1. Based on Brooks Products, Inc. - H 20-44 Traffic, Steel Grate, not Parkway, Cast-iron grate
2. Based on Drawing Number D-13 & D-15 in the City of San Diego Regional Standard Drawings, dated April 2003
3. A reduction factor of 50% assumed for clogging.
4. Weir equation, $Q = C_w L_e (h)^{3/2}$; Orifice equation, $Q = C_o A_e (2gh)^{1/2}$
5. "cfs" = cubic feet per second

COTTONWOOD AVE. INLET SIZING

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Wednesday, April 19, 2023

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: Curb and Gutter Analysis

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0020 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0130

Gutter Width: 2.0000 ft

Design Flow: 5.7000 cfs

Gutter Result Parameters

Width of Spread: 17.3191 ft

Gutter Depression: 0.0000 in

Area of Flow: 2.9995 ft^2

Eo (Gutter Flow to Total Flow): 0.2794

Gutter Depth at Curb: 4.1566 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Curb Opening

Length of Inlet: 5.0000 ft

Curb opening height: 6.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 8.6000 ft

Effective Perimeter: 8.6000 ft

Area: 4.1667 ft^2

Effective Area: 4.1667 ft^2

Depth at curb face (upstream of local depression): 0.4363 ft

Computed Width of Spread at Sag: 21.8140 ft

Flow type: Weir Flow

Efficiency: 1.0000

APPENDIX E

Storm Drain Sizing Calculations

Santee Schoolyard
J-19644
7/27/2022

Preliminary Storm Drain Size

The purpose of this table is to provide an estimated pipe size to convey the 100-year flow rates with a sizing factor.

Manning's n: 0.013

Sizing Factor (%): 30

	Slope at:	0.5%		1.0%	
Q_{100} (cfs[1])	Q_{100} with Sizing Factor (cfs[1])	Minimum Pipe Size[2] (feet)	Recommended Pipe Size (inches)	Minimum Pipe Size[2] (feet)	Recommended Pipe Size (inches)
1.0	1.3	0.78	10"	0.68	10"
2.0	2.6	1.01	12"	0.89	12"
5.0	6.5	1.43	18"	1.25	18"
10.0	13.0	1.85	24"	1.62	24"
15.0	19.5	2.15	30"	1.89	24"
20.0	26.0	2.40	30"	2.11	30"
25.0	32.5	2.61	36"	2.29	30"
30.0	39.0	2.79	36"	2.45	30"
35.0	45.5	2.96	36"	2.60	36"
40.0	52.0	3.11	42"	2.73	36"

Note:

1. "cfs" = cubic feet per second.

2. Minimum pipe sizes are calculated using the Manning's equation and are based on the flow rates with 30% factor.

APPENDIX F

Detention Analysis

```
1****************************************                                                   ****************************************
 *                                      *                                                   *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                  *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998               *                                                  *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                 *                                                  *          609 SECOND STREET           *
 *                                      *                                                   *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   20JUL22  TIME  08:23:29   *                                                  *           (916) 756-1104             *
 *                                      *                                                   *                                      *
 ****************************************                                                   ****************************************


                              X     X  XXXXXXX   XXXXX          X
                              X     X  X        X     X        XX
                              X     X  X        X               X
                              XXXXXXX  XXXX     X       XXXXX   X
                              X     X  X        X               X
                              X     X  X        X     X         X
                              X     X  XXXXXXX   XXXXX         XXX


           THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

           THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
           THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
           NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
           DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
           KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                                   HEC-1 INPUT                                          PAGE  1

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 *** FREE ***
                        *DIAGRAM
            1           ID   SANTEE SCHOOLYARD - POC 1
            2           ID   100-YEAR DETENTION ANALYSIS
            3           ID   JULY, 2022 - FILE NAME: SSDETPR1.HC1
            4           IT       1 01JAN90    1200     500
            5           IO       5       0
                        *

            6           KKPOC1.hc1
            7           KM   RUN DATE   7/19/2022
            8           KM   RATIONAL METHOD HYDROGRAPH PROGRAM
            9           KM   COPYRIGHT 1992, 2014, RICK ENGINEERING COMPANY
           10           KM   6HR RAINFALL IS 2.5 INCHES
           11           KM   RATIONAL METHOD RUNOFF COEFFICIENT IS 0.85
           12           KM   RATIONAL METHOD TIME OF CONCENTRATION IS 9 MIN.
           13           KM   FOR THIS DATA TO RUN PROPERLY THIS IT CARD MUST BE ADDED TO YOUR HEC-1
           14           KM   IT 2 01JAN90 1200 200
           15           BA  0.0202
           16           IN       9 01JAN90    1153
           17           QI       0       0     1.7     1.7     1.8     1.8     1.9     1.9       2       2
           18           QI     2.1     2.2     2.3     2.4     2.5     2.6     2.8     2.9     3.1     3.3
           19           QI     3.6     3.9     4.4     4.8     5.9     6.7     9.8    26.1    37.1     7.9
           20           QI     5.3     4.1     3.4       3     2.7     2.4     2.2     2.1     1.9     1.8
           21           QI     1.7       0       0       0       0       0       0       0       0       0
           22           QI       0       0
                        *

           23           KK    DET2
           24           KO       2       2       0       0      21
           25           KM   DETENTION FOR POC-1
           26           RS       1    ELEV     101
           27           SV       0   0.617    1.13    1.37
           28           SQ       0    2.24    10.3    17.1
           29           SE     100     101     102     103
                        *
           30           ZZ
1
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

     6    POC1.hc1
                V
```

```
              V
   23        DET2

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998               *
 *           VERSION 4.1                 *
 *                                       *
 *  RUN DATE   20JUL22  TIME  08:23:29   *
 *                                       *
 *****************************************
```

```
 ****************************************
 *                                      *
 *    U.S. ARMY CORPS OF ENGINEERS      *
 *    HYDROLOGIC ENGINEERING CENTER     *
 *          609 SECOND STREET           *
 *       DAVIS, CALIFORNIA 95616        *
 *           (916) 756-1104             *
 *                                      *
 ****************************************
```

```
                          SANTEE SCHOOLYARD - POC 1
                          100-YEAR DETENTION ANALYSIS
                          JULY, 2022 - FILE NAME: SSDETPR1.HC1

    5 IO          OUTPUT CONTROL VARIABLES
                        IPRNT          5  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN          1  MINUTES IN COMPUTATION INTERVAL
                        IDATE     1JAN90  STARTING DATE
                        ITIME       1200  STARTING TIME
                           NQ        500  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE     1JAN90  ENDING DATE
                       NDTIME       2019  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .02 HOURS
                       TOTAL TIME BASE    8.32 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
   23 KK    *      DET2  *
            *            *
            **************

   24 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          2  PRINT CONTROL
                        IPLOT          2  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE
                        IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                         IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2        500  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       .017  TIME INTERVAL IN HOURS

                          DETENTION FOR POC-1

               HYDROGRAPH ROUTING DATA

   26 RS          STORAGE ROUTING
                        NSTPS          1  NUMBER OF SUBREACHES
                         ITYP       ELEV  TYPE OF INITIAL CONDITION
                       RSVRIC     101.00  INITIAL CONDITION
                            X        .00 WORKING R AND D COEFFICIENT

   27 SV            STORAGE          .0        .6       1.1       1.4

   28 SQ          DISCHARGE          0.        2.       10.       17.

   29 SE          ELEVATION      100.00    101.00    102.00    103.00
```

