Appendix E-2

Drainage Study for the Pacific Specific Plan Project Alternative

Preliminary Drainage Study
for
Pacific North
Reduced Pacific Specific Plan Project Alternative

Prepared: May 14, 2024

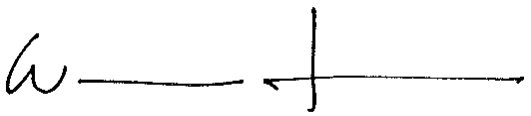
William Lundstrom, R.C.E. Lundstrom
Engineering & Surveying
3333 Camino Del Rio South, Suite 330
San Diego, California 92108
(619) 814-1220

Lundstrom
Engineering and Surveying, Inc.

Declaration of Responsible Charge

I hereby declare that I am the engineer of work for this project. That I have exercised responsible charge over the design of the project as defined in Section 6703 of the business and professions code, and that the design is consistent with current standards.

I understand that the check of project drawings and specifications by the City of San Marcos is confined to a review only and does not relieve me, as engineer of work, of my responsibilities for project design.



01/29/2024

William Lundstrom
Registered Civil Engineer 61630
Exp. Date: 06/30/23

Date

Table of Contents

Table of Exhibits

List of Tables

Table of Appendices

Introduction

Purpose and Scope

The City's application process requires a hydrology/ drainage study on all properties at the time of application. This study provides the needed information to ensure that any drainage facilities proposed in the future are sized and located appropriately and will accommodate any future development.

The study reviews storm runoff under existing conditions (100 year event) and identifies existing drainage problems that may be caused, or aggravated, by future development. The study is further used to determine impacts that might be caused downstream (erosion) and to identify proposed mitigation measures.

Section 1. Property Information

1.1.Property Description

1.1.1 Property Location

The subject property is located at the northwestern corner of Linda Vista Drive and Las Posas Road in the city of San Marcos, CA. The property is bounded to the southwest by Linda Vista Rd, to the southeast by Las Posas Rd., to the northeast by La Mirada Dr., and to the northwest by Pacific St. **Exhibit A** provides a location map for the site.

1.1.2 Property Activities Description

The Reduced Pacific Specific Plan Project Alternative consists of 299 residential units, including a mix of rowhomes, villas, and affordable flats on approximately 13.3 acres of the 33.2-acre project site. The reduced project alternative includes a total of 646 parking spaces and 111,025 square feet of common open space area. 45 of the 299 total units (15% of the total) would be designated as deed-restricted affordable units (alternatively, the project reserves the option to contribute to the affordable housing fund by paying the in-lieu fee). The reduced project alternative also includes landscaping, bio-retention areas, and circulation improvements. The remaining approximately 19.9 acres of the 33.2-acre project site would be preserved and restored as open space and habitat area. The reduced project alternative would have a density of approximately 8.99 dwelling units per acre, including the open space and habitat area.

1.2.Hydrologic Setting

This section summarizes the project's size and location in the context of the larger watershed perspective, topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, and other relevant hydrologic and environmental factors to be protected specific to the project area's watershed.

1.2.1 Topography

The topography slopes southeasterly toward Las Posas Rd and Linda Vista Dr. Elevations on site range from 557.1 Mean Sea Level to 524.7 Mean Sea Level.

1.2.2 FEMA Flood Insurance Rate Map

The site is located in Zone X of the Flood Insurance Rate Map (FIRM) Panel 06073C0789H. Zone X is designated to be areas determined to be outside the 500-year floodplain. **Exhibit B** illustrates the project site within Flood Zone X.

1.2.3 Current and Adjacent Land Use

The 33.2 acre property is currently undeveloped. Adjacent land use is varied with shopping centers, light industrial, and recreation.

1.2.4 Soil and Vegetation Conditions

The majority of the property contains type D soils per USDA soils site. See Appendix A

1.2.5 Existing Drainage Patterns and Facilities (Narrative)

The majority of the site flows southeasterly toward the northwest corner of Linda Vista Drive and Las Posas Road. This drainage is collected in a CMP (corrugated meatal pipe) riser which drains to an 11'x7' RCB (reinforced concrete box) in Las Posas Rd. The remainder of the site surface drains to the surrounding streets. All surrounding streets drain via gutter flow to the same corner (Las Posas and Linda Vista) where runoff is collected by a pair of curb inlets which drain into the same 11'x7' RCB in Las Posas Rd. It is noted that some on-site run-off occurs from the property onto adjacent streets. The run-off is carried via the streets to the same RCB in Las Posas Road. There is no offsite run-on to the property.

1.2.6 Downstream Conditions

All site runoff leads to the RCB in Las Posas Rd.

1.3.Proposed Runoff Management Facilities

Any future development facilities for managing runoff from the site will include one or more of the following (examples listed below or equal):

- Biofiltration basins.
- Underground Storage

Per the preliminary geotechnical evaluation by GeoTek, Inc. No. 3649-SD dated January 2022, infiltration rates are 0.07 inches per hour so infiltration is not recommended. Treated runoff will follow the same drainage pattern as currently existing.

Section 2. Design Criteria and Methodology

This section summarizes the design criteria and methodology applied during drainage analysis of the property. The design criteria and methodology follow the County of San Diego County Hydrology Manual (June 2003), San Diego County Hydraulic Drainage Design Manual (September 2014), and Storm Water Standards as appropriate for the property location.

2.1.Hydrologic Design Methodology

2.1.1 Rational Method: Peak Flow

Runoff calculations for this study were accomplished using the Rational Method. The Rational Method is a physically-based numerical method where runoff is assumed to be directly proportional to rainfall and area, less losses for infiltration and depression storage. Flows were computed based on the Rational formula:

$$Q = C\,i\,A$$

where ...
- Q = Peak discharge (cfs);
- C = runoff coefficient, based on land use and soil type;
- i = rainfall intensity (in/hr);
- A = watershed area (acre)

The runoff coefficient represents the ratio of rainfall that runs off the watershed versus the portion that infiltrates to the soil or is held in depression storage. The runoff coefficient is dependent on the land use coverage and soil type.

For a typical drainage study, rainfall intensity varies with the watershed time of concentration. The watershed time of concentration at any given point is defined as the time it would theoretically take runoff to travel from the most upstream point in the watershed to a concentration point, as calculated by equations in the San Diego County Hydrology Manual.

Table 2-1 Rational Method Runoff Coefficients.

		RUNOFF COEFFICIENT			
	(%)	Hydrologic Soil Type			
LAND USE (County Elements)	**Imperv.**	**A**	**B**	**C**	**D**
Permanent Open Space		0.20	0.25	0.30	0.35
Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Neighborhood Commercial	80	0.76	0.77	0.78	0.79
General Commercial	85	0.80	0.80	0.81	0.82
Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Limited Industrial	90	0.83	0.84	0.84	0.85
General Industrial	95	0.87	0.87	0.87	0.87

Rational Method calculations were accomplished using the Advanced Engineering Software Rational Method Analysis (Southern California County Methods) (AES-RATSCx) computer software packages. Peak discharges were computed for 100-year and 50-year storm return frequencies.

2.1.2 Time of Concentration

The Time of Concentration (T_c) is the time required for runoff to flow from the most remote part of the drainage area to the point of interest. The T_c is composed of two components: initial time of concentration (T_i) and the travel time (T_t). The T_i is the time required for runoff to travel across the surface of the most remote subarea in the study, or "initial subarea". Guidelines for designation the initial subarea are provided within the discussion of computation of T_i. The T_i is the time required for the runoff to flow in a watercourse (e.g., swale, channel, gutter, pipe) or series of watercourses from the initial subarea to the point of interest. For the Rational Method, the T_c at any point within the drainage area is given by:

$$T_c = T_i + T_t$$

Methods of calculation differ for natural watersheds (nonurbanized) and for urban drainage systems. When analyzing storm drain systems, the designer must consider the possibility that an existing natural watershed may become urbanized during the useful life of the storm drain system. Future land uses must be used for T_c and runoff calculations, and can be determined from the local Community General Plan.

2.1.3 Initial Time of Concentration

The initial time of concentration is typically based on sheet flow at the upstream end of a drainage basin. The Overland Time of Flow is approximated by an equation developed by the Federal Aviation Agency (FAA) for analyzing flow on runways (FAA, 1970). The usual runway configuration consists of a crown, like most freeways, with sloping pavement that directs flow to either side of the runway. This type of flow is uniform in the direction perpendicular to the velocity and is very shallow. Since these depths are ¼ of an inch in magnitude, the relative roughness is high. Some higher relative roughness values for overland flow are presented in the *HEC-1 Flood Hydrograph Package User's Manual* (USACE, 1990).

The sheet flow that is predicted by the FAA equation is limited to conditions that are similar to runway topography. Some considerations that limit the extent to which the FAA equation applies are identified below:

- Urban Areas – This "runway type" runoff includes:
  - Flat roofs, sloping at 1% +/-
  - Parking lots at the extreme upstream drainage basin boundary (at the "ridge" of a catchment area.) Even a parking lot is limited in the amounts of sheet flow. Parked or moving vehicles would "break-up" the sheet flow, concentrating runoff into streams that are not characteristic of sheet flow.
  - Driveways are constructed at the upstream end of catchment areas in some developments. However, if flow from a roof is directed to a driveway through a downspout or other conveyance mechanism, flow would be concentrated.
  - Flat slopes are prone to meandering flow that tends to be disrupted by minor irregularities and obstructions. Maximum Overland Flow lengths are shorter for the flatter slopes.
- Rural or Natural Areas –The FAA equation is applicable to these conditions since (0.5% to 10%) slopes that are uniform in width of flow have slow velocities consistent with the equation. Irregularities in terrain limit the length of application.
  - Most hills and ridge lines have a relatively flat area near the drainage divide. However, with flat slopes of 0.5% +/-, minor irregularities would cause flow to concentrate into streams.
  - Parks, lawns and other vegetated areas would have slow velocities that are consistent with the FAA Equation.

The Initial Time of Concentration is reflective of the general land-use at the upstream end of a drainage basin.

2.1.4 Travel Time

The T_t is the time required for the runoff to flow in a watercourse or series of watercourses from the initial subarea to the point of interest. The T_t is computed by dividing the length of the flow path by the computed flow velocity. Since the velocity normally changes as a result of each change in flow rate or slope, such as at an inlet or grade break, the total T_t must be computed as the sum of the T_t's for each section of the flow path.

2.1.5 Rational Method: Runoff Volume

For designs that are dependent on the total storm volume, a hydrograph must be generated to account for the entire volume of runoff from the 6-hour storm event. The hydrograph for the entire 6-hour storm event is generated by creating a rainfall distribution consisting of blocks of rain, creating an incremental hydrograph for each block of rain, and adding the hydrographs from each block of rain. This process creates a hydrograph that contains runoff from all the blocks of rain and accounts for the entire volume of runoff from the 6-hour storm event. The total volume under the resulting hydrograph is equal to the following equation:

$$VOL = CP_6A$$

Where: VOL = volume of runoff (acres-inches)

P_6 = 6-hour rainfall (inches)

C = runoff coefficient

A = area of the watershed (acres)

Section 3. Characterization of Project Runoff

3.1.Hydrologic Effects of Project

Any future development will be designed such that it will not significantly alter drainage patterns on the site. Table 3-1 summarizes the hydrologic effects of the existing site.

Table 3-1 Summary of Hydrology Analysis.

EXISTING

NODE	TC (MIN.)	AREA (ACRES)	C	I100 (in/hr)	Q100 RUN-OFF (CFS)
DMA1	18.7	0.33	0.35	3.71	0.43
DMA2	18.7	0.70	0.35	3.71	0.91
DMA3	18.7	0.78	0.35	3.71	1.01
DMA4	18.7	4.32	0.35	3.71	5.61
DMA5	18.7	2.43	0.35	3.71	3.20
DMA6	18.7	24.05	0.35	3.71	31.36
DMA7	18.7	0.53	0.35	3.71	0.70
		TOTAL=33.1			TOTAL @ POC #1= 43.2 CFS

PROPOSED

NODE	TC (MIN.)	AREA (ACRES)	C	I100 (in/hr)	Q100 RUN-OFF (CFS)
DMA 1-3	10.7	11.6	0.79	5.74	60.3 (13.9 mitigated)
DMA 4	6.4	1.8	0.79	7.41	10.5 (0.9 mitigated)
DMA 6	19.8	19.8	0.35	3.71	25.7
		TOTAL=33.0			
					TOTAL @ POC #1= 40.5 CFS

Section 4. Summary and Conclusions

This hydrology and hydraulic study has evaluated the potential effects of rainfall, runoff, and drainage on the property. In addition, the report has addressed the methodology used to analyze the pre-construction and to the parameters for post-construction condition, which was based on the San Diego County Hydrology and Design Manual. This section provides a summary discussion that evaluates the potential effects of any future proposed project.

- The proposed project will not substantially alter the existing drainage patterns on the site or area, including through the alteration of the existing drainage course, in which would not result in substantial erosion or siltation on- or off-site and not exceed the capacity of downstream storm drain.
- The proposed project does not place housing or structures within 100-year flood area in which would impede or redirect flows.
- The project will add new impervious area to the site, increasing unmitigated storm water runoff rates and volume from the existing condition. Proposed biofiltration basins and detention storage are sized to mitigate peak 100 year runoff rates.
- In my professional opinion, the proposed work and improvements, as they relate to this project, will not increase the flow rates or velocity of surface flows to the detriment of downstream landowners and/or facilities.

EXHIBITS

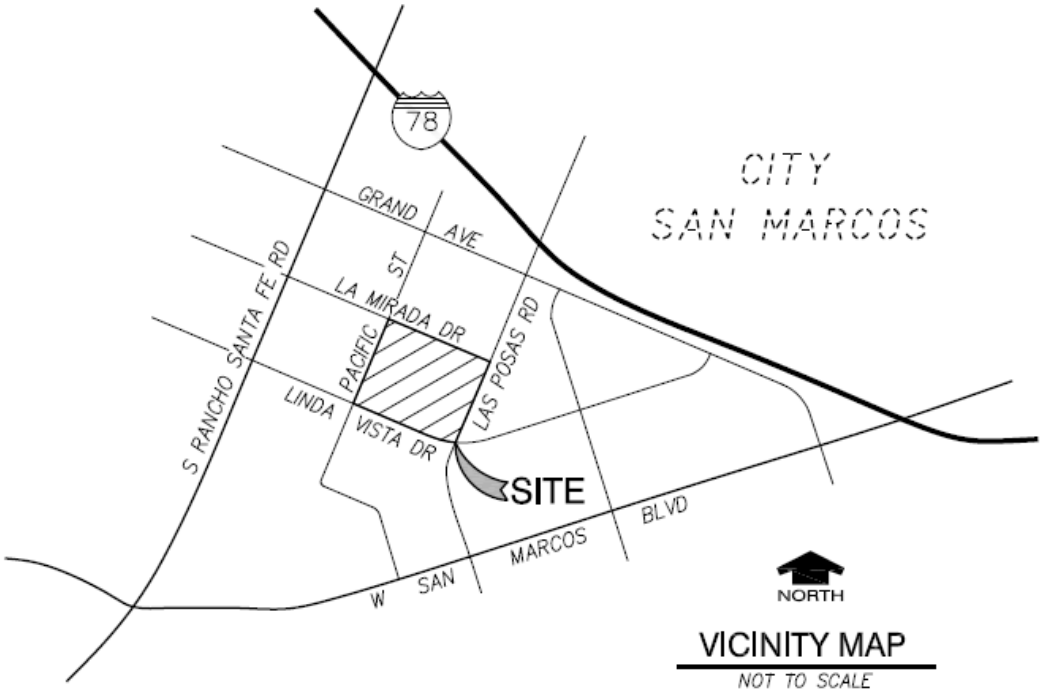

78
CITY
SAN MARCOS
GRAND AVE
ST
LA MIRADA DR
PACIFIC
LINDA VISTA DR
S RANCHO SANTA FE RD
LAS POSAS RD
SITE
W SAN MARCOS BLVD
NORTH
VICINITY MAP
NOT TO SCALE

Exhibit A

Exhibit B

FEMA FIRM Panel

National Flood Hazard Layer FIRMette

FEMA

117°12'6"W 33°8'37"N

117°11'28"W 33°8'7"N

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

1:6,000

Legend

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

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

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

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

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

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

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

N

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

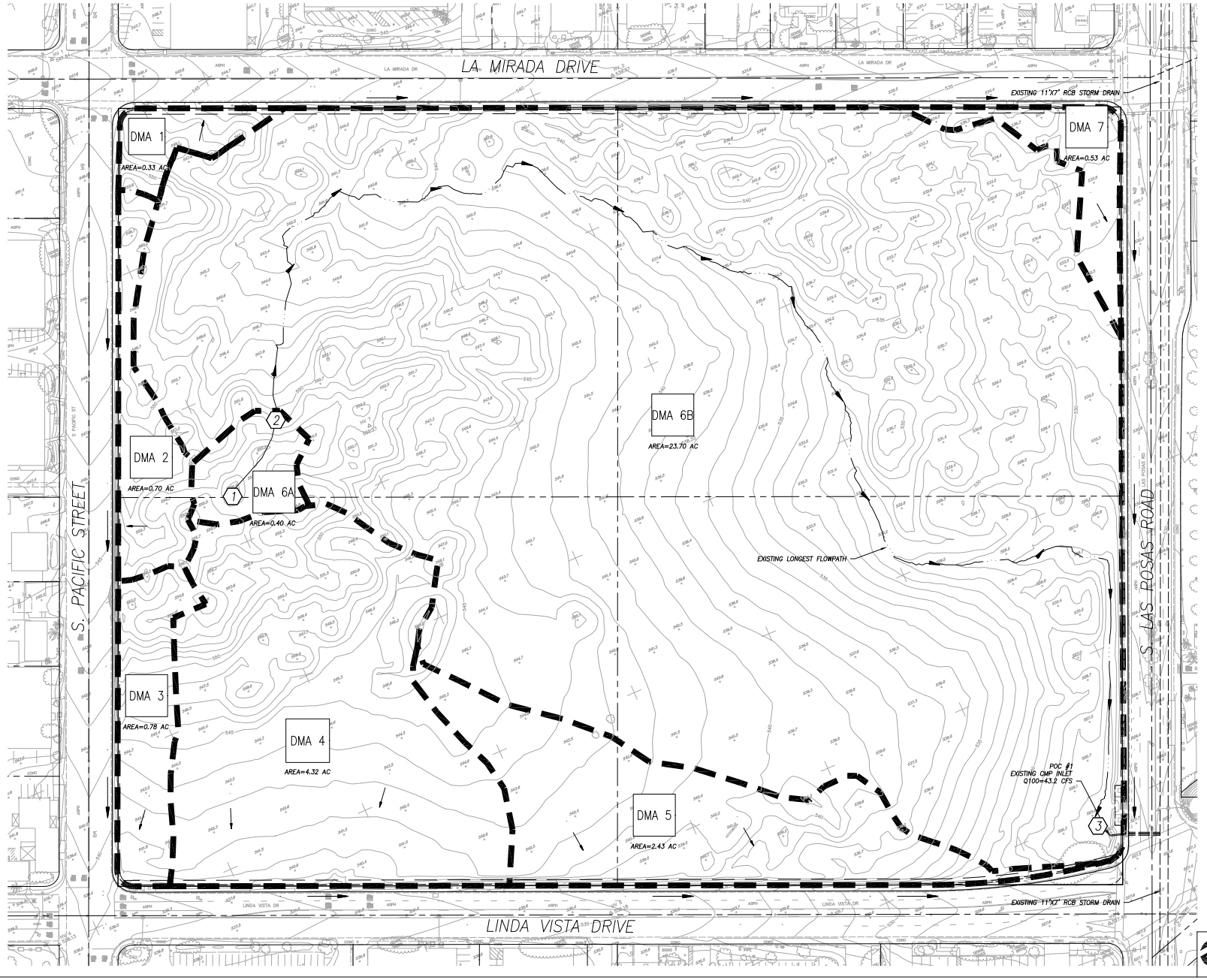
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/24/2020 at 5:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

Exhibit C

Existing Condition Hydrology Map



LEGEND

DMA NUMBER — DMA #

DMA LIMITS

AES DRAINAGE NODE — 1

60 30 0 60 120 180

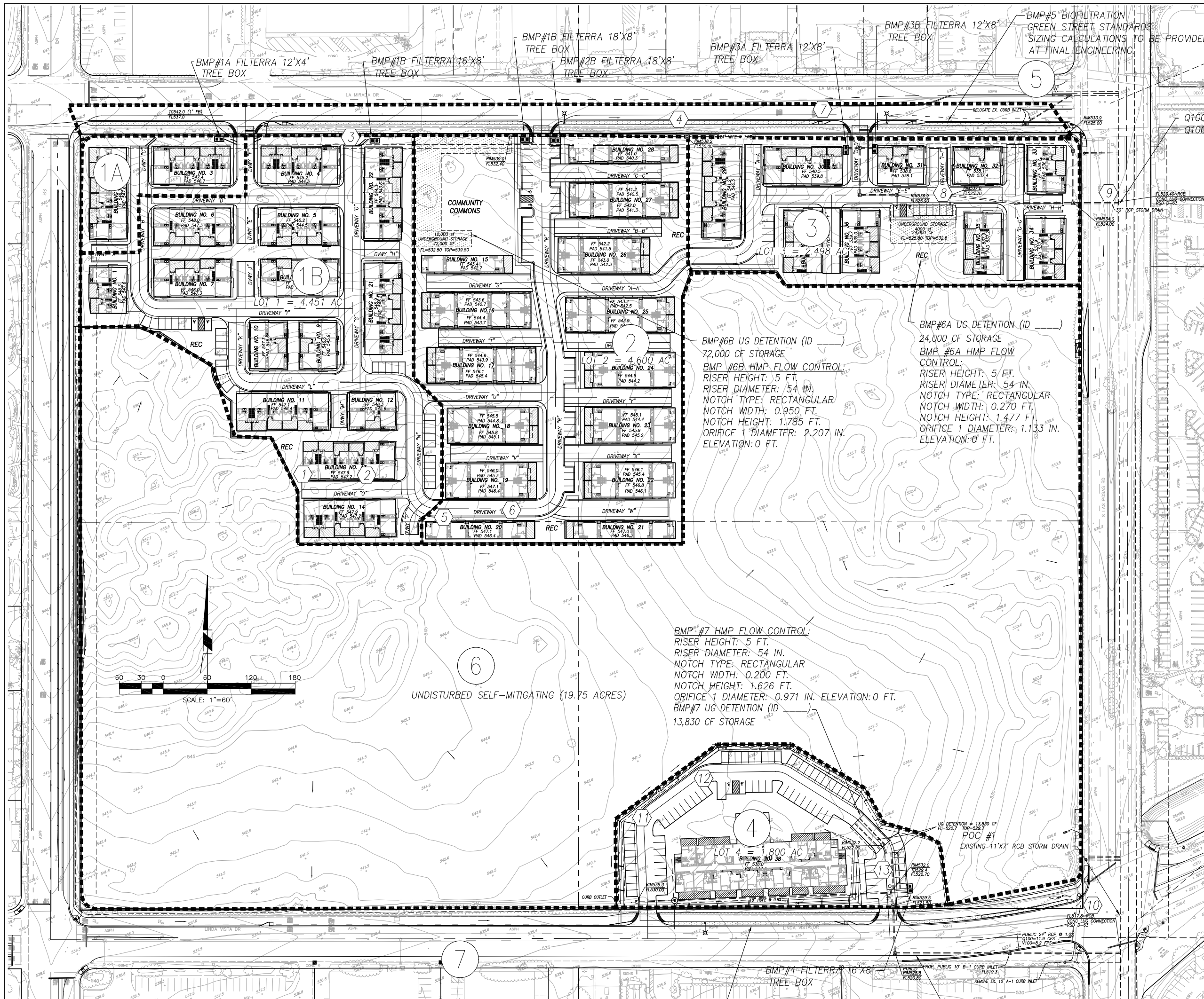
SCALE: 1"=60'

Lundstrom
Engineering and Surveying, Inc.
5333 Mission Center Road, #115 • San Diego, CA 92108
Phone (619) 814-1220 • Fax (619) 641-5910

PACIFIC PROPERTY
EXISTING DMA PLAN
APN: 219-222-01, 02, 03, & 04

JOB NO.: LX00-14 TMHC | DATE: 8-31-2020 | SHEET: 1 OF 1

Exhibit D



LEGEND

- (1) DMA NUMBER
- DRAINAGE MANAGEMENT AREA (DMA)
- STORMWATER VAULT WITH HMP FLOW CONTROL (PROJECT TOTAL = 110,000 CF)
- PROPOSED FILTERRA = 7 EACH
- BIOFILTRATION BASIN (GREEN STREET STANDARDS)
- AES DRAINAGE NODE

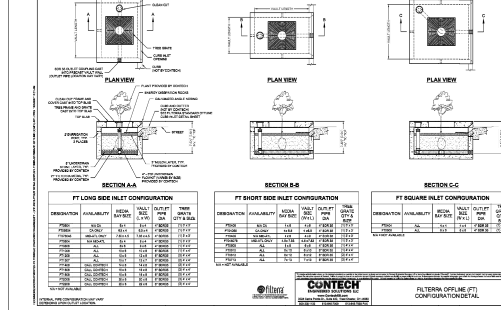
TOTAL AREA = 33.2 ACRES
DISTURBED AREA = 13.4 ACRES
HYDROLOGIC SOIL GROUP D
DEPTH TO GROUNDWATER > 15 FEET
NO EXISTING NATURAL HYDROLOGIC FEATURES
NO CRITICAL COARSE SEDIMENT YIELD AREAS (CCSYA) EXISTS ON SITE.