***

****

HYDROGRAPH AT STATION DET2

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	JAN	1200	1	2.	.6	101.0	*	1	JAN	1447	168	2.	.6	101.0	*	1	JAN	1734	335	5.	.8	101.3
1	JAN	1201	2	2.	.6	101.0	*	1	JAN	1448	169	2.	.6	101.0	*	1	JAN	1735	336	4.	.8	101.3
1	JAN	1202	3	2.	.6	101.0	*	1	JAN	1449	170	2.	.6	101.0	*	1	JAN	1736	337	4.	.8	101.3
1	JAN	1203	4	2.	.6	101.0	*	1	JAN	1450	171	2.	.6	101.0	*	1	JAN	1737	338	4.	.8	101.3
1	JAN	1204	5	2.	.6	101.0	*	1	JAN	1451	172	3.	.6	101.0	*	1	JAN	1738	339	4.	.7	101.3
1	JAN	1205	6	2.	.6	101.0	*	1	JAN	1452	173	3.	.6	101.0	*	1	JAN	1739	340	4.	.7	101.3
1	JAN	1206	7	2.	.6	101.0	*	1	JAN	1453	174	3.	.6	101.0	*	1	JAN	1740	341	4.	.7	101.2
1	JAN	1207	8	2.	.6	101.0	*	1	JAN	1454	175	3.	.6	101.0	*	1	JAN	1741	342	4.	.7	101.2
1	JAN	1208	9	2.	.6	101.0	*	1	JAN	1455	176	3.	.6	101.0	*	1	JAN	1742	343	4.	.7	101.2
1	JAN	1209	10	2.	.6	101.0	*	1	JAN	1456	177	3.	.6	101.0	*	1	JAN	1743	344	4.	.7	101.2
1	JAN	1210	11	2.	.6	101.0	*	1	JAN	1457	178	3.	.6	101.0	*	1	JAN	1744	345	4.	.7	101.2
1	JAN	1211	12	2.	.6	101.0	*	1	JAN	1458	179	3.	.6	101.1	*	1	JAN	1745	346	4.	.7	101.2
1	JAN	1212	13	2.	.6	101.0	*	1	JAN	1459	180	3.	.6	101.1	*	1	JAN	1746	347	4.	.7	101.2
1	JAN	1213	14	2.	.6	101.0	*	1	JAN	1500	181	3.	.6	101.1	*	1	JAN	1747	348	4.	.7	101.2
1	JAN	1214	15	2.	.6	101.0	*	1	JAN	1501	182	3.	.6	101.1	*	1	JAN	1748	349	4.	.7	101.2
1	JAN	1215	16	2.	.6	101.0	*	1	JAN	1502	183	3.	.7	101.1	*	1	JAN	1749	350	4.	.7	101.2
1	JAN	1216	17	2.	.6	101.0	*	1	JAN	1503	184	3.	.7	101.1	*	1	JAN	1750	351	4.	.7	101.2
1	JAN	1217	18	2.	.6	101.0	*	1	JAN	1504	185	3.	.7	101.1	*	1	JAN	1751	352	4.	.7	101.2
1	JAN	1218	19	2.	.6	101.0	*	1	JAN	1505	186	3.	.7	101.1	*	1	JAN	1752	353	4.	.7	101.2
1	JAN	1219	20	2.	.6	101.0	*	1	JAN	1506	187	3.	.7	101.1	*	1	JAN	1753	354	4.	.7	101.2
1	JAN	1220	21	2.	.6	101.0	*	1	JAN	1507	188	3.	.7	101.1	*	1	JAN	1754	355	4.	.7	101.2
1	JAN	1221	22	2.	.6	101.0	*	1	JAN	1508	189	3.	.7	101.1	*	1	JAN	1755	356	4.	.7	101.2
1	JAN	1222	23	2.	.6	101.0	*	1	JAN	1509	190	3.	.7	101.1	*	1	JAN	1756	357	3.	.7	101.2
1	JAN	1223	24	2.	.6	101.0	*	1	JAN	1510	191	3.	.7	101.1	*	1	JAN	1757	358	3.	.7	101.1
1	JAN	1224	25	2.	.6	101.0	*	1	JAN	1511	192	3.	.7	101.1	*	1	JAN	1758	359	3.	.7	101.1
1	JAN	1225	26	2.	.6	100.9	*	1	JAN	1512	193	3.	.7	101.1	*	1	JAN	1759	360	3.	.7	101.1
1	JAN	1226	27	2.	.6	100.9	*	1	JAN	1513	194	3.	.7	101.1	*	1	JAN	1800	361	3.	.7	101.1
1	JAN	1227	28	2.	.6	100.9	*	1	JAN	1514	195	3.	.7	101.1	*	1	JAN	1801	362	3.	.7	101.1
1	JAN	1228	29	2.	.6	100.9	*	1	JAN	1515	196	3.	.7	101.1	*	1	JAN	1802	363	3.	.7	101.1
1	JAN	1229	30	2.	.6	100.9	*	1	JAN	1516	197	3.	.7	101.1	*	1	JAN	1803	364	3.	.7	101.1
1	JAN	1230	31	2.	.6	100.9	*	1	JAN	1517	198	3.	.7	101.1	*	1	JAN	1804	365	3.	.7	101.1
1	JAN	1231	32	2.	.6	100.9	*	1	JAN	1518	199	3.	.7	101.1	*	1	JAN	1805	366	3.	.7	101.1
1	JAN	1232	33	2.	.6	100.9	*	1	JAN	1519	200	3.	.7	101.1	*	1	JAN	1806	367	3.	.7	101.1
1	JAN	1233	34	2.	.6	100.9	*	1	JAN	1520	201	3.	.7	101.1	*	1	JAN	1807	368	3.	.7	101.1
1	JAN	1234	35	2.	.6	100.9	*	1	JAN	1521	202	3.	.7	101.1	*	1	JAN	1808	369	3.	.6	101.1
1	JAN	1235	36	2.	.6	100.9	*	1	JAN	1522	203	3.	.7	101.1	*	1	JAN	1809	370	3.	.6	101.1
1	JAN	1236	37	2.	.6	100.9	*	1	JAN	1523	204	3.	.7	101.1	*	1	JAN	1810	371	3.	.6	101.0
1	JAN	1237	38	2.	.6	100.9	*	1	JAN	1524	205	3.	.7	101.1	*	1	JAN	1811	372	3.	.6	101.0
1	JAN	1238	39	2.	.6	100.9	*	1	JAN	1525	206	3.	.7	101.2	*	1	JAN	1812	373	3.	.6	101.0
1	JAN	1239	40	2.	.6	100.9	*	1	JAN	1526	207	4.	.7	101.2	*	1	JAN	1813	374	2.	.6	101.0
1	JAN	1240	41	2.	.6	100.9	*	1	JAN	1527	208	4.	.7	101.2	*	1	JAN	1814	375	2.	.6	101.0
1	JAN	1241	42	2.	.6	100.9	*	1	JAN	1528	209	4.	.7	101.2	*	1	JAN	1815	376	2.	.6	101.0
1	JAN	1242	43	2.	.6	100.9	*	1	JAN	1529	210	4.	.7	101.2	*	1	JAN	1816	377	2.	.6	101.0
1	JAN	1243	44	2.	.6	100.9	*	1	JAN	1530	211	4.	.7	101.2	*	1	JAN	1817	378	2.	.6	101.0
1	JAN	1244	45	2.	.6	100.9	*	1	JAN	1531	212	4.	.7	101.2	*	1	JAN	1818	379	2.	.6	101.0
1	JAN	1245	46	2.	.6	100.9	*	1	JAN	1532	213	4.	.7	101.2	*	1	JAN	1819	380	2.	.6	101.0
1	JAN	1246	47	2.	.6	100.9	*	1	JAN	1533	214	4.	.7	101.2	*	1	JAN	1820	381	2.	.6	101.0
1	JAN	1247	48	2.	.6	100.9	*	1	JAN	1534	215	4.	.7	101.2	*	1	JAN	1821	382	2.	.6	101.0
1	JAN	1248	49	2.	.6	100.9	*	1	JAN	1535	216	4.	.7	101.2	*	1	JAN	1822	383	2.	.6	101.0
1	JAN	1249	50	2.	.6	100.9	*	1	JAN	1536	217	4.	.7	101.2	*	1	JAN	1823	384	2.	.6	101.0
1	JAN	1250	51	2.	.6	100.9	*	1	JAN	1537	218	4.	.7	101.2	*	1	JAN	1824	385	2.	.6	101.0
1	JAN	1251	52	2.	.6	100.9	*	1	JAN	1538	219	4.	.7	101.2	*	1	JAN	1825	386	2.	.6	101.0
1	JAN	1252	53	2.	.6	100.9	*	1	JAN	1539	220	4.	.7	101.2	*	1	JAN	1826	387	2.	.6	101.0
1	JAN	1253	54	2.	.6	100.9	*	1	JAN	1540	221	4.	.7	101.2	*	1	JAN	1827	388	2.	.6	101.0
1	JAN	1254	55	2.	.6	100.9	*	1	JAN	1541	222	4.	.7	101.3	*	1	JAN	1828	389	2.	.6	100.9
1	JAN	1255	56	2.	.6	100.9	*	1	JAN	1542	223	4.	.8	101.3	*	1	JAN	1829	390	2.	.6	100.9
1	JAN	1256	57	2.	.6	100.9	*	1	JAN	1543	224	4.	.8	101.3	*	1	JAN	1830	391	2.	.6	100.9
1	JAN	1257	58	2.	.6	100.9	*	1	JAN	1544	225	5.	.8	101.3	*	1	JAN	1831	392	2.	.6	100.9
1	JAN	1258	59	2.	.6	100.9	*	1	JAN	1545	226	5.	.8	101.3	*	1	JAN	1832	393	2.	.6	100.9
1	JAN	1259	60	2.	.6	100.9	*	1	JAN	1546	227	5.	.8	101.3	*	1	JAN	1833	394	2.	.6	100.9
1	JAN	1300	61	2.	.6	100.9	*	1	JAN	1547	228	5.	.8	101.3	*	1	JAN	1834	395	2.	.6	100.9
1	JAN	1301	62	2.	.6	100.9	*	1	JAN	1548	229	5.	.8	101.3	*	1	JAN	1835	396	2.	.6	100.9
1	JAN	1302	63	2.	.6	100.9	*	1	JAN	1549	230	5.	.8	101.4	*	1	JAN	1836	397	2.	.6	100.9
1	JAN	1303	64	2.	.6	100.9	*	1	JAN	1550	231	5.	.8	101.4	*	1	JAN	1837	398	2.	.6	100.9
1	JAN	1304	65	2.	.6	100.9	*	1	JAN	1551	232	6.	.8	101.4	*	1	JAN	1838	399	2.	.6	100.9
1	JAN	1305	66	2.	.6	100.9	*	1	JAN	1552	233	6.	.8	101.4	*	1	JAN	1839	400	2.	.6	100.9
1	JAN	1306	67	2.	.6	100.9	*	1	JAN	1553	234	6.	.9	101.5	*	1	JAN	1840	401	2.	.6	100.9
1	JAN	1307	68	2.	.6	100.9	*	1	JAN	1554	235	6.	.9	101.5	*	1	JAN	1841	402	2.	.5	100.9
1	JAN	1308	69	2.	.6	100.9	*	1	JAN	1555	236	7.	.9	101.6	*	1	JAN	1842	403	2.	.5	100.9
1	JAN	1309	70	2.	.6	100.9	*	1	JAN	1556	237	7.	.9	101.6	*	1	JAN	1843	404	2.	.5	100.9
1	JAN	1310	71	2.	.6	100.9	*	1	JAN	1557	238	8.	1.0	101.7	*	1	JAN	1844	405	2.	.5	100.9
1	JAN	1311	72	2.	.6	100.9	*	1	JAN	1558	239	8.	1.0	101.7	*	1	JAN	1845	406	2.	.5	100.9
1	JAN	1312	73	2.	.6	100.9	*	1	JAN	1559	240	9.	1.0	101.8	*	1	JAN	1846	407	2.	.5	100.9