Automated Worksheet B.1: Calculation of Design Capture Volume (V2.0)

1	Drainage Basin ID or Name	DMA 1A	DMA 1B	DMA 2	DMA 3	DMA 4	DMA 5	DMA 7	unitless
2	85th Percentile 24-hr Storm Depth	0.75	0.75	0.75	0.75	0.75	0.75	0.75	inches
3	Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	19,800	68,600	190,940	81,675	40,000	51,250	57,200	sq-ft
4	Semi-Pervious Surfaces Not Serving as Dispersion Area (C=0.30)								sq-ft
5	Engineered Pervious Surfaces Not Serving as Dispersion Area (C=0.10)	4,900	17,200	56,400	27,225	38,600			sq-ft
6	Natural Type A Soil Not Serving as Dispersion Area (C=0.10)								sq-ft
7	Natural Type B Soil Not Serving as Dispersion Area (C=0.14)								sq-ft
8	Natural Type C Soil Not Serving as Dispersion Area (C=0.23)								sq-ft
9	Natural Type D Soil Not Serving as Dispersion Area (C=0.30)								sq-ft
10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	No	No	No	No	No	No	yes/no
11	Impervious Surfaces **Directed to Dispersion Area** per SD-B (Ci=0.90)								sq-ft
12	Semi-Pervious Surfaces **Serving as Dispersion Area** per SD-B (Ci=0.30)								sq-ft
13	Engineered Pervious Surfaces **Serving as Dispersion Area** per SD-B (Ci=0.10)								sq-ft
14	Natural Type A Soil **Serving as Dispersion Area** per SD-B (Ci=0.10)								sq-ft
15	Natural Type B Soil **Serving as Dispersion Area** per SD-B (Ci=0.14)								sq-ft
16	Natural Type C Soil **Serving as Dispersion Area** per SD-B (Ci=0.23)								sq-ft
17	Natural Type D Soil **Serving as Dispersion Area** per SD-B (Ci=0.30)								sq-ft
18	Number of Tree Wells Proposed per SD-A							~~6~~	#
19	Average Mature Tree Canopy Diameter							~~20~~	ft
20	Number of Rain Barrels Proposed per SD-E								#
21	Average Rain Barrel Size								gal
22	Total Tributary Area	24,700	85,800	247,340	108,900	78,600	51,250	57,200	sq-ft
23	Initial Runoff Factor for Standard Drainage Areas	0.74	0.74	0.72	0.70	0.51	0.90	0.90	unitless
24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
25	Initial Weighted Runoff Factor	0.74	0.74	0.72	0.70	0.51	0.90	0.90	unitless
26	Initial Design Capture Volume	1,142	3,968	11,130	4,764	2,505	2,883	3,218	cubic-feet
27	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	sq-ft
28	Total Pervious Dispersion Area	0	0	0	0	0	0	0	sq-ft
29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
30	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
31	Runoff Factor After Dispersion Techniques	0.74	0.74	0.72	0.70	0.51	0.90	0.90	unitless
32	Design Capture Volume After Dispersion Techniques	1,142	3,968	11,130	4,764	2,505	2,883	3,218	cubic-feet
33	Total Tree Well Volume Reduction	0	0	0	0	0	0	0	cubic-feet
34	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	cubic-feet
35	Final Adjusted Runoff Factor	0.74	0.74	0.72	0.70	0.51	0.90	0.90	unitless
36	Final Effective Tributary Area	18,278	63,492	178,085	76,230	40,086	46,125	51,480	sq-ft
37	Initial Design Capture Volume Retained by Site Design Elements	0	0	0	0	0	0	0	cubic-feet
38	Final Design Capture Volume Tributary to BMP	1,142	3,968	11,130	4,764	2,505	2,883	3,218	cubic-feet

Automated Worksheet B.3: BMP Performance (V2.0)

1	Drainage Basin ID or Name	DMA 1A	DMA 1B	DMA 2	DMA 3	DMA 4	DMA 5	DMA 7	sq-ft
2	Design Infiltration Rate Recommended	0.000	0.000	0.000	0.000	0.000	0.000	0.000	in/hr
3	Design Capture Volume Tributary to BMP	1,142	3,968	11,130	4,764	2,505	2,883	3,218	cubic-feet
4	Is BMP Vegetated or Unvegetated?	Vegetated	Vegetated	Vegetated	Vegetated	Vegetated	Vegetated	Vegetated	unitless
5	Is BMP Impermeably Lined or Unlined?	Lined	Lined	Lined	Lined	Lined	Lined	Lined	unitless
6	Does BMP Have an Underdrain?	Underdrain	Underdrain	Underdrain	Underdrain	Underdrain	Underdrain	Underdrain	unitless
7	Does BMP Utilize Standard or Specialized Media?	Specialized	Specialized	Specialized	Specialized	Specialized	Standard	Standard	unitless
8	Provided Surface Area	48	128	300	192	128	3,700	1,600	sq-ft
9	Provided Surface Ponding Depth	6	6	6	6	6	6	6	inches
10	Provided Soil Media Thickness	21	21	21	21	21	18	18	inches
11	Provided Gravel Thickness (Total Thickness)	12	12	12	12	12	18	18	inches
12	Underdrain Offset	3	3	3	3	3	3	3	inches
13	Diameter of Underdrain or Hydromod Orifice (Select Smallest)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	inches
14	Specialized Soil Media Filtration Rate	175.00	175.00	175.00	175.00	175.00		~~175.00~~	in/hr
15	Specialized Soil Media Pore Space for Retention							~~0.20~~	unitless
16	Specialized Soil Media Pore Space for Biofiltration							~~0.20~~	unitless
17	Specialized Gravel Media Pore Space							~~0.40~~	unitless
18	Volume Infiltrated Over 6 Hour Storm	0	0	0	0	0	0	0	cubic-feet
19	Ponding Pore Space Available for Retention	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
20	Soil Media Pore Space Available for Retention	0.05	0.05	0.05	0.05	0.05	0.05	0.20	unitless
21	Gravel Pore Space Available for Retention (Above Underdrain)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
22	Gravel Pore Space Available for Retention (Below Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
23	Effective Retention Depth	2.25	2.25	2.25	2.25	2.25	2.10	4.80	inches
24	Fraction of DCV Retained (Independent of Drawdown Time)	0.01	0.01	0.01	0.01	0.01	0.22	0.20	ratio
25	Calculated Retention Storage Drawdown Time	120	120	120	120	120	120	120	hours
26	Efficacy of Retention Processes	0.01	0.01	0.01	0.01	0.01	0.24	0.22	ratio
27	Volume Retained by BMP (Considering Drawdown Time)	14	48	134	58	30	687	711	cubic-feet
28	Design Capture Volume Remaining for Biofiltration	1,128	3,920	10,996	4,706	2,475	2,196	2,507	cubic-feet
29	Max Hydromod Flow Rate through Underdrain	2.7446	2.7446	2.7446	2.7446	2.7446	2.8704	2.8704	cfs
30	Max Soil Filtration Rate Allowed by Underdrain Orifice	2,470.18	926.32	395.23	617.54	926.32	33.51	77.50	in/hr
31	Soil Media Filtration Rate per Specifications	175.00	175.00	175.00	175.00	175.00	5.00	175.00	in/hr
32	Soil Media Filtration Rate to be used for Sizing	175.00	175.00	175.00	175.00	175.00	5.00	77.50	in/hr
33	Depth Biofiltered Over 6 Hour Storm	1050.00	1050.00	1050.00	1050.00	1050.00	30.00	465.01	inches
34	Ponding Pore Space Available for Biofiltration	1.00	1.00	1.00	1.00	1.00	1.00	1.00	unitless
35	Soil Media Pore Space Available for Biofiltration	0.20	0.20	0.20	0.20	0.20	0.20	0.20	unitless
36	Gravel Pore Space Available for Biofiltration (Above Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
37	Effective Depth of Biofiltration Storage	13.80	13.80	13.80	13.80	13.80	15.60	15.60	inches
38	Drawdown Time for Surface Ponding	0	0	0	0	0	1	0	hours
39	Drawdown Time for Effective Biofiltration Depth	0	0	0	0	0	3	0	hours
40	Total Depth Biofiltered	1063.80	1063.80	1063.80	1063.80	1063.80	45.60	480.61	inches
41	Option 1 - Biofilter 1.50 DCV: Target Volume	1,692	5,880	16,493	7,060	3,712	3,295	3,760	cubic-feet
42	Option 1 - Provided Biofiltration Volume	1,692	5,880	16,493	7,060	3,712	3,295	3,760	cubic-feet
43	Option 2 - Store 0.75 DCV: Target Volume	846	2,940	8,247	3,530	1,856	1,647	1,880	cubic-feet
44	Option 2 - Provided Storage Volume	55	147	345	221	147	1,647	1,880	cubic-feet
45	Portion of Biofiltration Performance Standard Satisfied	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
46	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	yes/no
47	Overall Portion of Performance Standard Satisfied (BMP Efficacy Factor)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
48	**Deficit of Effectively Treated Stormwater**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	cubic-feet



SOURCE CONTROL BMPs

SOURCE CONTROL BMPS	PROJECT IMPLEMENTATION
(1) 4.2.1 & 4.2.2 STORM DRAIN INLETS	MARK ALL INLETS WITH THE WORDS "NO DUMPING! DRAINS TO WATERWAYS" IN ENGLISH AND "NO CONTAMINE" IN SPANISH. MAINTAIN AND PERIODICALLY REPLACE INLET MARKINGS. SEE APPLICABLE OPERATIONAL BMPS IN CASQA FACT SHEET SC-44, "DRAINAGE SYSTEM MAINTENANCE."
(2) 4.2.6.E LANDSCAPE/OUTDOOR PESTICIDE USE	LANDSCAPE HAS BEEN DESIGNED PER CITY OF SAN SAN DIEGO LANDSCAPE STANDARDS TO MINIMIZE IRRIGATION AND RUNOFF, AND TO MINIMIZE THE USE OF FERTILIZERS AND PESTICIDES THAT CAN CONTRIBUTE TO STORMWATER POLLUTION. SEE APPLICABLE BMPS IN CASQA FACT SHEETS SC-41, "BUILDING AND GROUNDS MAINTENANCE."
(3) 4.2.5 TRASH BINS	TRASH BIN FOR EACH UNIT SHALL HAVE LIDS AND BE STORED IN GARAGE. SEE CASQA FACT SHEET SC-34, "WASTE HANDLING AND DISPOSAL."
(4) 4.2.6.Q PLAZAS, SIDEWALKS, AND PARKING LOTS	PLAZAS, SIDEWALKS, AND PARKING LOTS SHALL BE SWEPT REGULARLY AND ONCE PRIOR TO OCTOBER 1ST TO PREVENT THE ACCUMULATION OF LITTER AND DEBRIS. SEE CASQA FACT SHEET SC-41, "BUILDING AND GROUNDS MAINTENANCE."

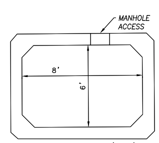
SITE DESIGN BMPS

4.3.3 — 4.3.3 MINIMIZE IMPERVIOUS AREA: RESIDENTIAL STREETS ARE AT THE MINIMUM REQUIRED WIDTH PER COUNTY STANDARDS.

4.3.4 — 4.3.4 MINIMIZE SOIL COMPACTION: RE-TILL SOILS COMPACTED BY CONSTRUCTION VEHICLES. COLLECT AND RE-USE UPPER SOIL LAYERS DEVELOPMENT SITE CONTAINING ORGANIC MATERIALS.

4.3.5 — 4.3.5 RUNOFF FROM WALKS AND ROOF DRAIN DOWNSPOUTS SHALL DISCHARGE ONTO SPLASH BLOCKS AND FLOW THROUGH ADJACENT LANDSCAPE AREA BEFORE ENTERING BIORETENTION BASINS

4.3.7 — 4.3.7 LANDSCAPING WITH DROUGHT TOLERANT SPECIES



TRAFFIC RATED (H-20)
BIOCLEAN FASTCAST (OR EQUIVALENT)

PROPOSED PRECAST DETENTION STORAGE

NOT TO SCALE

Lundstrom Engineering and Surveying, Inc.
5333 Mission Center Road, #115 • San Diego, CA 92108
Phone (619) 814-1220 • Fax (619) 641-5910

PACIFIC NORTH
PROPOSED DMA/HMP SITE MAP
APN: 219-222-01, 02, 03, & 04

JOB NO.: L300-14 | DATE: 01-29-2024 | SHEET: 1 OF 1

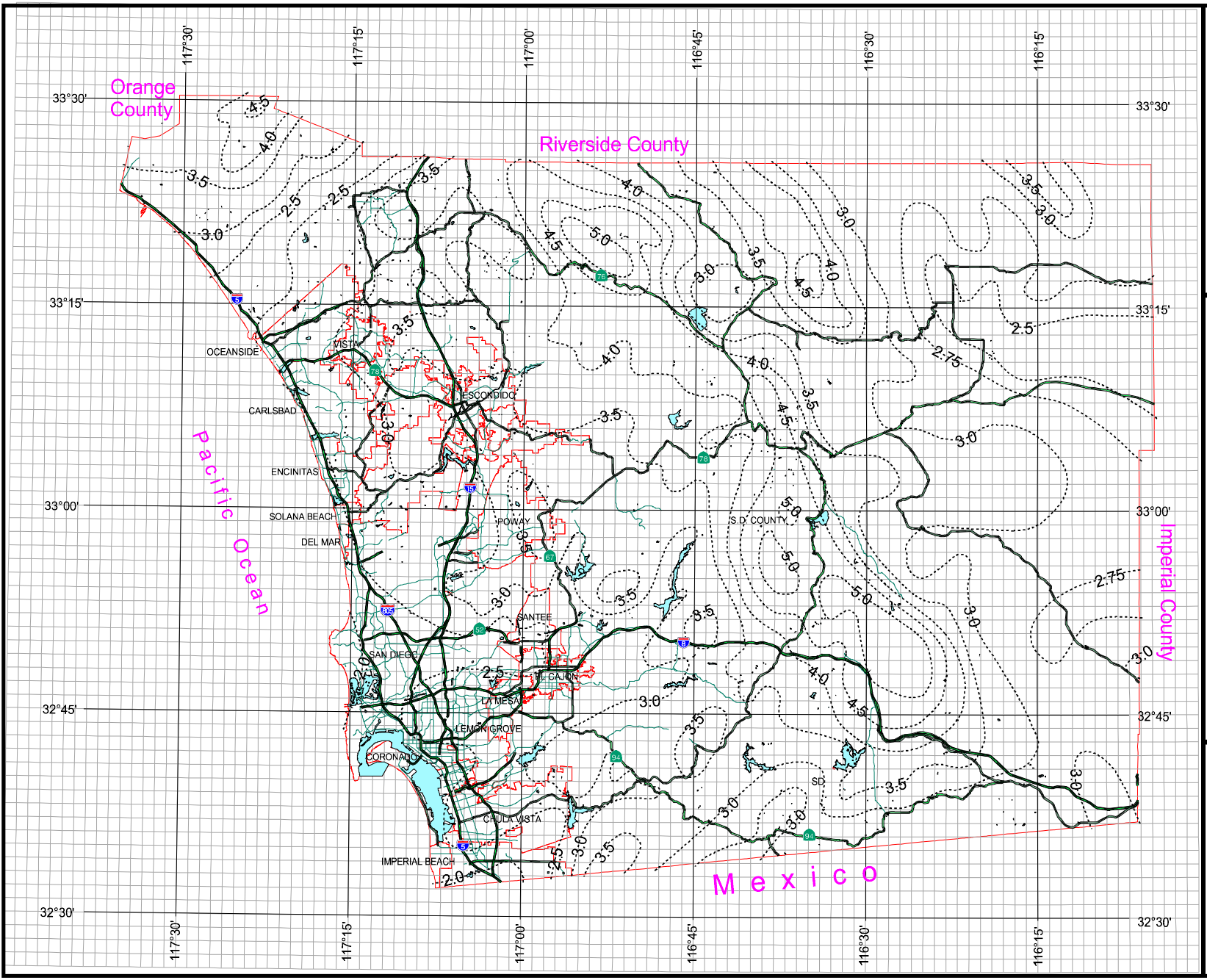
APPENDIX A
Hydrologic Information

This Section Contains:

- Precipitation Analysis

County of San Diego Hydrology Manual

Rainfall Isopluvials



100 Year Rainfall Event - 6 Hours

Isopluvial (inches)

DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N
W E
S

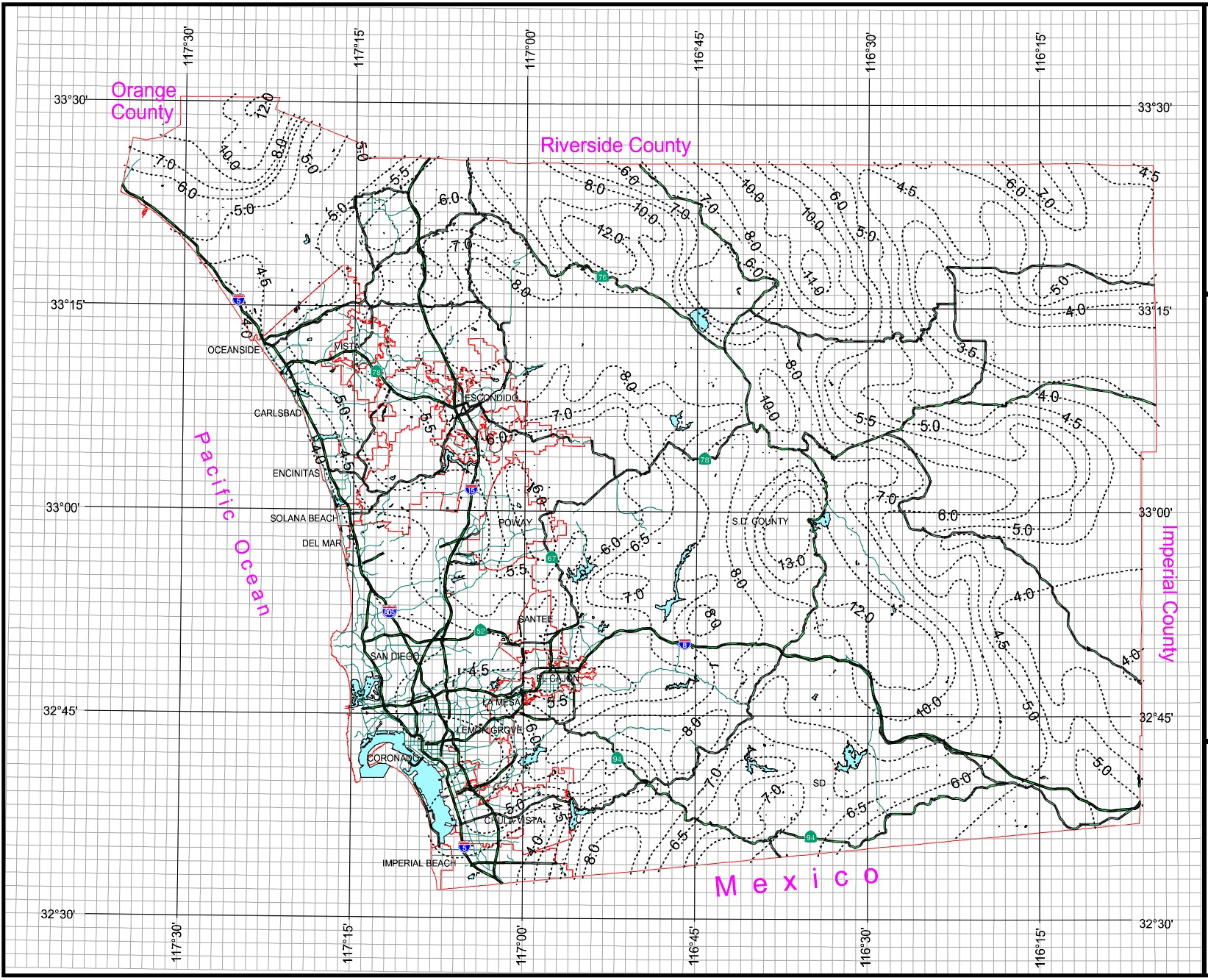
3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)



DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N
W E
S

3 0 3 Miles

APPENDIX B
Hydrologic Calculations

This Section Contains:

- Existing Condition Analysis
- Proposed Condition Analysis

Existing Condition Analysis

```
________________________________________________________________________
___

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

             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2006 Advanced Engineering Software (aes)
              Ver. 2.0 Release Date: 06/01/2005  License ID 1553

                           Analysis prepared by:


□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□
                                 LUNDSTROM

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
□□□

  ************************** DESCRIPTION OF STUDY
**************************
 * L300-14 EXISTING 100 YEAR STORM EVENT
*
 *
*
 *
*

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

   FILE NAME: C:\PR30014.DAT
   TIME/DATE OF STUDY: 09:59 12/15/2021
 -----------------------------------------------------------------------
----
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 -----------------------------------------------------------------------
----
   2003 SAN DIEGO MANUAL CRITERIA

   USER SPECIFIED STORM EVENT(YEAR) = 100.00
   6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =
0.01
   SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
   NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
```

```
   *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

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.00 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      1.00 TO NODE      2.00 IS CODE =  21
 ----------------------------------------------------------------------------
----
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

============================================================================
===
   NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  88
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
   UPSTREAM ELEVATION(FEET) =    556.00
   DOWNSTREAM ELEVATION(FEET) =    553.00
   ELEVATION DIFFERENCE(FEET) =      3.00
   SUBAREA OVERLAND TIME OF FLOW(MIN.) =   11.295
   WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
            THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
            (Reference: Table 3-1B of Hydrology Manual)
            THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.140
   SUBAREA RUNOFF(CFS) =      0.72
   TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      0.72


****************************************************************************
***
   FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  51
 ----------------------------------------------------------------------------
----
   >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
================================================================================
   ELEVATION DATA: UPSTREAM(FEET) =    553.00  DOWNSTREAM(FEET) =
525.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =  2250.00   CHANNEL SLOPE =  0.0124
   CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   3.000
   MANNING'S FACTOR = 0.020   MAXIMUM DEPTH(FEET) =   3.00
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.714
   NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  88
   TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.42
   TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.07
   AVERAGE FLOW DEPTH(FEET) =   0.76   TRAVEL TIME(MIN.) =   7.40
   Tc(MIN.) =  18.70
   SUBAREA AREA(ACRES) =    23.70       SUBAREA RUNOFF(CFS) =   30.80
   AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
   TOTAL AREA(ACRES) =       24.1         PEAK FLOW RATE(CFS) =
31.32

   END OF SUBAREA CHANNEL FLOW HYDRAULICS:
   DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   6.00
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =    2550.00
FEET.


****************************************************************************
***
   FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
 ------------------------------------------------------------------------
----
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

================================================================================
===
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.714
   NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  88
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
   SUBAREA AREA(ACRES) =    9.15   SUBAREA RUNOFF(CFS) =   11.89
   TOTAL AREA(ACRES) =       33.2   TOTAL RUNOFF(CFS) =      43.22
   TC(MIN.) =  18.70

================================================================================
===
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)     =       33.2  TC(MIN.) =     18.70
   PEAK FLOW RATE(CFS)   =      43.22

================================================================================
===
```

==========
END OF RATIONAL METHOD ANALYSIS

Proposed Condition Analysis

San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2019 Version 9.1

Rational method hydrology program based on
San Diego County Flood Control Division 2003 hydrology manual
        Rational Hydrology Study   Date: 05/13/24

PROPOSED 100 YEAR PACIFIC
L30014PR

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

Program License Serial Number 6540

Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour, precipitation(inches) = 3.300
24 hour precipitation(inches) = 5.500
P6/P24 =   60.0%
San Diego hydrology manual 'C' values used