1 JAN 1313	74	2.	.6	100.9 *	1 JAN 1600	241	9.	1.0	101.8 *	1 JAN 1847	408	2.	.5	100.9
1 JAN 1314	75	2.	.6	100.9 *	1 JAN 1601	242	9.	1.1	101.9 *	1 JAN 1848	409	2.	.5	100.9
1 JAN 1315	76	2.	.6	100.9 *	1 JAN 1602	243	10.	1.1	102.0 *	1 JAN 1849	410	2.	.5	100.9
1 JAN 1316	77	2.	.6	100.9 *	1 JAN 1603	244	11.	1.1	102.1 *	1 JAN 1850	411	2.	.5	100.8
1 JAN 1317	78	2.	.6	100.9 *	1 JAN 1604	245	12.	1.2	102.2 *	1 JAN 1851	412	2.	.5	100.8
1 JAN 1318	79	2.	.6	100.9 *	1 JAN 1605	246	13.	1.2	102.3 *	1 JAN 1852	413	2.	.5	100.8
1 JAN 1319	80	2.	.6	100.9 *	1 JAN 1606	247	13.	1.2	102.5 *	1 JAN 1853	414	2.	.5	100.8
1 JAN 1320	81	2.	.6	100.9 *	1 JAN 1607	248	14.	1.3	102.6 *	1 JAN 1854	415	2.	.5	100.8
1 JAN 1321	82	2.	.6	100.9 *	1 JAN 1608	249	15.	1.3	102.6 *	1 JAN 1855	416	2.	.5	100.8
1 JAN 1322	83	2.	.6	100.9 *	1 JAN 1609	250	15.	1.3	102.7 *	1 JAN 1856	417	2.	.5	100.8
1 JAN 1323	84	2.	.6	100.9 *	1 JAN 1610	251	15.	1.3	102.8 *	1 JAN 1857	418	2.	.5	100.8
1 JAN 1324	85	2.	.6	100.9 *	1 JAN 1611	252	16.	1.3	102.8 *	1 JAN 1858	419	2.	.5	100.8
1 JAN 1325	86	2.	.6	100.9 *	1 JAN 1612	253	16.	1.3	102.8 *	1 JAN 1859	420	2.	.5	100.8
1 JAN 1326	87	2.	.6	100.9 *	1 JAN 1613	254	15.	1.3	102.8 *	1 JAN 1900	421	2.	.5	100.8
1 JAN 1327	88	2.	.6	100.9 *	1 JAN 1614	255	15.	1.3	102.7 *	1 JAN 1901	422	2.	.5	100.8
1 JAN 1328	89	2.	.6	100.9 *	1 JAN 1615	256	15.	1.3	102.7 *	1 JAN 1902	423	2.	.5	100.8
1 JAN 1329	90	2.	.6	100.9 *	1 JAN 1616	257	15.	1.3	102.6 *	1 JAN 1903	424	2.	.5	100.8
1 JAN 1330	91	2.	.6	100.9 *	1 JAN 1617	258	14.	1.3	102.6 *	1 JAN 1904	425	2.	.5	100.8
1 JAN 1331	92	2.	.6	100.9 *	1 JAN 1618	259	14.	1.3	102.6 *	1 JAN 1905	426	2.	.5	100.8
1 JAN 1332	93	2.	.6	100.9 *	1 JAN 1619	260	14.	1.3	102.5 *	1 JAN 1906	427	2.	.5	100.8
1 JAN 1333	94	2.	.6	100.9 *	1 JAN 1620	261	14.	1.2	102.5 *	1 JAN 1907	428	2.	.5	100.8
1 JAN 1334	95	2.	.6	100.9 *	1 JAN 1621	262	13.	1.2	102.4 *	1 JAN 1908	429	2.	.5	100.8
1 JAN 1335	96	2.	.6	100.9 *	1 JAN 1622	263	13.	1.2	102.4 *	1 JAN 1909	430	2.	.5	100.8
1 JAN 1336	97	2.	.6	100.9 *	1 JAN 1623	264	13.	1.2	102.3 *	1 JAN 1910	431	2.	.5	100.8
1 JAN 1337	98	2.	.6	100.9 *	1 JAN 1624	265	12.	1.2	102.3 *	1 JAN 1911	432	2.	.5	100.8
1 JAN 1338	99	2.	.6	100.9 *	1 JAN 1625	266	12.	1.2	102.3 *	1 JAN 1912	433	2.	.5	100.8
1 JAN 1339	100	2.	.6	100.9 *	1 JAN 1626	267	12.	1.2	102.2 *	1 JAN 1913	434	2.	.5	100.8
1 JAN 1340	101	2.	.6	100.9 *	1 JAN 1627	268	12.	1.2	102.2 *	1 JAN 1914	435	2.	.5	100.8
1 JAN 1341	102	2.	.6	100.9 *	1 JAN 1628	269	11.	1.2	102.1 *	1 JAN 1915	436	2.	.5	100.7
1 JAN 1342	103	2.	.6	100.9 *	1 JAN 1629	270	11.	1.2	102.1 *	1 JAN 1916	437	2.	.5	100.7
1 JAN 1343	104	2.	.6	100.9 *	1 JAN 1630	271	11.	1.1	102.1 *	1 JAN 1917	438	2.	.5	100.7
1 JAN 1344	105	2.	.6	100.9 *	1 JAN 1631	272	11.	1.1	102.0 *	1 JAN 1918	439	2.	.5	100.7
1 JAN 1345	106	2.	.6	100.9 *	1 JAN 1632	273	10.	1.1	102.0 *	1 JAN 1919	440	2.	.5	100.7
1 JAN 1346	107	2.	.6	100.9 *	1 JAN 1633	274	10.	1.1	102.0 *	1 JAN 1920	441	2.	.5	100.7
1 JAN 1347	108	2.	.6	100.9 *	1 JAN 1634	275	10.	1.1	102.0 *	1 JAN 1921	442	2.	.4	100.7
1 JAN 1348	109	2.	.6	100.9 *	1 JAN 1635	276	10.	1.1	102.0 *	1 JAN 1922	443	2.	.4	100.7
1 JAN 1349	110	2.	.6	100.9 *	1 JAN 1636	277	10.	1.1	101.9 *	1 JAN 1923	444	2.	.4	100.7
1 JAN 1350	111	2.	.6	100.9 *	1 JAN 1637	278	10.	1.1	101.9 *	1 JAN 1924	445	2.	.4	100.7
1 JAN 1351	112	2.	.6	100.9 *	1 JAN 1638	279	10.	1.1	101.9 *	1 JAN 1925	446	2.	.4	100.7
1 JAN 1352	113	2.	.6	100.9 *	1 JAN 1639	280	9.	1.1	101.9 *	1 JAN 1926	447	2.	.4	100.7
1 JAN 1353	114	2.	.6	100.9 *	1 JAN 1640	281	9.	1.1	101.9 *	1 JAN 1927	448	2.	.4	100.7
1 JAN 1354	115	2.	.6	100.9 *	1 JAN 1641	282	9.	1.1	101.9 *	1 JAN 1928	449	2.	.4	100.7
1 JAN 1355	116	2.	.6	100.9 *	1 JAN 1642	283	9.	1.0	101.8 *	1 JAN 1929	450	2.	.4	100.7
1 JAN 1356	117	2.	.6	100.9 *	1 JAN 1643	284	9.	1.0	101.8 *	1 JAN 1930	451	2.	.4	100.7
1 JAN 1357	118	2.	.6	100.9 *	1 JAN 1644	285	9.	1.0	101.8 *	1 JAN 1931	452	2.	.4	100.7
1 JAN 1358	119	2.	.6	100.9 *	1 JAN 1645	286	9.	1.0	101.8 *	1 JAN 1932	453	2.	.4	100.7
1 JAN 1359	120	2.	.6	100.9 *	1 JAN 1646	287	9.	1.0	101.8 *	1 JAN 1933	454	2.	.4	100.7
1 JAN 1400	121	2.	.6	100.9 *	1 JAN 1647	288	8.	1.0	101.8 *	1 JAN 1934	455	2.	.4	100.7
1 JAN 1401	122	2.	.6	100.9 *	1 JAN 1648	289	8.	1.0	101.8 *	1 JAN 1935	456	2.	.4	100.7
1 JAN 1402	123	2.	.6	100.9 *	1 JAN 1649	290	8.	1.0	101.7 *	1 JAN 1936	457	2.	.4	100.7
1 JAN 1403	124	2.	.6	100.9 *	1 JAN 1650	291	8.	1.0	101.7 *	1 JAN 1937	458	2.	.4	100.7
1 JAN 1404	125	2.	.6	100.9 *	1 JAN 1651	292	8.	1.0	101.7 *	1 JAN 1938	459	1.	.4	100.7
1 JAN 1405	126	2.	.6	100.9 *	1 JAN 1652	293	8.	1.0	101.7 *	1 JAN 1939	460	1.	.4	100.7
1 JAN 1406	127	2.	.6	101.0 *	1 JAN 1653	294	8.	1.0	101.7 *	1 JAN 1940	461	1.	.4	100.7
1 JAN 1407	128	2.	.6	101.0 *	1 JAN 1654	295	8.	1.0	101.7 *	1 JAN 1941	462	1.	.4	100.7
1 JAN 1408	129	2.	.6	101.0 *	1 JAN 1655	296	8.	1.0	101.7 *	1 JAN 1942	463	1.	.4	100.7
1 JAN 1409	130	2.	.6	101.0 *	1 JAN 1656	297	7.	.9	101.6 *	1 JAN 1943	464	1.	.4	100.7
1 JAN 1410	131	2.	.6	101.0 *	1 JAN 1657	298	7.	.9	101.6 *	1 JAN 1944	465	1.	.4	100.6
1 JAN 1411	132	2.	.6	101.0 *	1 JAN 1658	299	7.	.9	101.6 *	1 JAN 1945	466	1.	.4	100.6
1 JAN 1412	133	2.	.6	101.0 *	1 JAN 1659	300	7.	.9	101.6 *	1 JAN 1946	467	1.	.4	100.6
1 JAN 1413	134	2.	.6	101.0 *	1 JAN 1700	301	7.	.9	101.6 *	1 JAN 1947	468	1.	.4	100.6
1 JAN 1414	135	2.	.6	101.0 *	1 JAN 1701	302	7.	.9	101.6 *	1 JAN 1948	469	1.	.4	100.6
1 JAN 1415	136	2.	.6	101.0 *	1 JAN 1702	303	7.	.9	101.6 *	1 JAN 1949	470	1.	.4	100.6
1 JAN 1416	137	2.	.6	101.0 *	1 JAN 1703	304	7.	.9	101.6 *	1 JAN 1950	471	1.	.4	100.6
1 JAN 1417	138	2.	.6	101.0 *	1 JAN 1704	305	7.	.9	101.6 *	1 JAN 1951	472	1.	.4	100.6
1 JAN 1418	139	2.	.6	101.0 *	1 JAN 1705	306	7.	.9	101.5 *	1 JAN 1952	473	1.	.4	100.6
1 JAN 1419	140	2.	.6	101.0 *	1 JAN 1706	307	7.	.9	101.5 *	1 JAN 1953	474	1.	.4	100.6
1 JAN 1420	141	2.	.6	101.0 *	1 JAN 1707	308	6.	.9	101.5 *	1 JAN 1954	475	1.	.4	100.6
1 JAN 1421	142	2.	.6	101.0 *	1 JAN 1708	309	6.	.9	101.5 *	1 JAN 1955	476	1.	.4	100.6
1 JAN 1422	143	2.	.6	101.0 *	1 JAN 1709	310	6.	.9	101.5 *	1 JAN 1956	477	1.	.4	100.6
1 JAN 1423	144	2.	.6	101.0 *	1 JAN 1710	311	6.	.9	101.5 *	1 JAN 1957	478	1.	.4	100.6
1 JAN 1424	145	2.	.6	101.0 *	1 JAN 1711	312	6.	.9	101.5 *	1 JAN 1958	479	1.	.4	100.6
1 JAN 1425	146	2.	.6	101.0 *	1 JAN 1712	313	6.	.9	101.5 *	1 JAN 1959	480	1.	.4	100.6
1 JAN 1426	147	2.	.6	101.0 *	1 JAN 1713	314	6.	.9	101.5 *	1 JAN 2000	481	1.	.4	100.6
1 JAN 1427	148	2.	.6	101.0 *	1 JAN 1714	315	6.	.8	101.4 *	1 JAN 2001	482	1.	.4	100.6
1 JAN 1428	149	2.	.6	101.0 *	1 JAN 1715	316	6.	.8	101.4 *	1 JAN 2002	483	1.	.4	100.6
1 JAN 1429	150	2.	.6	101.0 *	1 JAN 1716	317	6.	.8	101.4 *	1 JAN 2003	484	1.	.4	100.6
1 JAN 1430	151	2.	.6	101.0 *	1 JAN 1717	318	6.	.8	101.4 *	1 JAN 2004	485	1.	.4	100.6
1 JAN 1431	152	2.	.6	101.0 *	1 JAN 1718	319	6.	.8	101.4 *	1 JAN 2005	486	1.	.4	100.6
1 JAN 1432	153	2.	.6	101.0 *	1 JAN 1719	320	5.	.8	101.4 *	1 JAN 2006	487	1.	.4	100.6
1 JAN 1433	154	2.	.6	101.0 *	1 JAN 1720	321	5.	.8	101.4 *	1 JAN 2007	488	1.	.4	100.6
1 JAN 1434	155	2.	.6	101.0 *	1 JAN 1721	322	5.	.8	101.4 *	1 JAN 2008	489	1.	.4	100.6
1 JAN 1435	156	2.	.6	101.0 *	1 JAN 1722	323	5.	.8	101.4 *	1 JAN 2009	490	1.	.4	100.6
1 JAN 1436	157	2.	.6	101.0 *	1 JAN 1723	324	5.	.8	101.4 *	1 JAN 2010	491	1.	.4	100.6