++
Process from Point/Station   1.000 to Point/Station   2.000
**** INITIAL AREA EVALUATION ****
_____
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL   ]
(43.0 DU/A or Less   )
Impervious value, Ai = 0.800
Sub-Area C Value = 0.790
Initial subarea total flow distance =   70.000(Ft.)
Highest elevation = 547.400(Ft.)
Lowest elevation = 546.700(Ft.)
Elevation difference =   0.700(Ft.) Slope = 1.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 65.00 (Ft)

```
for the top area slope value of   1.00 %, in a development type of
 43.0 DU/A or Less
In Accordance With Table 3-2
Initial Area Time of Concentration =   4.70 minutes
 (for slope value of   1.00 %)
Calculated TC of    4.700 minutes is less than 5 minutes,
 resetting TC to 5.0 minutes for rainfall intensity calculations
Rainfall intensity (I) =      8.695(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.790
Subarea runoff =      1.374(CFS)
Total initial stream area =        0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        2.000 to Point/Station        3.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   546.700(Ft.)
End of street segment elevation =   542.100(Ft.)
Length of street segment  =   600.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.732(CFS)
Depth of flow =   0.523(Ft.), Average velocity =   2.880(Ft/s)
Warning: depth of flow exceeds top of curb
Distance that curb overflow reaches into property =    0.94(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  19.838(Ft.)
Flow velocity =   2.88(Ft/s)
Travel time =    3.47 min.     TC =    8.17  min.
 Adding area flow to street
Rainfall intensity (I) =      6.334(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL                    ]
(43.0 DU/A or Less      )
Impervious value, Ai = 0.800
```

```
Sub-Area C Value = 0.790
Rainfall intensity =      6.334(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.790  CA =      3.476
Subarea runoff =     20.642(CFS) for      4.200(Ac.)
Total runoff =     22.015(CFS)  Total area =       4.400(Ac.)
Street flow at end of street =     22.015(CFS)
Half street flow at end of street =     22.015(CFS)
Depth of flow =   0.626(Ft.), Average velocity =   3.342(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    5.04(Ft.)
Flow width (from curb towards crown)=  22.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   535.000(Ft.)
Downstream point/station elevation =   531.000(Ft.)
Pipe length  =   450.00(Ft.) Slope =   0.0089  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.015(CFS)
Given pipe size =     24.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     1.404(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      4.260(Ft.)
 Minor friction loss =      1.144(Ft.)  K-factor =   1.50
Pipe flow velocity =      7.01(Ft/s)
Travel time through pipe =    1.07 min.
Time of concentration (TC) =     9.24 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.400(Ac.)
Runoff from this stream =     22.015(CFS)
Time of concentration =    9.24 min.
Rainfall intensity =     5.850(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        6.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Decimal fraction soil group A = 0.000
```

```
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL                    ]
(43.0 DU/A or Less      )
Impervious value, Ai = 0.800
Sub-Area C Value = 0.790
Initial subarea total flow distance  =   70.000(Ft.)
Highest elevation =  546.600(Ft.)
Lowest elevation =  546.000(Ft.)
Elevation difference =    0.600(Ft.) Slope =  0.857 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 65.00 (Ft)
for the top area slope value of   0.86 %, in a development type of
 43.0 DU/A or Less
In Accordance With Table 3-2
Initial Area Time of Concentration =   4.70 minutes
 (for slope value of   1.00 %)
Calculated TC of    4.700 minutes is less than 5 minutes,
 resetting TC to 5.0 minutes for rainfall intensity calculations
Rainfall intensity (I) =      8.695(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.790
Subarea runoff =      1.374(CFS)
Total initial stream area =        0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        4.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   546.000(Ft.)
End of street segment elevation =   538.000(Ft.)
Length of street segment  =   800.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.702(CFS)
Depth of flow =   0.499(Ft.), Average velocity =   3.251(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.635(Ft.)
```

```
Flow velocity =   3.25(Ft/s)
Travel time =    4.10 min.     TC =    8.80  min.
 Adding area flow to street
Rainfall intensity (I) =      6.038(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL                    ]
(43.0 DU/A or Less      )
Impervious value, Ai = 0.800
Sub-Area C Value = 0.790
Rainfall intensity =      6.038(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.790  CA =      3.634
Subarea runoff =     20.567(CFS) for      4.400(Ac.)
Total runoff =     21.941(CFS)  Total area =       4.600(Ac.)
Street flow at end of street =     21.941(CFS)
Half street flow at end of street =     21.941(CFS)
Depth of flow =   0.603(Ft.), Average velocity =   3.662(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    4.14(Ft.)
Flow width (from curb towards crown)=  22.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.600(Ac.)
Runoff from this stream =     21.941(CFS)
Time of concentration =    8.80 min.
Rainfall intensity =     6.038(In/Hr)
Summary of stream data:

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


1       22.015      9.24                5.850
2       21.941      8.80                6.038
Qmax(1) =
           1.000 *    1.000 *    22.015) +
           0.969 *    1.000 *    21.941) + =      43.275
Qmax(2) =
           1.000 *    0.952 *    22.015) +
           1.000 *    1.000 *    21.941) + =      42.905
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
      22.015      21.941
Maximum flow rates at confluence using above data:
       43.275       42.905
Area of streams before confluence:
        4.400        4.600
Results of confluence:
Total flow rate =     43.275(CFS)
Time of concentration =     9.242 min.
Effective stream area after confluence =      9.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** 6 HOUR HYDROGRAPH ****
________________________________________________________________________
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003


Time of Concentration =   9.24
Basin Area =     9.00 Acres
6 Hour Rainfall =  3.300 Inches
Runoff Coefficient =  0.790
Peak Discharge =    43.27 CFS
     Time (Min)     Discharge (CFS)
       0               0.000
       9               1.380
       18               1.426
       27               1.450
       36               1.503
       45               1.530
       54               1.591
       63               1.623
       72               1.693
       81               1.731
       90               1.814
       99               1.860
       108               1.961
       117               2.016
       126               2.141
       135               2.211
       144               2.371
       153               2.463
       162               2.677
       171               2.804
       180               3.110
       189               3.298
       198               3.780
```

207	4.099
216	5.010
225	5.706
234	8.378
243	11.805
252	43.275
261	6.720
270	4.496
279	3.518
288	2.947
297	2.565
306	2.288
315	2.076
324	1.909
333	1.772
342	1.657
351	1.560
360	1.476
369	1.403

++

6 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 1 Minute intervals ((CFS))

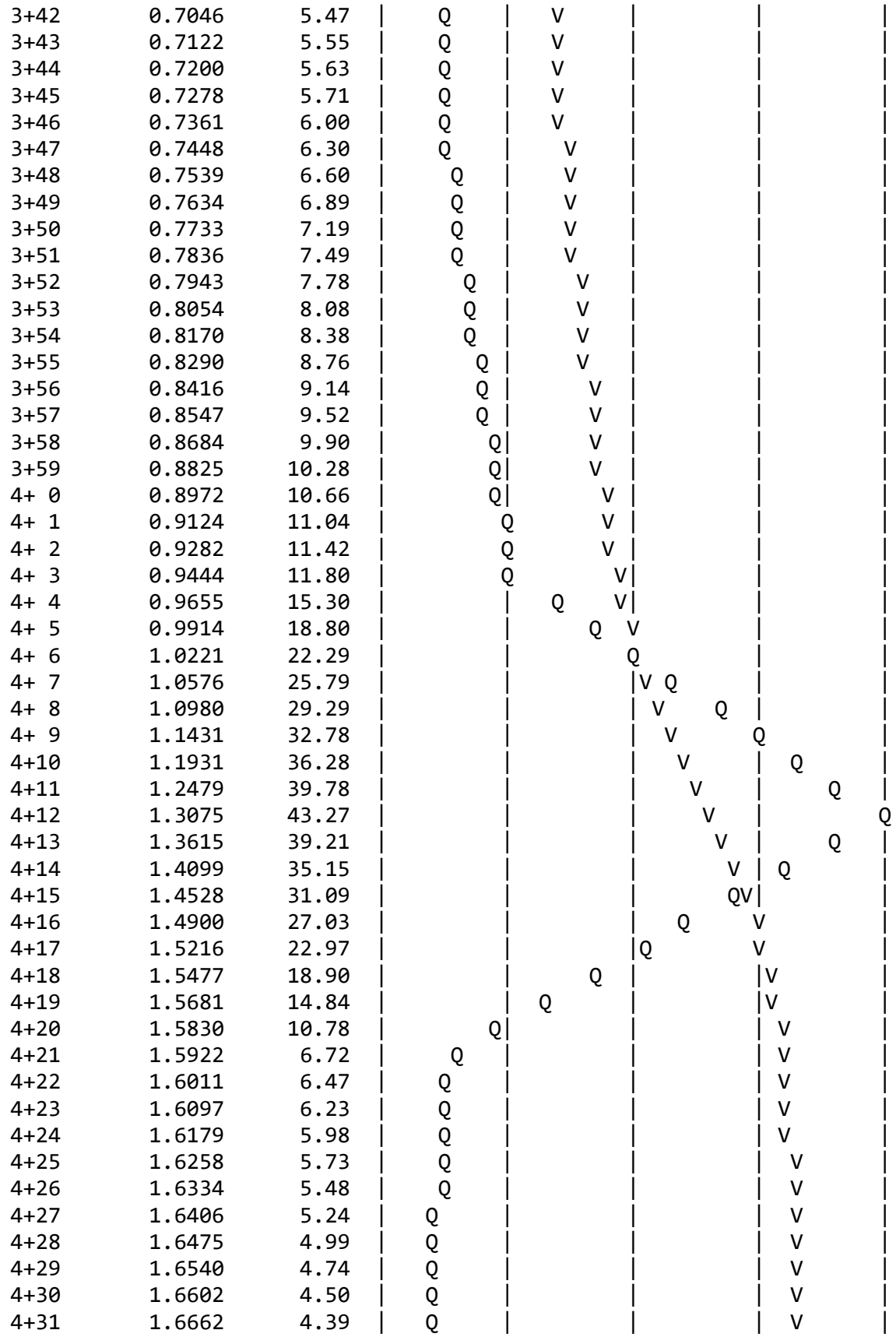
Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.8	21.6	32.5	43.3
0+ 0	0.0000	0.00	Q	|	|	|	|
0+ 1	0.0002	0.15	Q	|	|	|	|
0+ 2	0.0006	0.31	Q	|	|	|	|
0+ 3	0.0013	0.46	Q	|	|	|	|
0+ 4	0.0021	0.61	Q	|	|	|	|
0+ 5	0.0032	0.77	Q	|	|	|	|
0+ 6	0.0044	0.92	Q	|	|	|	|
0+ 7	0.0059	1.07	Q	|	|	|	|
0+ 8	0.0076	1.23	VQ	|	|	|	|
0+ 9	0.0095	1.38	VQ	|	|	|	|
0+10	0.0114	1.39	VQ	|	|	|	|
0+11	0.0133	1.39	VQ	|	|	|	|
0+12	0.0152	1.40	VQ	|	|	|	|
0+13	0.0172	1.40	VQ	|	|	|	|
0+14	0.0191	1.41	VQ	|	|	|	|
0+15	0.0211	1.41	VQ	|	|	|	|
0+16	0.0230	1.42	VQ	|	|	|	|
0+17	0.0250	1.42	VQ	|	|	|	|
0+18	0.0269	1.43	VQ	|	|	|	|
0+19	0.0289	1.43	VQ	|	|	|	|
0+20	0.0309	1.43	VQ	|	|	|	|
0+21	0.0328	1.43	VQ	|	|	|	|

```
0+22       0.0348      1.44  VQ        |          |          |          |
0+23       0.0368      1.44  VQ        |          |          |          |
0+24       0.0388      1.44  VQ        |          |          |          |
0+25       0.0408      1.44  VQ        |          |          |          |
0+26       0.0428      1.45  VQ        |          |          |          |
0+27       0.0448      1.45  VQ        |          |          |          |
0+28       0.0468      1.46  VQ        |          |          |          |
0+29       0.0488      1.46  VQ        |          |          |          |
0+30       0.0508      1.47  |Q        |          |          |          |
0+31       0.0528      1.47  |Q        |          |          |          |
0+32       0.0549      1.48  |Q        |          |          |          |
0+33       0.0569      1.49  |Q        |          |          |          |
0+34       0.0590      1.49  |Q        |          |          |          |
0+35       0.0610      1.50  |Q        |          |          |          |
0+36       0.0631      1.50  |Q        |          |          |          |
0+37       0.0652      1.51  |Q        |          |          |          |
0+38       0.0673      1.51  |Q        |          |          |          |
0+39       0.0693      1.51  |Q        |          |          |          |
0+40       0.0714      1.51  |Q        |          |          |          |
0+41       0.0735      1.52  |Q        |          |          |          |
0+42       0.0756      1.52  |Q        |          |          |          |
0+43       0.0777      1.52  |Q        |          |          |          |
0+44       0.0798      1.53  |Q        |          |          |          |
0+45       0.0819      1.53  |Q        |          |          |          |
0+46       0.0840      1.54  |Q        |          |          |          |
0+47       0.0862      1.54  |Q        |          |          |          |
0+48       0.0883      1.55  |Q        |          |          |          |
0+49       0.0905      1.56  |Q        |          |          |          |
0+50       0.0926      1.56  |Q        |          |          |          |
0+51       0.0948      1.57  |Q        |          |          |          |
0+52       0.0969      1.58  |Q        |          |          |          |
0+53       0.0991      1.58  |QV       |          |          |          |
0+54       0.1013      1.59  |QV       |          |          |          |
0+55       0.1035      1.59  |QV       |          |          |          |
0+56       0.1057      1.60  |QV       |          |          |          |
0+57       0.1079      1.60  |QV       |          |          |          |
0+58       0.1101      1.60  |QV       |          |          |          |
0+59       0.1123      1.61  |QV       |          |          |          |
1+ 0       0.1146      1.61  |QV       |          |          |          |
1+ 1       0.1168      1.62  |QV       |          |          |          |
1+ 2       0.1190      1.62  |QV       |          |          |          |
1+ 3       0.1213      1.62  |QV       |          |          |          |
1+ 4       0.1235      1.63  |QV       |          |          |          |
1+ 5       0.1258      1.64  |QV       |          |          |          |
1+ 6       0.1280      1.65  |QV       |          |          |          |
1+ 7       0.1303      1.65  |QV       |          |          |          |
1+ 8       0.1326      1.66  |QV       |          |          |          |
1+ 9       0.1349      1.67  |QV       |          |          |          |
1+10       0.1372      1.68  |QV       |          |          |          |
1+11       0.1395      1.69  |QV       |          |          |          |
```

```
1+12       0.1419      1.69  |QV       |         |         |         |
1+13       0.1442      1.70  |QV       |         |         |         |
1+14       0.1465      1.70  |QV       |         |         |         |
1+15       0.1489      1.71  |Q V      |         |         |         |
1+16       0.1512      1.71  |Q V      |         |         |         |
1+17       0.1536      1.71  |Q V      |         |         |         |
1+18       0.1560      1.72  |Q V      |         |         |         |
1+19       0.1583      1.72  |Q V      |         |         |         |
1+20       0.1607      1.73  |Q V      |         |         |         |
1+21       0.1631      1.73  |Q V      |         |         |         |
1+22       0.1655      1.74  |Q V      |         |         |         |
1+23       0.1679      1.75  |Q V      |         |         |         |
1+24       0.1703      1.76  |Q V      |         |         |         |
1+25       0.1728      1.77  |Q V      |         |         |         |
1+26       0.1752      1.78  |Q V      |         |         |         |
1+27       0.1777      1.79  |Q V      |         |         |         |
1+28       0.1802      1.80  |Q V      |         |         |         |
1+29       0.1826      1.81  |Q V      |         |         |         |
1+30       0.1851      1.81  |Q V      |         |         |         |
1+31       0.1877      1.82  |Q V      |         |         |         |
1+32       0.1902      1.82  |Q V      |         |         |         |
1+33       0.1927      1.83  |Q V      |         |         |         |
1+34       0.1952      1.83  |Q V      |         |         |         |
1+35       0.1977      1.84  |Q  V     |         |         |         |
1+36       0.2003      1.84  |Q  V     |         |         |         |
1+37       0.2028      1.85  |Q  V     |         |         |         |
1+38       0.2054      1.85  |Q  V     |         |         |         |
1+39       0.2080      1.86  |Q  V     |         |         |         |
1+40       0.2105      1.87  |Q  V     |         |         |         |
1+41       0.2131      1.88  |Q  V     |         |         |         |
1+42       0.2157      1.89  |Q  V     |         |         |         |
1+43       0.2184      1.90  |Q  V     |         |         |         |
1+44       0.2210      1.92  |Q  V     |         |         |         |
1+45       0.2236      1.93  |Q  V     |         |         |         |
1+46       0.2263      1.94  |Q  V     |         |         |         |
1+47       0.2290      1.95  |Q  V     |         |         |         |
1+48       0.2317      1.96  |Q  V     |         |         |         |
1+49       0.2344      1.97  |Q  V     |         |         |         |
1+50       0.2371      1.97  |Q  V     |         |         |         |
1+51       0.2399      1.98  |Q  V     |         |         |         |
1+52       0.2426      1.99  |Q  V     |         |         |         |
1+53       0.2453      1.99  |Q  V     |         |         |         |
1+54       0.2481      2.00  |Q   V    |         |         |         |
1+55       0.2508      2.00  |Q   V    |         |         |         |
1+56       0.2536      2.01  |Q   V    |         |         |         |
1+57       0.2564      2.02  |Q   V    |         |         |         |
1+58       0.2592      2.03  |Q   V    |         |         |         |
1+59       0.2620      2.04  |Q   V    |         |         |         |
2+ 0       0.2648      2.06  |Q   V    |         |         |         |
2+ 1       0.2677      2.07  |Q   V    |         |         |         |
```