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  1 JAN 1437 158       2.       .6   101.0 *  1 JAN 1724 325       5.       .8   101.4 *  1 JAN 2011 492       1.       .3   100.6
  1 JAN 1438 159       2.       .6   101.0 *  1 JAN 1725 326       5.       .8   101.4 *  1 JAN 2012 493       1.       .3   100.6
  1 JAN 1439 160       2.       .6   101.0 *  1 JAN 1726 327       5.       .8   101.3 *  1 JAN 2013 494       1.       .3   100.6
  1 JAN 1440 161       2.       .6   101.0 *  1 JAN 1727 328       5.       .8   101.3 *  1 JAN 2014 495       1.       .3   100.6
  1 JAN 1441 162       2.       .6   101.0 *  1 JAN 1728 329       5.       .8   101.3 *  1 JAN 2015 496       1.       .3   100.6
  1 JAN 1442 163       2.       .6   101.0 *  1 JAN 1729 330       5.       .8   101.3 *  1 JAN 2016 497       1.       .3   100.6
  1 JAN 1443 164       2.       .6   101.0 *  1 JAN 1730 331       5.       .8   101.3 *  1 JAN 2017 498       1.       .3   100.5
  1 JAN 1444 165       2.       .6   101.0 *  1 JAN 1731 332       5.       .8   101.3 *  1 JAN 2018 499       1.       .3   100.5
  1 JAN 1445 166       2.       .6   101.0 *  1 JAN 1732 333       5.       .8   101.3 *  1 JAN 2019 500       1.       .3   100.5
  1 JAN 1446 167       2.       .6   101.0 *  1 JAN 1733 334       5.       .8   101.3 *
                                          *                                          *
*******************************************************************************************************************************

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR      8.32-HR
+   (CFS)       (HR)
                           (CFS)
+      16.      4.20                    4.          4.          4.           4.
                         (INCHES)    2.045       2.353       2.353        2.353
                          (AC-FT)       2.          3.          3.           3.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR      8.32-HR
+  (AC-FT)      (HR)
        1.      4.18                    1.          1.          1.           1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR      8.32-HR
+   (FEET)      (HR)
    102.78      4.20                101.26      101.13      101.13       101.13

                         CUMULATIVE AREA =     .02 SQ MI

1                                                        STATION     DET2

                          (I) INFLOW,   (O) OUTFLOW
         0.        5.       10.       15.       20.       25.       30.       35.       40.        0.        0.        0.        0.
                                                                                  (S) STORAGE
        .0        .0        .0        .0        .0        .0        .0        .4        .8       1.2       1.6        .0        .0
 DAHRMN PER
  11200   1I---O-----.---------.---------.---------.---------.---------.---------.----S----.---------.---------.---------.---------.
  11201   2I   O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11202   3I   O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11203   4I   O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11204   5.I  O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11205   6.I  O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11206   7. I O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11207   8. I O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11208   9. I O     .         .         .         .         .         .         .    S    .         .         .         .         .
  11209  10.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11210  11. .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
  11211  12.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11212  13.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11213  14.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11214  15.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11215  16.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11216  17.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11217  18.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11218  19.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11219  20.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11220  21. .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
  11221  22.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11222  23.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11223  24.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11224  25.  IO     .         .         .         .         .         .         .    S    .         .         .         .         .
  11225  26.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11226  27.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11227  28.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11228  29.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11229  30.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11230  31. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
  11231  32.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11232  33.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11233  34.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11234  35.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11235  36.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11236  37.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11237  38.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11238  39.   I     .         .         .         .         .         .         .    S    .         .         .         .         .
  11239  40.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
  11240  41. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
  11241  42.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
  11242  43.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
  11243  44.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
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11244  45.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11245  46.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11246  47.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11247  48.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11248  49.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11249  50.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11250  51. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11251  52.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11252  53.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11253  54.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11254  55.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11255  56.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11256  57.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11257  58.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11258  59.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11259  60.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11300  61. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11301  62.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11302  63.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11303  64.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11304  65.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11305  66.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11306  67.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11307  68.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11308  69.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11309  70.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11310  71. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11311  72.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11312  73.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11313  74.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11314  75.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11315  76.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11316  77.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11317  78.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11318  79.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11319  80.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11320  81. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11321  82.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11322  83.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11323  84.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11324  85.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11325  86.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11326  87.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11327  88.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11328  89.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11329  90.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11330  91. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11331  92.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11332  93.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11333  94.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11334  95.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11335  96.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11336  97.   I     .         .         .         .         .         .         .   S     .         .         .         .         .
11337  98.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11338  99.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11339 100.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11340 101. . OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11341 102.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11342 103.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11343 104.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11344 105.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11345 106.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11346 107.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11347 108.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11348 109.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11349 110.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11350 111. . OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11351 112.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11352 113.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11353 114.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11354 115.   OI    .         .         .         .         .         .         .   S     .         .         .         .         .
11355 116.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11356 117.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11357 118.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11358 119.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11359 120.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11400 121. . OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11401 122.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11402 123.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11403 124.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11404 125.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11405 126.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11406 127.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11407 128.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
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11408 129.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11409 130.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11410 131. . OI. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11411 132.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11412 133.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11413 134.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11414 135.   OI    .         .         .         .         .         .         .    S    .         .         .         .         .
11415 136.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11416 137.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11417 138.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11418 139.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11419 140.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11420 141. . O I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11421 142.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11422 143.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11423 144.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11424 145.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11425 146.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11426 147.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11427 148.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11428 149.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11429 150.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11430 151. . O I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11431 152.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11432 153.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11433 154.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11434 155.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11435 156.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11436 157.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11437 158.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11438 159.   O I   .         .         .         .         .         .         .    S    .         .         .         .         .
11439 160.    OI   .         .         .         .         .         .         .    S    .         .         .         .         .
11440 161. . .OI . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11441 162.    OI   .         .         .         .         .         .         .     S   .         .         .         .         .
11442 163.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11443 164.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11444 165.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11445 166.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11446 167.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11447 168.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11448 169.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11449 170.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11450 171. . .O.I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . .
11451 172.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11452 173.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11453 174.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11454 175.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11455 176.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11456 177.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11457 178.    O I  .         .         .         .         .         .         .     S   .         .         .         .         .
11458 179.    O  I .         .         .         .         .         .         .     S   .         .         .         .         .
11459 180.    O  I .         .         .         .         .         .         .     S   .         .         .         .         .
11500 181. . .O. I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . .
11501 182.    O  I .         .         .         .         .         .         .     S   .         .         .         .         .
11502 183.     O I .         .         .         .         .         .         .     S   .         .         .         .         .
11503 184.     O I .         .         .         .         .         .         .     S   .         .         .         .         .
11504 185.     O I .         .         .         .         .         .         .     S   .         .         .         .         .
11505 186.     O I .         .         .         .         .         .         .     S   .         .         .         .         .
11506 187.     O I .         .         .         .         .         .         .     S   .         .         .         .         .
11507 188.     O I .         .         .         .         .         .         .     S   .         .         .         .         .
11508 189.     O I .         .         .         .         .         .         .      S  .         .         .         .         .
11509 190.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11510 191. . . O .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
11511 192.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11512 193.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11513 194.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11514 195.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11515 196.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11516 197.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11517 198.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11518 199.     O  I.         .         .         .         .         .         .      S  .         .         .         .         .
11519 200.      O  I         .         .         .         .         .         .      S  .         .         .         .         .
11520 201. . . .O. I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
11521 202.      O  I         .         .         .         .         .         .      S  .         .         .         .         .
11522 203.      O  I         .         .         .         .         .         .      S  .         .         .         .         .
11523 204.      O  I         .         .         .         .         .         .      S  .         .         .         .         .
11524 205.      O  .I        .         .         .         .         .         .      S  .         .         .         .         .
11525 206.      O  .I        .         .         .         .         .         .      S  .         .         .         .         .
11526 207.      O  .I        .         .         .         .         .         .      S  .         .         .         .         .
11527 208.      O  .I        .         .         .         .         .         .       S .         .         .         .         .
11528 209.      O  . I       .         .         .         .         .         .       S .         .         .         .         .
11529 210.      O  . I       .         .         .         .         .         .       S .         .         .         .         .
11530 211. . . .O. . I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
11531 212.       O . I       .         .         .         .         .         .       S .         .         .         .         .
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11532 213.       O . I       .         .         .         .         .         .       S .         .         .         .         .
11533 214.       O .  I      .         .         .         .         .         .       S .         .         .         .         .
11534 215.       O .  I      .         .         .         .         .         .       S .         .         .         .         .
11535 216.       O .  I      .         .         .         .         .         .       S .         .         .         .         .
11536 217.       O .  I      .         .         .         .         .         .       S .         .         .         .         .
11537 218.       O .  I      .         .         .         .         .         .       S .         .         .         .         .
11538 219.       O .  I      .         .         .         .         .         .       S .         .         .         .         .
11539 220.       O .   I     .         .         .         .         .         .        S.         .         .         .         .
11540 221. . . . .O. . .I. . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
11541 222.        O.    I    .         .         .         .         .         .        S.         .         .         .         .
11542 223.        O.     I   .         .         .         .         .         .        S.         .         .         .         .
11543 224.        O.      I  .         .         .         .         .         .        S.         .         .         .         .
11544 225.        O.       I .         .         .         .         .         .        S.         .         .         .         .
11545 226.        O.       I .         .         .         .         .         .        S.         .         .         .         .
11546 227.         O        I.         .         .         .         .         .        S.         .         .         .         .
11547 228.         O         I         .         .         .         .         .         S         .         .         .         .
11548 229.         O         .  I      .         .         .         .         .         S         .         .         .         .
11549 230.         O         .      I  .         .         .         .         .         S         .         .         .         .
11550 231. . . . . .O. . . . . . . . . I . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . .
11551 232.         .O        .         .   I     .         .         .         .         .S        .         .         .         .
11552 233.         . O       .         .       I .         .         .         .         .S        .         .         .         .
11553 234.         . O       .         .         .I        .         .         .         . S       .         .         .         .
11554 235.         .  O      .         .         .    I    .         .         .         . S       .         .         .         .
11555 236.         .   O     .         .         .        I.         .         .         .  S      .         .         .         .
11556 237.         .   O     .         .         .         . I       .         .         .  S      .         .         .         .
11557 238.         .    O    .         .         .         .    I    .         .         .   S     .         .         .         .
11558 239.         .     O   .         .         .         .      I  .         .         .    S    .         .         .         .
11559 240.         .      O  .         .         .         .         I         .         .    S    .         .         .         .
11600 241. . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . S . . . . . . . . . . . . . . . .
11601 242.         .        O.         .         .         .         .   I     .         .      S  .         .         .         .
11602 243.         .         O         .         .         .         .      I  .         .       S .         .         .         .
11603 244.         .         .O        .         .         .         .        I.         .        S.         .         .         .
11604 245.         .         .  O      .         .         .         .         . I       .        S.         .         .         .
11605 246.         .         .    O    .         .         .         .         .   I     .         S         .         .         .
11606 247.         .         .      O  .         .         .         .       I .         .         .S        .         .         .
11607 248.         .         .       O .         .         .         .I        .         .         . S       .         .         .
11608 249.         .         .        O.         .         .    I    .         .         .         . S       .         .         .
11609 250.         .         .         O         .       I .         .         .         .         .  S      .         .         .
11610 251. . . . . . . . . . . . . . . .O. . . . . I . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . .
11611 252.         .         .         .O   I    .         .         .         .         .         .  S      .         .         .
11612 253.         .         .        I.O        .         .         .         .         .         .  S      .         .         .
11613 254.         .         . I       .O        .         .         .         .         .         .  S      .         .         .
11614 255.         .     I   .         O         .         .         .         .         .         .  S      .         .         .
11615 256.         .    I    .         O         .         .         .         .         .         . S       .         .         .
11616 257.         .    I    .        O.         .         .         .         .         .         . S       .         .         .
11617 258.         .   I     .        O.         .         .         .         .         .         . S       .         .         .
11618 259.         .  I      .       O .         .         .         .         .         .         . S       .         .         .
11619 260.         .  I      .       O .         .         .         .         .         .         .S        .         .         .
11620 261. . . . . . I . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . .
11621 262.         . I       .     O   .         .         .         .         .         .         .S        .         .         .
11622 263.         .I        .     O   .         .         .         .         .         .         .S        .         .         .
11623 264.         .I        .    O    .         .         .         .         .         .         .S        .         .         .
11624 265.         I         .    O    .         .         .         .         .         .         S         .         .         .
11625 266.         I         .   O     .         .         .         .         .         .         S         .         .         .
11626 267.         I         .   O     .         .         .         .         .         .         S         .         .         .
11627 268.         I         .  O      .         .         .         .         .         .        S.         .         .         .
11628 269.        I.         .  O      .         .         .         .         .         .        S.         .         .         .
11629 270.        I.         . O       .         .         .         .         .         .        S.         .         .         .
11630 271. . . . .I. . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . .
11631 272.       I .         .O        .         .         .         .         .         .       S .         .         .         .
11632 273.       I .         .O        .         .         .         .         .         .       S .         .         .         .
11633 274.       I .         O         .         .         .         .         .         .       S .         .         .         .
11634 275.       I .         O         .         .         .         .         .         .       S .         .         .         .