2+ 2	0.2706	2.09	|Q V |	|	|	|
2+ 3	0.2735	2.10	|Q V |	|	|	|
2+ 4	0.2764	2.11	|Q V |	|	|	|
2+ 5	0.2793	2.13	|Q V |	|	|	|
2+ 6	0.2822	2.14	|Q V |	|	|	|
2+ 7	0.2852	2.15	|Q V |	|	|	|
2+ 8	0.2882	2.16	|Q V |	|	|	|
2+ 9	0.2912	2.16	| Q V |	|	|	|
2+10	0.2942	2.17	| Q V |	|	|	|
2+11	0.2972	2.18	| Q V |	|	|	|
2+12	0.3002	2.19	| Q V |	|	|	|
2+13	0.3032	2.20	| Q V |	|	|	|
2+14	0.3062	2.20	| Q V |	|	|	|
2+15	0.3093	2.21	| Q V |	|	|	|
2+16	0.3123	2.23	| Q V |	|	|	|
2+17	0.3154	2.25	| Q V |	|	|	|
2+18	0.3186	2.26	| Q V |	|	|	|
2+19	0.3217	2.28	| Q V |	|	|	|
2+20	0.3249	2.30	| Q V |	|	|	|
2+21	0.3281	2.32	| Q V |	|	|	|
2+22	0.3313	2.34	| Q V |	|	|	|
2+23	0.3345	2.35	| Q V |	|	|	|
2+24	0.3378	2.37	| Q V |	|	|	|
2+25	0.3411	2.38	| Q V |	|	|	|
2+26	0.3444	2.39	| Q V |	|	|	|
2+27	0.3477	2.40	| Q V |	|	|	|
2+28	0.3510	2.41	| Q V |	|	|	|
2+29	0.3543	2.42	| Q V |	|	|	|
2+30	0.3577	2.43	| Q V |	|	|	|
2+31	0.3611	2.44	| Q V |	|	|	|
2+32	0.3644	2.45	| Q V |	|	|	|
2+33	0.3678	2.46	| Q V |	|	|	|
2+34	0.3712	2.49	| Q V |	|	|	|
2+35	0.3747	2.51	| Q V |	|	|	|
2+36	0.3782	2.53	| Q V |	|	|	|
2+37	0.3817	2.56	| Q V |	|	|	|
2+38	0.3853	2.58	| Q V |	|	|	|
2+39	0.3889	2.61	| Q V |	|	|	|
2+40	0.3925	2.63	| Q V |	|	|	|
2+41	0.3961	2.65	| Q V |	|	|	|
2+42	0.3998	2.68	| Q V |	|	|	|
2+43	0.4035	2.69	| Q V |	|	|	|
2+44	0.4073	2.71	| Q V |	|	|	|
2+45	0.4110	2.72	| Q V |	|	|	|
2+46	0.4148	2.73	| Q V |	|	|	|
2+47	0.4186	2.75	| Q V |	|	|	|
2+48	0.4224	2.76	| Q V |	|	|	|
2+49	0.4262	2.78	| Q V |	|	|	|
2+50	0.4300	2.79	| Q V |	|	|	|
2+51	0.4339	2.80	| Q V |	|	|	|

2+52	0.4378	2.84	Q V				
2+53	0.4418	2.87	Q V				
2+54	0.4458	2.91	Q V				
2+55	0.4498	2.94	Q V				
2+56	0.4539	2.97	Q V				
2+57	0.4580	3.01	Q V				
2+58	0.4622	3.04	Q V				
2+59	0.4665	3.08	Q V				
3+ 0	0.4708	3.11	Q V				
3+ 1	0.4751	3.13	Q V				
3+ 2	0.4794	3.15	Q V				
3+ 3	0.4838	3.17	Q V				
3+ 4	0.4882	3.19	Q V				
3+ 5	0.4926	3.21	Q V				
3+ 6	0.4971	3.23	Q V				
3+ 7	0.5015	3.26	Q V				
3+ 8	0.5061	3.28	Q V				
3+ 9	0.5106	3.30	Q V				
3+10	0.5152	3.35	Q V				
3+11	0.5199	3.40	Q V				
3+12	0.5247	3.46	Q V				
3+13	0.5295	3.51	Q V				
3+14	0.5344	3.57	Q V				
3+15	0.5394	3.62	Q V				
3+16	0.5445	3.67	Q V				
3+17	0.5496	3.73	Q V				
3+18	0.5548	3.78	Q V				
3+19	0.5601	3.82	Q V				
3+20	0.5654	3.85	Q V				
3+21	0.5707	3.89	Q V				
3+22	0.5761	3.92	Q V				
3+23	0.5816	3.96	Q V				
3+24	0.5871	3.99	Q V				
3+25	0.5926	4.03	Q V				
3+26	0.5982	4.06	Q V				
3+27	0.6039	4.10	Q V				
3+28	0.6096	4.20	Q V				
3+29	0.6156	4.30	Q V				
3+30	0.6216	4.40	Q V				
3+31	0.6278	4.50	Q V				
3+32	0.6342	4.60	Q V				
3+33	0.6407	4.71	Q V				
3+34	0.6473	4.81	Q V				
3+35	0.6540	4.91	Q V				
3+36	0.6609	5.01	Q V				
3+37	0.6679	5.09	Q V				
3+38	0.6751	5.16	Q V				
3+39	0.6823	5.24	Q V				
3+40	0.6896	5.32	Q V				
3+41	0.6970	5.40	Q V				