11635 276.       I .         O         .         .         .         .         .         .       S .         .         .         .
11636 277.       I .         O         .         .         .         .         .         .      S  .         .         .         .
11637 278.      I  .        O.         .         .         .         .         .         .      S  .         .         .         .
11638 279.      I  .        O.         .         .         .         .         .         .      S  .         .         .         .
11639 280.      I  .        O.         .         .         .         .         .         .      S  .         .         .         .
11640 281. . . .I. . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . .
11641 282.      I  .       O .         .         .         .         .         .         .     S   .         .         .         .
11642 283.      I  .       O .         .         .         .         .         .         .     S   .         .         .         .
11643 284.      I  .       O .         .         .         .         .         .         .     S   .         .         .         .
11644 285.      I  .       O .         .         .         .         .         .         .     S   .         .         .         .
11645 286.     I   .      O  .         .         .         .         .         .         .     S   .         .         .         .
11646 287.     I   .      O  .         .         .         .         .         .         .    S    .         .         .         .
11647 288.     I   .      O  .         .         .         .         .         .         .    S    .         .         .         .
11648 289.     I   .      O  .         .         .         .         .         .         .    S    .         .         .         .
11649 290.     I   .     O   .         .         .         .         .         .         .    S    .         .         .         .
11650 291. . . I . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
11651 292.     I   .     O   .         .         .         .         .         .         .    S    .         .         .         .
11652 293.     I   .     O   .         .         .         .         .         .         .   S     .         .         .         .
11653 294.     I   .     O   .         .         .         .         .         .         .   S     .         .         .         .
11654 295.     I   .    O    .         .         .         .         .         .         .   S     .         .         .         .
11655 296.     I   .    O    .         .         .         .         .         .         .   S     .         .         .         .
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11656 297.     I   .    O    .         .         .         .         .         .         .   S     .         .         .         .
11657 298.     I   .    O    .         .         .         .         .         .         .   S     .         .         .         .
11658 299.    I    .    O    .         .         .         .         .         .         .  S      .         .         .         .
11659 300.    I    .   O     .         .         .         .         .         .         .  S      .         .         .         .
11700 301. . .I. . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . .
11701 302.    I    .   O     .         .         .         .         .         .         .  S      .         .         .         .
11702 303.    I    .   O     .         .         .         .         .         .         .  S      .         .         .         .
11703 304.    I    .   O     .         .         .         .         .         .         .  S      .         .         .         .
11704 305.    I    .  O      .         .         .         .         .         .         .  S      .         .         .         .
11705 306.    I    .  O      .         .         .         .         .         .         . S       .         .         .         .
11706 307.    I    .  O      .         .         .         .         .         .         . S       .         .         .         .
11707 308.    I    .  O      .         .         .         .         .         .         . S       .         .         .         .
11708 309.    I    .  O      .         .         .         .         .         .         . S       .         .         .         .
11709 310.    I    .  O      .         .         .         .         .         .         . S       .         .         .         .
11710 311. . .I. . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . .
11711 312.    I    . O       .         .         .         .         .         .         . S       .         .         .         .
11712 313.    I    . O       .         .         .         .         .         .         .S        .         .         .         .
11713 314.    I    . O       .         .         .         .         .         .         .S        .         .         .         .
11714 315.    I    . O       .         .         .         .         .         .         .S        .         .         .         .
11715 316.   I     . O       .         .         .         .         .         .         .S        .         .         .         .
11716 317.   I     .O        .         .         .         .         .         .         .S        .         .         .         .
11717 318.   I     .O        .         .         .         .         .         .         .S        .         .         .         .
11718 319.   I     .O        .         .         .         .         .         .         .S        .         .         .         .
11719 320.   I     .O        .         .         .         .         .         .         .S        .         .         .         .
11720 321. . I . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . .
11721 322.   I     .O        .         .         .         .         .         .         S         .         .         .         .
11722 323.   I     .O        .         .         .         .         .         .         S         .         .         .         .
11723 324.   I     O         .         .         .         .         .         .         S         .         .         .         .
11724 325.   I     O         .         .         .         .         .         .         S         .         .         .         .
11725 326.   I     O         .         .         .         .         .         .         S         .         .         .         .
11726 327.   I     O         .         .         .         .         .         .         S         .         .         .         .
11727 328.   I     O         .         .         .         .         .         .         S         .         .         .         .
11728 329.   I     O         .         .         .         .         .         .         S         .         .         .         .
11729 330.   I     O         .         .         .         .         .         .         S         .         .         .         .
11730 331. . I . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
11731 332.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11732 333.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11733 334.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11734 335.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11735 336.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11736 337.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11737 338.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11738 339.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11739 340.   I    O.         .         .         .         .         .         .        S.         .         .         .         .
11740 341. . I . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
11741 342.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11742 343.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11743 344.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11744 345.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11745 346.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11746 347.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11747 348.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11748 349.   I   O .         .         .         .         .         .         .       S .         .         .         .         .
11749 350.  I    O .         .         .         .         .         .         .       S .         .         .         .         .
11750 351. .I. .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
11751 352.  I   O  .         .         .         .         .         .         .       S .         .         .         .         .
11752 353.  I   O  .         .         .         .         .         .         .       S .         .         .         .         .
11753 354.  I   O  .         .         .         .         .         .         .       S .         .         .         .         .
11754 355.  I   O  .         .         .         .         .         .         .       S .         .         .         .         .
11755 356.  I   O  .         .         .         .         .         .         .      S  .         .         .         .         .
11756 357. I    O  .         .         .         .         .         .         .      S  .         .         .         .         .
11757 358. I    O  .         .         .         .         .         .         .      S  .         .         .         .         .
11758 359. I    O  .         .         .         .         .         .         .      S  .         .         .         .         .
11759 360.I     O  .         .         .         .         .         .         .      S  .         .         .         .         .
11800 361.I. . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . .
11801 362I     O   .         .         .         .         .         .         .      S  .         .         .         .         .
11802 363I     O   .         .         .         .         .         .         .      S  .         .         .         .         .
11803 364I     O   .         .         .         .         .         .         .      S  .         .         .         .         .
11804 365I     O   .         .         .         .         .         .         .      S  .         .         .         .         .
11805 366I     O   .         .         .         .         .         .         .      S  .         .         .         .         .
11806 367I     O   .         .         .         .         .         .         .     S   .         .         .         .         .
11807 368I     O   .         .         .         .         .         .         .     S   .         .         .         .         .
11808 369I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11809 370I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11810 371I . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . .
11811 372I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11812 373I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11813 374I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11814 375I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11815 376I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11816 377I    O    .         .         .         .         .         .         .     S   .         .         .         .         .
11817 378I    O    .         .         .         .         .         .         .    S    .         .         .         .         .
11818 379I   O     .         .         .         .         .         .         .    S    .         .         .         .         .
11819 380I   O     .         .         .         .         .         .         .    S    .         .         .         .         .
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11820 381I . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . .
11821 382I   O     .         .         .         .         .         .         .    S    .         .         .         .
11822 383I   O     .         .         .         .         .         .         .    S    .         .         .         .
11823 384I   O     .         .         .         .         .         .         .    S    .         .         .         .
11824 385I   O     .         .         .         .         .         .         .    S    .         .         .         .
11825 386I   O     .         .         .         .         .         .         .    S    .         .         .         .
11826 387I   O     .         .         .         .         .         .         .    S    .         .         .         .
11827 388I   O     .         .         .         .         .         .         .    S    .         .         .         .
11828 389I   O     .         .         .         .         .         .         .    S    .         .         .         .
11829 390I   O     .         .         .         .         .         .         .    S    .         .         .         .
11830 391I . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11831 392I   O     .         .         .         .         .         .         .   S     .         .         .         .
11832 393I   O     .         .         .         .         .         .         .   S     .         .         .         .
11833 394I   O     .         .         .         .         .         .         .   S     .         .         .         .
11834 395I   O     .         .         .         .         .         .         .   S     .         .         .         .
11835 396I   O     .         .         .         .         .         .         .   S     .         .         .         .
11836 397I   O     .         .         .         .         .         .         .   S     .         .         .         .
11837 398I   O     .         .         .         .         .         .         .   S     .         .         .         .
11838 399I   O     .         .         .         .         .         .         .   S     .         .         .         .
11839 400I   O     .         .         .         .         .         .         .   S     .         .         .         .
11840 401I . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . .
11841 402I   O     .         .         .         .         .         .         .   S     .         .         .         .
11842 403I   O     .         .         .         .         .         .         .   S     .         .         .         .
11843 404I   O     .         .         .         .         .         .         .   S     .         .         .         .
11844 405I   O     .         .         .         .         .         .         .  S      .         .         .         .
11845 406I   O     .         .         .         .         .         .         .  S      .         .         .         .
11846 407I   O     .         .         .         .         .         .         .  S      .         .         .         .
11847 408I   O     .         .         .         .         .         .         .  S      .         .         .         .
11848 409I   O     .         .         .         .         .         .         .  S      .         .         .         .
11849 410I   O     .         .         .         .         .         .         .  S      .         .         .         .
11850 411I . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . .
11851 412I   O     .         .         .         .         .         .         .  S      .         .         .         .
11852 413I   O     .         .         .         .         .         .         .  S      .         .         .         .
11853 414I   O     .         .         .         .         .         .         .  S      .         .         .         .
11854 415I   O     .         .         .         .         .         .         .  S      .         .         .         .
11855 416I   O     .         .         .         .         .         .         .  S      .         .         .         .
11856 417I   O     .         .         .         .         .         .         .  S      .         .         .         .
11857 418I   O     .         .         .         .         .         .         .  S      .         .         .         .
11858 419I   O     .         .         .         .         .         .         .  S      .         .         .         .
11859 420I   O     .         .         .         .         .         .         .  S      .         .         .         .
11900 421I . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . .
11901 422I   O     .         .         .         .         .         .         . S       .         .         .         .
11902 423I   O     .         .         .         .         .         .         . S       .         .         .         .
11903 424I   O     .         .         .         .         .         .         . S       .         .         .         .
11904 425I   O     .         .         .         .         .         .         . S       .         .         .         .
11905 426I   O     .         .         .         .         .         .         . S       .         .         .         .
11906 427I   O     .         .         .         .         .         .         . S       .         .         .         .
11907 428I  O      .         .         .         .         .         .         . S       .         .         .         .
11908 429I  O      .         .         .         .         .         .         . S       .         .         .         .
11909 430I  O      .         .         .         .         .         .         . S       .         .         .         .
11910 431I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . .
11911 432I  O      .         .         .         .         .         .         . S       .         .         .         .
11912 433I  O      .         .         .         .         .         .         . S       .         .         .         .
11913 434I  O      .         .         .         .         .         .         . S       .         .         .         .
11914 435I  O      .         .         .         .         .         .         . S       .         .         .         .
11915 436I  O      .         .         .         .         .         .         . S       .         .         .         .
11916 437I  O      .         .         .         .         .         .         .S        .         .         .         .
11917 438I  O      .         .         .         .         .         .         .S        .         .         .         .
11918 439I  O      .         .         .         .         .         .         .S        .         .         .         .
11919 440I  O      .         .         .         .         .         .         .S        .         .         .         .
11920 441I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . .
11921 442I  O      .         .         .         .         .         .         .S        .         .         .         .
11922 443I  O      .         .         .         .         .         .         .S        .         .         .         .
11923 444I  O      .         .         .         .         .         .         .S        .         .         .         .
11924 445I  O      .         .         .         .         .         .         .S        .         .         .         .
11925 446I  O      .         .         .         .         .         .         .S        .         .         .         .
11926 447I  O      .         .         .         .         .         .         .S        .         .         .         .
11927 448I  O      .         .         .         .         .         .         .S        .         .         .         .
11928 449I  O      .         .         .         .         .         .         .S        .         .         .         .
11929 450I  O      .         .         .         .         .         .         .S        .         .         .         .
11930 451I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . .
11931 452I  O      .         .         .         .         .         .         .S        .         .         .         .
11932 453I  O      .         .         .         .         .         .         .S        .         .         .         .
11933 454I  O      .         .         .         .         .         .         .S        .         .         .         .
11934 455I  O      .         .         .         .         .         .         .S        .         .         .         .
11935 456I  O      .         .         .         .         .         .         S         .         .         .         .
11936 457I  O      .         .         .         .         .         .         S         .         .         .         .
11937 458I  O      .         .         .         .         .         .         S         .         .         .         .
11938 459I  O      .         .         .         .         .         .         S         .         .         .         .
11939 460I  O      .         .         .         .         .         .         S         .         .         .         .
11940 461I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
11941 462I  O      .         .         .         .         .         .         S         .         .         .         .
11942 463I  O      .         .         .         .         .         .         S         .         .         .         .
11943 464I  O      .         .         .         .         .         .         S         .         .         .         .
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  11944 465I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11945 466I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11946 467I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11947 468I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11948 469I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11949 470I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11950 471I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
  11951 472I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11952 473I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11953 474I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11954 475I  O      .         .         .         .         .         .         S         .         .         .         .         .
  11955 476I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  11956 477I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  11957 478I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  11958 479I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  11959 480I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12000 481I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . .
  12001 482I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12002 483I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12003 484I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12004 485I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12005 486I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12006 487I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12007 488I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12008 489I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12009 490I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12010 491I .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . .
  12011 492I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12012 493I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12013 494I  O      .         .         .         .         .         .        S.         .         .         .         .         .
  12014 495I O       .         .         .         .         .         .        S.         .         .         .         .         .
  12015 496I O       .         .         .         .         .         .        S.         .         .         .         .         .
  12016 497I O       .         .         .         .         .         .        S.         .         .         .         .         .
  12017 498I O       .         .         .         .         .         .       S .         .         .         .         .         .
  12018 499I O       .         .         .         .         .         .       S .         .         .         .         .         .
  12019 500I-O-------.---------.---------.---------.---------.---------.-------S-.---------.---------.---------.---------.---------.
1
1