4+32	1.6721	4.28	Q			V	
4+33	1.6779	4.17	Q			V	
4+34	1.6835	4.06	Q			V	
4+35	1.6889	3.95	Q			V	
4+36	1.6942	3.84	Q			V	
4+37	1.6994	3.74	Q			V	
4+38	1.7044	3.63	Q			V	
4+39	1.7092	3.52	Q			V	
4+40	1.7140	3.45	Q			V	
4+41	1.7186	3.39	Q			V	
4+42	1.7232	3.33	Q			V	
4+43	1.7277	3.26	Q			V	
4+44	1.7321	3.20	Q			V	
4+45	1.7364	3.14	Q			V	
4+46	1.7407	3.07	Q			V	
4+47	1.7448	3.01	Q			V	
4+48	1.7489	2.95	Q			V	
4+49	1.7529	2.90	Q			V	
4+50	1.7568	2.86	Q			V	
4+51	1.7607	2.82	Q			V	
4+52	1.7645	2.78	Q			V	
4+53	1.7683	2.73	Q			V	
4+54	1.7720	2.69	Q			V	
4+55	1.7757	2.65	Q			V	
4+56	1.7792	2.61	Q			V	
4+57	1.7828	2.56	Q			V	
4+58	1.7863	2.53	Q			V	
4+59	1.7897	2.50	Q			V	
5+ 0	1.7931	2.47	Q			V	
5+ 1	1.7965	2.44	Q			V	
5+ 2	1.7998	2.41	Q			V	
5+ 3	1.8031	2.38	Q			V	
5+ 4	1.8063	2.35	Q			V	
5+ 5	1.8095	2.32	Q			V	
5+ 6	1.8127	2.29	Q			V	
5+ 7	1.8158	2.26	Q			V	
5+ 8	1.8189	2.24	Q			V	
5+ 9	1.8219	2.22	Q			V	
5+10	1.8249	2.19	Q			V	
5+11	1.8279	2.17	Q			V	
5+12	1.8309	2.15	Q			V	
5+13	1.8338	2.12	Q			V	
5+14	1.8367	2.10	Q			V	
5+15	1.8396	2.08	Q			V	
5+16	1.8424	2.06	Q			V	
5+17	1.8452	2.04	Q			V	
5+18	1.8480	2.02	Q			V	
5+19	1.8508	2.00	Q			V	
5+20	1.8535	1.98	Q			V	
5+21	1.8562	1.96	Q			V	

```
   5+22       1.8589      1.95  |Q        |         |         |      V  |
   5+23       1.8615      1.93  |Q        |         |         |      V  |
   5+24       1.8642      1.91  |Q        |         |         |      V  |
   5+25       1.8668      1.89  |Q        |         |         |       V |
   5+26       1.8693      1.88  |Q        |         |         |       V |
   5+27       1.8719      1.86  |Q        |         |         |       V |
   5+28       1.8745      1.85  |Q        |         |         |       V |
   5+29       1.8770      1.83  |Q        |         |         |       V |
   5+30       1.8795      1.82  |Q        |         |         |       V |
   5+31       1.8820      1.80  |Q        |         |         |       V |
   5+32       1.8844      1.79  |Q        |         |         |       V |
   5+33       1.8869      1.77  |Q        |         |         |       V |
   5+34       1.8893      1.76  |Q        |         |         |       V |
   5+35       1.8917      1.75  |Q        |         |         |       V |
   5+36       1.8941      1.73  |Q        |         |         |       V |
   5+37       1.8965      1.72  |Q        |         |         |       V |
   5+38       1.8988      1.71  |Q        |         |         |       V |
   5+39       1.9011      1.70  |Q        |         |         |       V |
   5+40       1.9035      1.68  |Q        |         |         |       V |
   5+41       1.9058      1.67  |Q        |         |         |       V |
   5+42       1.9080      1.66  |Q        |         |         |       V |
   5+43       1.9103      1.65  |Q        |         |         |       V |
   5+44       1.9126      1.64  |Q        |         |         |       V |
   5+45       1.9148      1.62  |Q        |         |         |       V |
   5+46       1.9170      1.61  |Q        |         |         |        V|
   5+47       1.9192      1.60  |Q        |         |         |        V|
   5+48       1.9214      1.59  |Q        |         |         |        V|
   5+49       1.9236      1.58  |Q        |         |         |        V|
   5+50       1.9258      1.57  |Q        |         |         |        V|
   5+51       1.9279      1.56  |Q        |         |         |        V|
   5+52       1.9300      1.55  |Q        |         |         |        V|
   5+53       1.9322      1.54  |Q        |         |         |        V|
   5+54       1.9343      1.53  |Q        |         |         |        V|
   5+55       1.9364      1.52  |Q        |         |         |        V|
   5+56       1.9385      1.51  |Q        |         |         |        V|
   5+57       1.9405      1.50  |Q        |         |         |        V|
   5+58       1.9426      1.49  |Q        |         |         |        V|
   5+59       1.9446      1.49  |Q        |         |         |        V|
   6+ 0       1.9467      1.48  |Q        |         |         |        V|
   6+ 1       1.9487      1.47  |Q        |         |         |        V|
   6+ 2       1.9507      1.46  |Q        |         |         |        V|
   6+ 3       1.9527      1.45  |Q        |         |         |        V|
   6+ 4       1.9547      1.44  |Q        |         |         |        V|
   6+ 5       1.9567      1.44  |Q        |         |         |        V|
   6+ 6       1.9586      1.43  |Q        |         |         |        V|
   6+ 7       1.9606      1.42  |Q        |         |         |        V|
   6+ 8       1.9625      1.41  |Q        |         |         |        V|
   6+ 9       1.9645      1.40  |Q        |         |         |         V
-----------------------------------------------------------------------
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        9.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   538.000(Ft.)
Downstream point/station elevation =   525.000(Ft.)
Pipe length  =   550.00(Ft.) Slope =   0.0236  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    43.275(CFS)
Given pipe size =     24.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
    11.539(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =     20.119(Ft.)
 Minor friction loss =      4.420(Ft.)  K-factor =   1.50
Pipe flow velocity =     13.77(Ft/s)
Travel time through pipe =    0.67 min.
Time of concentration (TC) =     9.91 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        8.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL                    ]
(43.0 DU/A or Less      )
Impervious value, Ai = 0.800
Sub-Area C Value = 0.790
Initial subarea total flow distance  =  300.000(Ft.)
Highest elevation =  542.500(Ft.)
Lowest elevation =  536.000(Ft.)
Elevation difference =    6.500(Ft.) Slope =  2.167 %
Top of Initial Area Slope adjusted by User to  1.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 65.00 (Ft)
for the top area slope value of   1.00 %, in a development type of
 43.0 DU/A or Less
In Accordance With Table 3-2
Initial Area Time of Concentration =   4.70 minutes
 (for slope value of   1.00 %)
Calculated TC of    4.700 minutes is less than 5 minutes,
 resetting TC to 5.0 minutes for rainfall intensity calculations
```

Rainfall intensity (I) = 8.695(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.790
Subarea runoff = 17.172(CFS)
Total initial stream area = 2.500(Ac.)

++
Process from Point/Station 8.000 to Point/Station 8.000
**** 6 HOUR HYDROGRAPH ****
_____
++
Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003

Time of Concentration = 4.70
Basin Area = 11.50 Acres
6 Hour Rainfall = 3.300 Inches
Runoff Coefficient = 0.172
Peak Discharge = 17.17 CFS

Time (Min)	Discharge (CFS)
0	0.000
4	0.388
8	0.391
12	0.396
16	0.399
20	0.406
24	0.409
28	0.415
32	0.419
36	0.426
40	0.429
44	0.437
48	0.440
52	0.448
56	0.452
60	0.461
64	0.465
68	0.474
72	0.479
76	0.489
80	0.494
84	0.505
88	0.510
92	0.522
96	0.528
100	0.540
104	0.547
108	0.561
112	0.568
116	0.584

120	0.592
124	0.609
128	0.618
132	0.637
136	0.647
140	0.668
144	0.680
148	0.704
152	0.717
156	0.745
160	0.761
164	0.793
168	0.811
172	0.850
176	0.872
180	0.919
184	0.945
188	1.004
192	1.036
196	1.111
200	1.154
204	1.255
208	1.314
212	1.457
216	1.545
220	1.772
224	1.921
228	2.348
232	2.674
236	3.926
240	5.532
244	17.172
248	3.149
252	2.107
256	1.649
260	1.381
264	1.202
268	1.072
272	0.973
276	0.894
280	0.830
284	0.777
288	0.731
292	0.692
296	0.657
300	0.627
304	0.600
308	0.576
312	0.554
316	0.534

320	0.516
324	0.499
328	0.484
332	0.470
336	0.457
340	0.444
344	0.433
348	0.422
352	0.412
356	0.402
360	0.394
364	0.385

++

6 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 1 Minute intervals ((CFS))

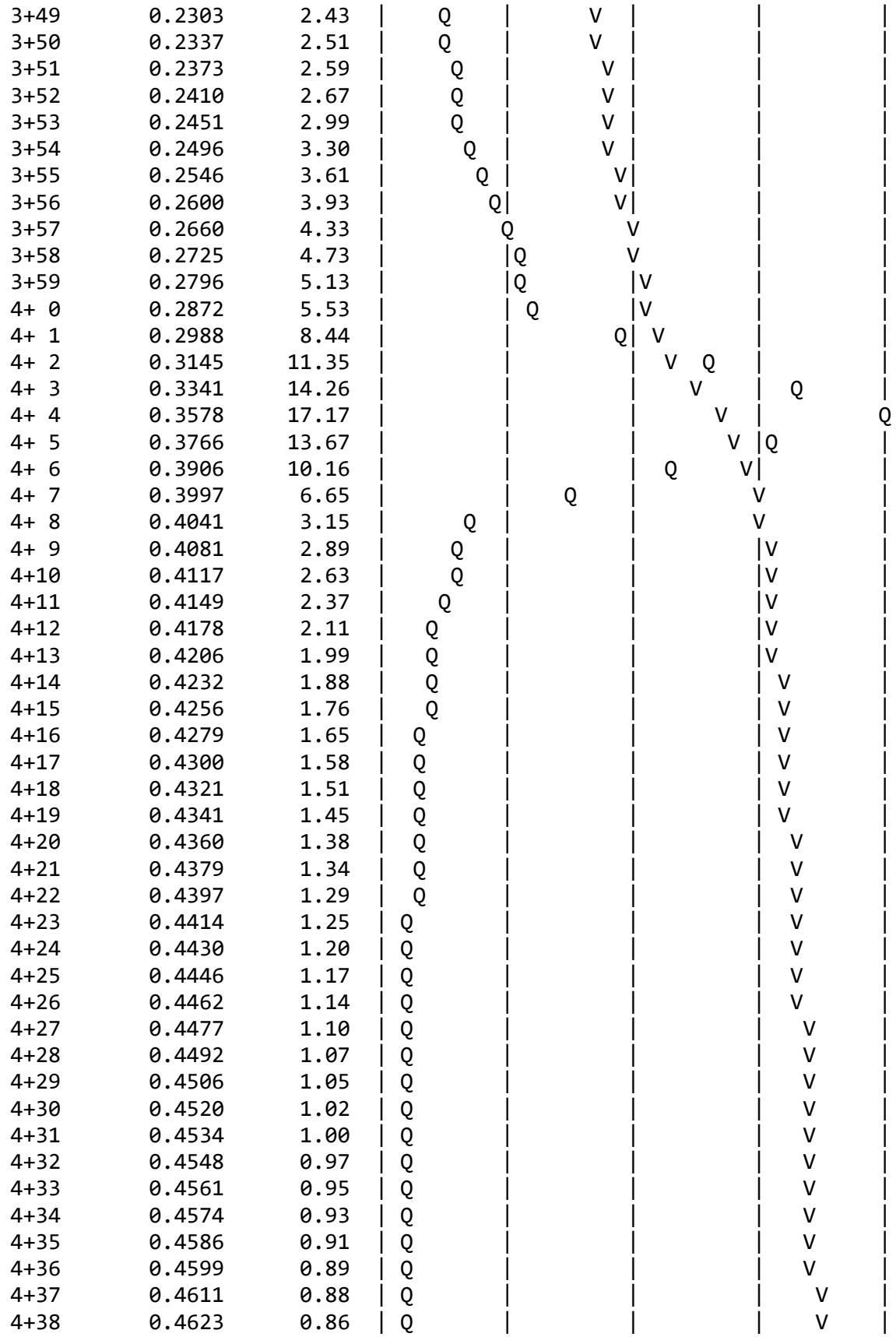
Time(h+m)	Volume Ac.Ft	Q(CFS)	0	4.3	8.6	12.9	17.2
0+ 0	0.0000	0.00	Q	|	|	|	|
0+ 1	0.0001	0.10	Q	|	|	|	|
0+ 2	0.0004	0.19	Q	|	|	|	|
0+ 3	0.0008	0.29	Q	|	|	|	|
0+ 4	0.0013	0.39	Q	|	|	|	|
0+ 5	0.0019	0.39	Q	|	|	|	|
0+ 6	0.0024	0.39	Q	|	|	|	|
0+ 7	0.0029	0.39	Q	|	|	|	|
0+ 8	0.0035	0.39	Q	|	|	|	|
0+ 9	0.0040	0.39	Q	|	|	|	|
0+10	0.0046	0.39	Q	|	|	|	|
0+11	0.0051	0.39	Q	|	|	|	|
0+12	0.0057	0.40	Q	|	|	|	|
0+13	0.0062	0.40	Q	|	|	|	|
0+14	0.0067	0.40	Q	|	|	|	|
0+15	0.0073	0.40	Q	|	|	|	|
0+16	0.0078	0.40	Q	|	|	|	|
0+17	0.0084	0.40	Q	|	|	|	|
0+18	0.0090	0.40	Q	|	|	|	|
0+19	0.0095	0.40	Q	|	|	|	|
0+20	0.0101	0.41	Q	|	|	|	|
0+21	0.0106	0.41	Q	|	|	|	|
0+22	0.0112	0.41	Q	|	|	|	|
0+23	0.0118	0.41	Q	|	|	|	|
0+24	0.0123	0.41	Q	|	|	|	|
0+25	0.0129	0.41	Q	|	|	|	|
0+26	0.0134	0.41	QV	|	|	|	|
0+27	0.0140	0.41	QV	|	|	|	|
0+28	0.0146	0.42	QV	|	|	|	|

0+29	0.0152	0.42	QV				
0+30	0.0157	0.42	QV				
0+31	0.0163	0.42	QV				
0+32	0.0169	0.42	QV				
0+33	0.0175	0.42	QV				
0+34	0.0181	0.42	QV				
0+35	0.0186	0.42	QV				
0+36	0.0192	0.43	QV				
0+37	0.0198	0.43	QV				
0+38	0.0204	0.43	QV				
0+39	0.0210	0.43	QV				
0+40	0.0216	0.43	QV				
0+41	0.0222	0.43	|Q				
0+42	0.0228	0.43	|Q				
0+43	0.0234	0.43	|Q				
0+44	0.0240	0.44	|Q				
0+45	0.0246	0.44	|Q				
0+46	0.0252	0.44	|Q				
0+47	0.0258	0.44	|Q				
0+48	0.0264	0.44	|QV				
0+49	0.0270	0.44	|QV				
0+50	0.0276	0.44	|QV				
0+51	0.0282	0.45	|QV				
0+52	0.0288	0.45	|QV				
0+53	0.0295	0.45	|QV				
0+54	0.0301	0.45	|QV				
0+55	0.0307	0.45	|QV				
0+56	0.0313	0.45	|QV				
0+57	0.0319	0.45	|QV				
0+58	0.0326	0.46	|QV				
0+59	0.0332	0.46	|QV				
1+ 0	0.0338	0.46	|QV				
1+ 1	0.0345	0.46	|QV				
1+ 2	0.0351	0.46	|QV				
1+ 3	0.0358	0.46	|QV				
1+ 4	0.0364	0.47	|QV				
1+ 5	0.0370	0.47	|QV				
1+ 6	0.0377	0.47	|QV				
1+ 7	0.0383	0.47	|QV				
1+ 8	0.0390	0.47	|QV				
1+ 9	0.0396	0.48	|Q V				
1+10	0.0403	0.48	|Q V				
1+11	0.0410	0.48	|Q V				
1+12	0.0416	0.48	|Q V				
1+13	0.0423	0.48	|Q V				
1+14	0.0430	0.48	|Q V				
1+15	0.0436	0.49	|Q V				
1+16	0.0443	0.49	|Q V				
1+17	0.0450	0.49	|Q V				
1+18	0.0456	0.49	|Q V				