                                                            RUNOFF SUMMARY
                                                    FLOW IN CUBIC FEET PER SECOND
                                                 TIME IN HOURS,  AREA IN SQUARE MILES

                                              PEAK    TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD       BASIN     MAXIMUM     TIME OF
          OPERATION        STATION            FLOW     PEAK                                              AREA      STAGE     MAX STAGE
+                                                                 6-HOUR      24-HOUR      72-HOUR

          HYDROGRAPH AT
+                         POC1.hc1             37.     4.08          5.           3.           3.          .02

          ROUTED TO
+                             DET2             16.     4.20          4.           4.           4.          .02
+                                                                                                                  102.78        4.20


 *** NORMAL END OF HEC-1 ***
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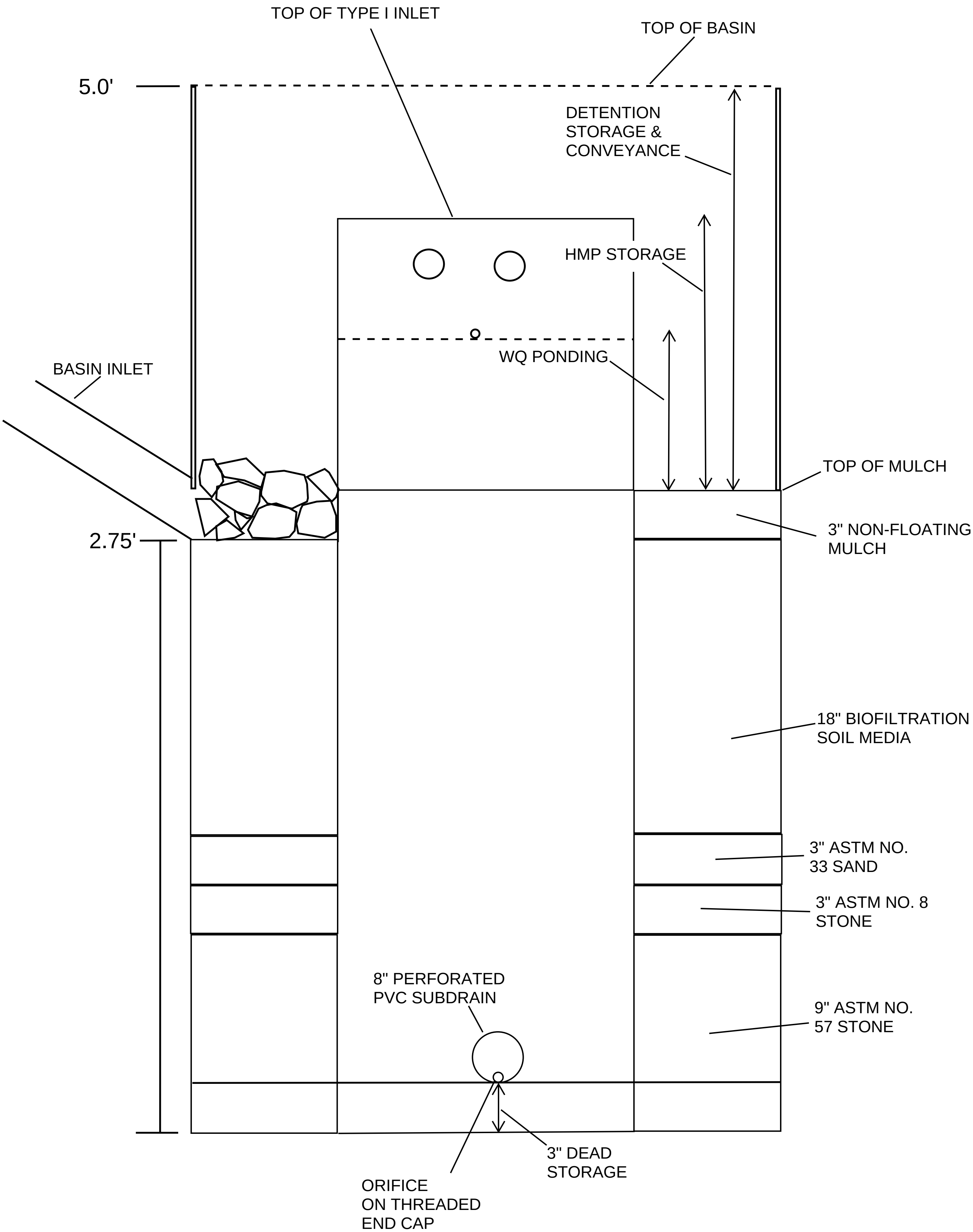
Lag Time = 4.20hr - 4.08hr =
0.12hr*(60min/1hr) = 7.2min

DET2   11200 1JAN90 0 1 1 500   .020

Q100 Mitigated → 15.582

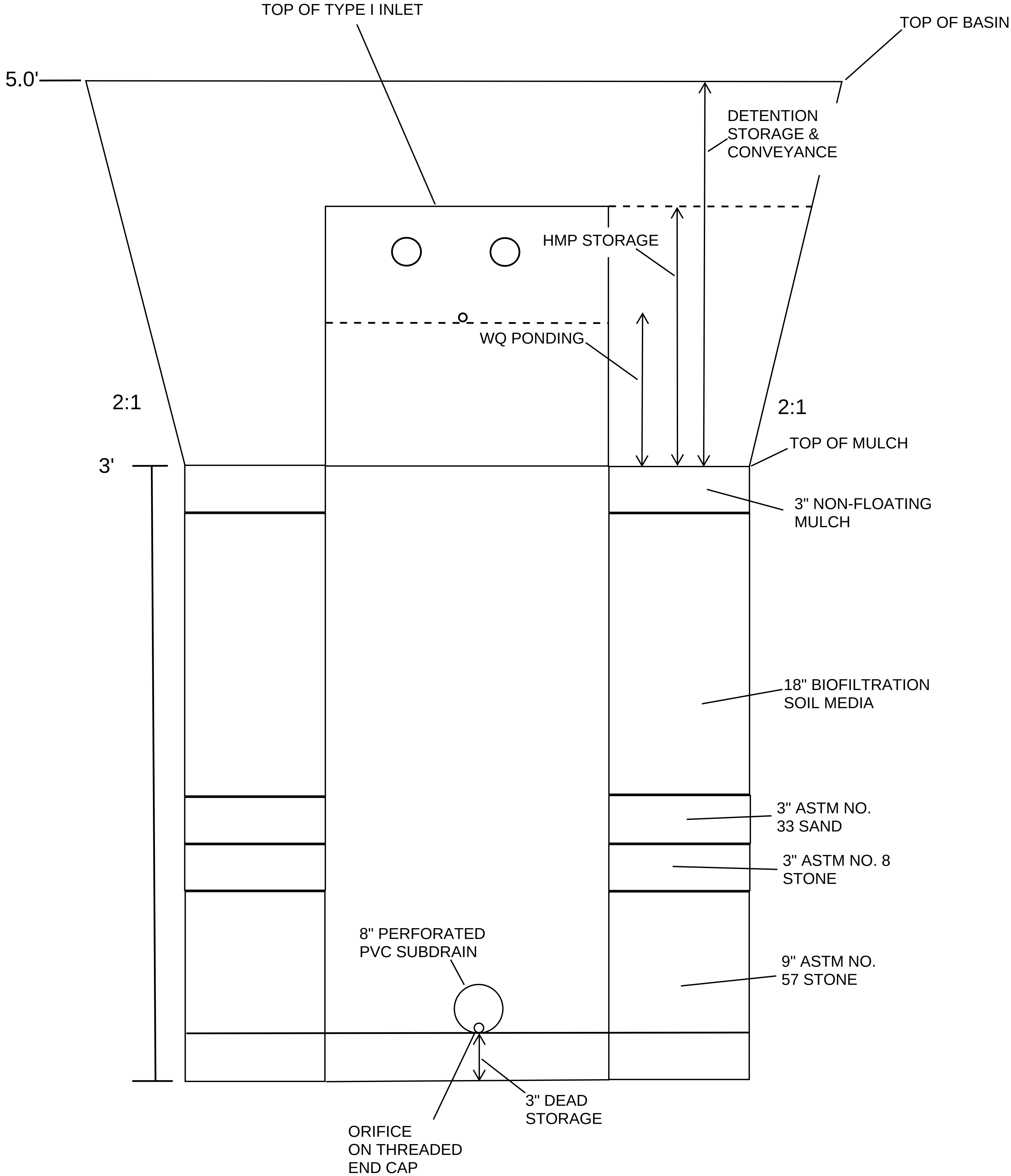
2.240	2.229	2.218	2.207	2.198	2.189	2.181	2.175	2.169	2.164
2.161	2.158	2.156	2.153	2.151	2.149	2.146	2.144	2.142	2.140
2.138	2.135	2.133	2.131	2.129	2.128	2.126	2.124	2.122	2.121
2.119	2.117	2.116	2.114	2.113	2.111	2.110	2.108	2.106	2.105
2.104	2.102	2.101	2.100	2.098	2.097	2.096	2.095	2.094	2.093
2.092	2.091	2.090	2.089	2.089	2.088	2.087	2.086	2.085	2.084
2.083	2.083	2.082	2.082	2.081	2.081	2.080	2.080	2.079	2.079
2.079	2.078	2.078	2.077	2.077	2.077	2.076	2.076	2.076	2.076
2.076	2.076	2.076	2.076	2.076	2.076	2.077	2.077	2.077	2.078
2.078	2.079	2.079	2.080	2.081	2.081	2.082	2.083	2.084	2.085
2.086	2.087	2.088	2.089	2.090	2.091	2.093	2.094	2.095	2.097
2.098	2.100	2.101	2.103	2.105	2.106	2.108	2.110	2.112	2.114
2.116	2.118	2.120	2.122	2.124	2.126	2.128	2.131	2.133	2.135
2.138	2.140	2.143	2.146	2.149	2.152	2.155	2.158	2.161	2.165
2.168	2.171	2.175	2.178	2.181	2.185	2.188	2.192	2.196	2.200
2.203	2.207	2.211	2.216	2.220	2.224	2.229	2.233	2.238	2.251
2.271	2.291	2.312	2.332	2.353	2.373	2.394	2.415	2.437	2.458
2.480	2.503	2.525	2.548	2.571	2.594	2.617	2.641	2.664	2.688
2.712	2.737	2.761	2.786	2.812	2.838	2.865	2.893	2.921	2.949
2.979	3.008	3.039	3.069	3.100	3.131	3.163	3.195	3.227	3.259
3.291	3.325	3.360	3.398	3.437	3.478	3.521	3.565	3.611	3.659
3.708	3.757	3.808	3.860	3.912	3.965	4.019	4.073	4.128	4.187
4.252	4.323	4.400	4.482	4.570	4.664	4.763	4.867	4.992	5.153
5.349	5.580	5.845	6.143	6.473	6.835	7.228	7.646	8.080	8.531
8.999	9.483	9.982	10.653	11.595	12.548	13.426	14.146	14.714	15.136
15.418	15.565	15.582	15.475	15.247	14.960	14.673	14.386	14.099	13.812
13.525	13.238	12.950	12.663	12.379	12.100	11.827	11.559	11.297	11.039
10.786	10.538	10.297	10.163	10.031	9.900	9.770	9.641	9.513	9.386
9.261	9.136	9.013	8.891	8.771	8.653	8.536	8.421	8.307	8.195
8.084	7.975	7.868	7.762	7.657	7.554	7.453	7.353	7.254	7.157
7.061	6.967	6.874	6.782	6.691	6.602	6.514	6.427	6.341	6.256
6.173	6.091	6.010	5.931	5.853	5.776	5.700	5.625	5.552	5.480
5.409	5.339	5.271	5.204	5.138	5.073	5.010	4.947	4.886	4.825
4.765	4.706	4.647	4.590	4.533	4.477	4.421	4.367	4.314	4.261
4.209	4.159	4.109	4.060	4.011	3.964	3.917	3.871	3.826	3.782
3.738	3.695	3.653	3.611	3.568	3.522	3.473	3.421	3.366	3.308
3.247	3.184	3.117	3.051	2.985	2.921	2.859	2.798	2.738	2.679
2.622	2.566	2.511	2.457	2.404	2.353	2.303	2.253	2.232	2.221
2.210	2.199	2.188	2.177	2.166	2.155	2.144	2.134	2.123	2.112
2.102	2.091	2.081	2.071	2.060	2.050	2.040	2.030	2.019	2.009
1.999	1.989	1.979	1.970	1.960	1.950	1.940	1.931	1.921	1.911
1.902	1.892	1.883	1.874	1.864	1.855	1.846	1.836	1.827	1.818
1.809	1.800	1.791	1.782	1.773	1.764	1.756	1.747	1.738	1.729
1.721	1.712	1.704	1.695	1.687	1.678	1.670	1.662	1.653	1.645
1.637	1.629	1.621	1.613	1.604	1.596	1.588	1.581	1.573	1.565
1.557	1.549	1.542	1.534	1.526	1.519	1.511	1.503	1.496	1.489
1.481	1.474	1.466	1.459	1.452	1.445	1.437	1.430	1.423	1.416
1.409	1.402	1.395	1.388	1.381	1.374	1.367	1.360	1.354	1.347
1.340	1.333	1.327	1.320	1.314	1.307	1.301	1.294	1.288	1.281
1.275	1.268	1.262	1.256	1.250	1.243	1.237	1.231	1.225	1.219

BMP-A CROSS SECTION



J-19644
DATE

BMP-B, C1, C2 CROSS SECTION



J-19644
DATE

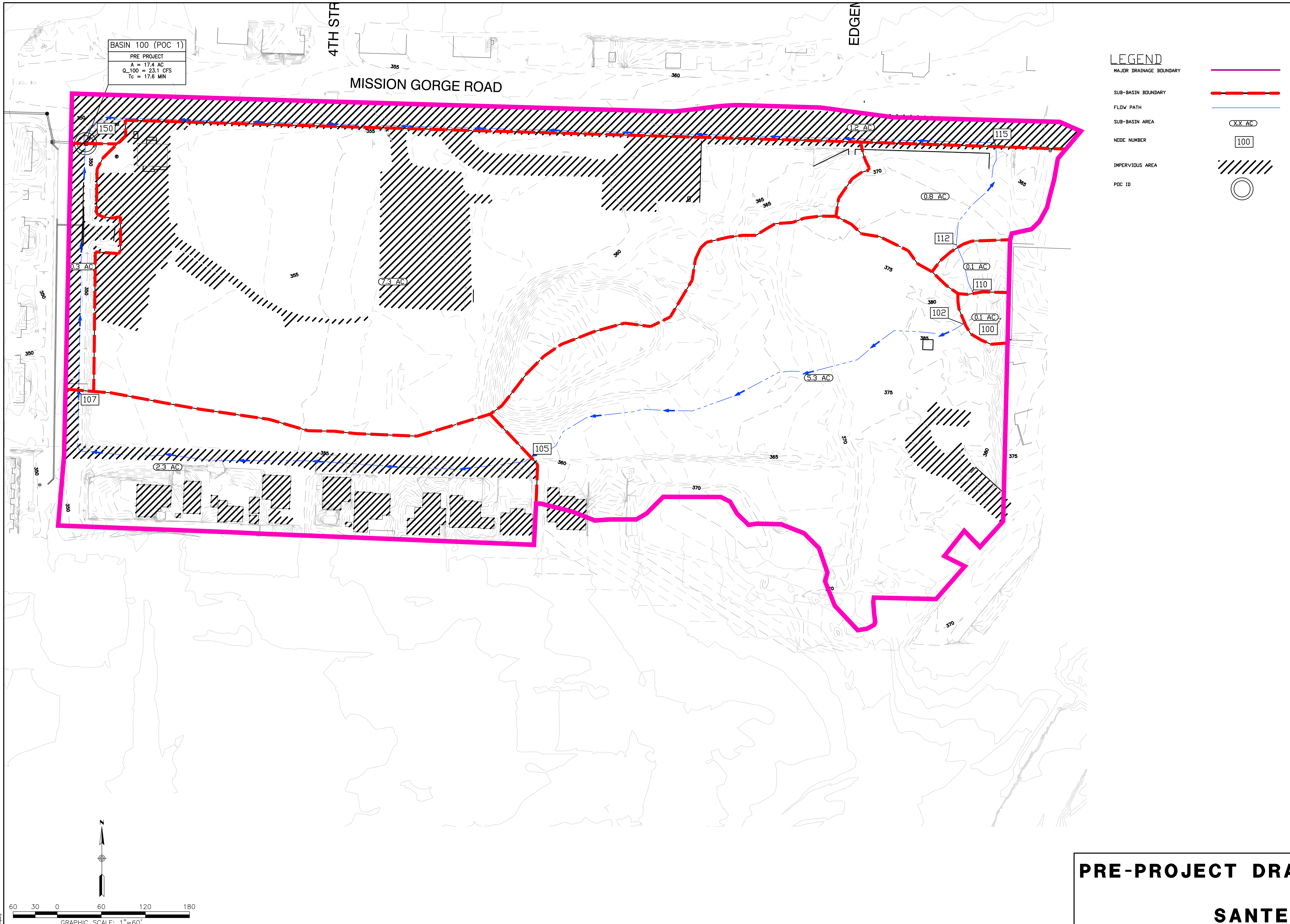
MAP POCKET 1

Drainage Study Map

for

Santee Schoolyard

[Pre-Project]



PRE-PROJECT DRAINAGE EXHIBIT FOR SANTEE SCHOOLYARD

DATE: APRIL 21, 2023

JN–19644

RICK ENGINEERING COMPANY
San Diego
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SAN DIEGO, CA 92110
619.291.0707
(FAX)619.291.4165
rickengineering.com
Riverside - Orange - San Luis Obispo - Denver - Sacramento - Phoenix - Tucson

NOT FOR CONSTRUCTION – EXHIBIT FOR DRAINAGE STUDY ONLY

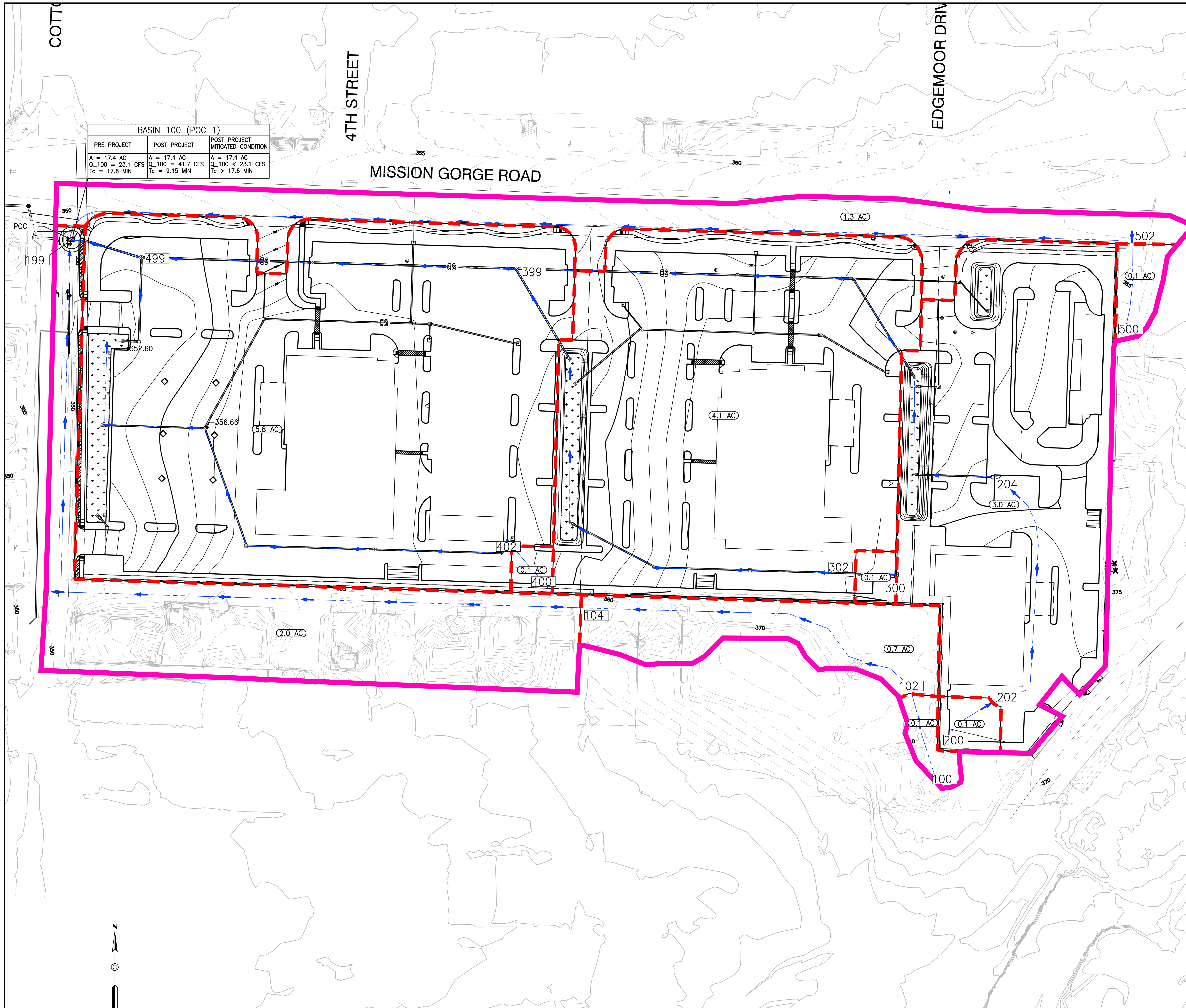
MAP POCKET 2

Drainage Study Map

for

Santee Schoolyard

[Post-Project]



BASIN 100 (POC 1)		
PRE PROJECT	POST PROJECT	POST PROJECT MITIGATED CONDITION
A = 17.4 AC Q_100 = 23.1 CFS Tc = 17.6 MIN	A = 17.4 AC Q_100 = 41.7 CFS Tc = 9.15 MIN	A = 17.4 AC Q_100 < 23.1 CFS Tc > 17.6 MIN

LEGEND

- MAJOR DRAINAGE BOUNDARY
- SUB-BASIN BOUNDARY
- FLOW PATH
- SUB-BASIN AREA — X.X AC
- NODE NUMBER
- POC ID

NOTES:

1. UNDERLYING HYDROLOGIC SOIL GROUP IS TYPE "D".

2. BIOFILTRATION BASINS ARE PROPOSED TO PROVIDE MITIGATION OF THE PEAK FLOW FOR THE 100 YEAR 6 HOUR STORM EVENT. POST-PROJECT FLOWS (Q100_POST = 41.7 CFS) HAVE BEEN MITIGATED BACK TO THE PRE-PROJECT FLOW RATE (Q100 PRE & Q100 MITIGATED = 23.1 CFS).

30 15 0 30 60 90

GRAPHIC SCALE: 1"=30'

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