1+19	0.0463	0.49	|Q V	|	|	|	|
1+20	0.0470	0.49	|Q V	|	|	|	|
1+21	0.0477	0.50	|Q V	|	|	|	|
1+22	0.0484	0.50	|Q V	|	|	|	|
1+23	0.0491	0.50	|Q V	|	|	|	|
1+24	0.0498	0.50	|Q V	|	|	|	|
1+25	0.0505	0.51	|Q V	|	|	|	|
1+26	0.0512	0.51	|Q V	|	|	|	|
1+27	0.0519	0.51	|Q V	|	|	|	|
1+28	0.0526	0.51	|Q V	|	|	|	|
1+29	0.0533	0.51	|Q V	|	|	|	|
1+30	0.0540	0.52	|Q V	|	|	|	|
1+31	0.0547	0.52	|Q V	|	|	|	|
1+32	0.0554	0.52	|Q V	|	|	|	|
1+33	0.0561	0.52	|Q V	|	|	|	|
1+34	0.0569	0.52	|Q V	|	|	|	|
1+35	0.0576	0.53	|Q V	|	|	|	|
1+36	0.0583	0.53	|Q V	|	|	|	|
1+37	0.0590	0.53	|Q V	|	|	|	|
1+38	0.0598	0.53	|Q V	|	|	|	|
1+39	0.0605	0.54	|Q V	|	|	|	|
1+40	0.0613	0.54	|Q V	|	|	|	|
1+41	0.0620	0.54	|Q V	|	|	|	|
1+42	0.0628	0.54	|Q V	|	|	|	|
1+43	0.0635	0.55	|Q V	|	|	|	|
1+44	0.0643	0.55	|Q V	|	|	|	|
1+45	0.0650	0.55	|Q V	|	|	|	|
1+46	0.0658	0.55	|Q V	|	|	|	|
1+47	0.0666	0.56	|Q V	|	|	|	|
1+48	0.0673	0.56	|Q V	|	|	|	|
1+49	0.0681	0.56	|Q V	|	|	|	|
1+50	0.0689	0.56	|Q V	|	|	|	|
1+51	0.0697	0.57	|Q V	|	|	|	|
1+52	0.0704	0.57	|Q V	|	|	|	|
1+53	0.0712	0.57	|Q V	|	|	|	|
1+54	0.0720	0.58	|Q V	|	|	|	|
1+55	0.0728	0.58	|Q V	|	|	|	|
1+56	0.0736	0.58	|Q V	|	|	|	|
1+57	0.0744	0.59	|Q V	|	|	|	|
1+58	0.0752	0.59	|Q V	|	|	|	|
1+59	0.0761	0.59	|Q V	|	|	|	|
2+ 0	0.0769	0.59	|Q V	|	|	|	|
2+ 1	0.0777	0.60	|Q V	|	|	|	|
2+ 2	0.0785	0.60	|Q V	|	|	|	|
2+ 3	0.0793	0.60	|Q V	|	|	|	|
2+ 4	0.0802	0.61	|Q V	|	|	|	|
2+ 5	0.0810	0.61	|Q V	|	|	|	|
2+ 6	0.0819	0.61	|Q V	|	|	|	|
2+ 7	0.0827	0.62	|Q V	|	|	|	|
2+ 8	0.0836	0.62	|Q V	|	|	|	|

```
2+ 9       0.0844      0.62  |Q    V   |          |          |          |
2+10       0.0853      0.63  |Q    V   |          |          |          |
2+11       0.0862      0.63  |Q    V   |          |          |          |
2+12       0.0870      0.64  |Q    V   |          |          |          |
2+13       0.0879      0.64  |Q    V   |          |          |          |
2+14       0.0888      0.64  |Q    V   |          |          |          |
2+15       0.0897      0.64  |Q    V   |          |          |          |
2+16       0.0906      0.65  |Q    V   |          |          |          |
2+17       0.0915      0.65  |Q    V   |          |          |          |
2+18       0.0924      0.66  |Q     V  |          |          |          |
2+19       0.0933      0.66  |Q     V  |          |          |          |
2+20       0.0942      0.67  |Q     V  |          |          |          |
2+21       0.0951      0.67  |Q     V  |          |          |          |
2+22       0.0961      0.67  |Q     V  |          |          |          |
2+23       0.0970      0.68  |Q     V  |          |          |          |
2+24       0.0979      0.68  |Q     V  |          |          |          |
2+25       0.0989      0.69  |Q     V  |          |          |          |
2+26       0.0998      0.69  |Q     V  |          |          |          |
2+27       0.1008      0.70  |Q     V  |          |          |          |
2+28       0.1018      0.70  |Q     V  |          |          |          |
2+29       0.1027      0.71  |Q     V  |          |          |          |
2+30       0.1037      0.71  |Q     V  |          |          |          |
2+31       0.1047      0.71  |Q     V  |          |          |          |
2+32       0.1057      0.72  |Q      V |          |          |          |
2+33       0.1067      0.72  |Q      V |          |          |          |
2+34       0.1077      0.73  |Q      V |          |          |          |
2+35       0.1087      0.74  |Q      V |          |          |          |
2+36       0.1097      0.75  |Q      V |          |          |          |
2+37       0.1108      0.75  |Q      V |          |          |          |
2+38       0.1118      0.75  |Q      V |          |          |          |
2+39       0.1129      0.76  |Q      V |          |          |          |
2+40       0.1139      0.76  |Q      V |          |          |          |
2+41       0.1150      0.77  |Q      V |          |          |          |
2+42       0.1160      0.78  |Q      V |          |          |          |
2+43       0.1171      0.79  |Q      V |          |          |          |
2+44       0.1182      0.79  |Q      V |          |          |          |
2+45       0.1193      0.80  |Q       V|          |          |          |
2+46       0.1204      0.80  |Q       V|          |          |          |
2+47       0.1215      0.81  |Q       V|          |          |          |
2+48       0.1226      0.81  |Q       V|          |          |          |
2+49       0.1238      0.82  |Q       V|          |          |          |
2+50       0.1249      0.83  |Q       V|          |          |          |
2+51       0.1261      0.84  |Q       V|          |          |          |
2+52       0.1272      0.85  |Q       V|          |          |          |
2+53       0.1284      0.86  |Q       V|          |          |          |
2+54       0.1296      0.86  | Q      V|          |          |          |
2+55       0.1308      0.87  | Q      V|          |          |          |
2+56       0.1320      0.87  | Q       V          |          |          |
2+57       0.1332      0.88  | Q       V          |          |          |
2+58       0.1345      0.90  | Q       V          |          |          |
```

```
2+59       0.1357      0.91  | Q       V         |          |          |
3+ 0       0.1370      0.92  | Q       V         |          |          |
3+ 1       0.1382      0.93  | Q       V         |          |          |
3+ 2       0.1395      0.93  | Q       V         |          |          |
3+ 3       0.1408      0.94  | Q       V         |          |          |
3+ 4       0.1421      0.95  | Q       V         |          |          |
3+ 5       0.1434      0.96  | Q       V         |          |          |
3+ 6       0.1448      0.97  | Q       |V        |          |          |
3+ 7       0.1461      0.99  | Q       |V        |          |          |
3+ 8       0.1475      1.00  | Q       |V        |          |          |
3+ 9       0.1489      1.01  | Q       |V        |          |          |
3+10       0.1503      1.02  | Q       |V        |          |          |
3+11       0.1517      1.03  | Q       |V        |          |          |
3+12       0.1532      1.04  | Q       |V        |          |          |
3+13       0.1546      1.06  | Q       |V        |          |          |
3+14       0.1561      1.07  | Q       |V        |          |          |
3+15       0.1576      1.09  | Q       |V        |          |          |
3+16       0.1591      1.11  | Q       | V       |          |          |
3+17       0.1607      1.12  | Q       | V       |          |          |
3+18       0.1622      1.13  | Q       | V       |          |          |
3+19       0.1638      1.14  | Q       | V       |          |          |
3+20       0.1654      1.15  | Q       | V       |          |          |
3+21       0.1670      1.18  | Q       | V       |          |          |
3+22       0.1687      1.20  | Q       | V       |          |          |
3+23       0.1704      1.23  | Q       | V       |          |          |
3+24       0.1721      1.25  | Q       |  V      |          |          |
3+25       0.1739      1.27  | Q       |  V      |          |          |
3+26       0.1756      1.28  | Q       |  V      |          |          |
3+27       0.1774      1.30  |  Q      |  V      |          |          |
3+28       0.1792      1.31  |  Q      |  V      |          |          |
3+29       0.1811      1.35  |  Q      |  V      |          |          |
3+30       0.1830      1.39  |  Q      |  V      |          |          |
3+31       0.1850      1.42  |  Q      |   V     |          |          |
3+32       0.1870      1.46  |  Q      |   V     |          |          |
3+33       0.1890      1.48  |  Q      |   V     |          |          |
3+34       0.1911      1.50  |  Q      |   V     |          |          |
3+35       0.1932      1.52  |  Q      |   V     |          |          |
3+36       0.1953      1.55  |  Q      |   V     |          |          |
3+37       0.1975      1.60  |  Q      |    V    |          |          |
3+38       0.1998      1.66  |  Q      |    V    |          |          |
3+39       0.2022      1.72  |  Q      |    V    |          |          |
3+40       0.2046      1.77  |   Q     |    V    |          |          |
3+41       0.2071      1.81  |   Q     |    V    |          |          |
3+42       0.2096      1.85  |   Q     |    V    |          |          |
3+43       0.2122      1.88  |   Q     |     V   |          |          |
3+44       0.2149      1.92  |   Q     |     V   |          |          |
3+45       0.2177      2.03  |   Q     |     V   |          |          |
3+46       0.2206      2.13  |   Q     |     V   |          |          |
3+47       0.2237      2.24  |    Q    |     V   |          |          |
3+48       0.2269      2.35  |    Q    |      V  |          |          |
```



```
4+39       0.4634      0.85  |Q        |         |         |    V    |
4+40       0.4646      0.83  |Q        |         |         |    V    |
4+41       0.4657      0.82  |Q        |         |         |    V    |
4+42       0.4668      0.80  |Q        |         |         |    V    |
4+43       0.4679      0.79  |Q        |         |         |    V    |
4+44       0.4690      0.78  |Q        |         |         |    V    |
4+45       0.4700      0.77  |Q        |         |         |    V    |
4+46       0.4710      0.75  |Q        |         |         |    V    |
4+47       0.4721      0.74  |Q        |         |         |    V    |
4+48       0.4731      0.73  |Q        |         |         |    V    |
4+49       0.4741      0.72  |Q        |         |         |     V   |
4+50       0.4750      0.71  |Q        |         |         |     V   |
4+51       0.4760      0.70  |Q        |         |         |     V   |
4+52       0.4770      0.69  |Q        |         |         |     V   |
4+53       0.4779      0.68  |Q        |         |         |     V   |
4+54       0.4788      0.67  |Q        |         |         |     V   |
4+55       0.4798      0.67  |Q        |         |         |     V   |
4+56       0.4807      0.66  |Q        |         |         |     V   |
4+57       0.4816      0.65  |Q        |         |         |     V   |
4+58       0.4824      0.64  |Q        |         |         |     V   |
4+59       0.4833      0.63  |Q        |         |         |     V   |
5+ 0       0.4842      0.63  |Q        |         |         |     V   |
5+ 1       0.4850      0.62  |Q        |         |         |     V   |
5+ 2       0.4859      0.61  |Q        |         |         |     V   |
5+ 3       0.4867      0.61  |Q        |         |         |     V   |
5+ 4       0.4875      0.60  |Q        |         |         |      V  |
5+ 5       0.4884      0.59  |Q        |         |         |      V  |
5+ 6       0.4892      0.59  |Q        |         |         |      V  |
5+ 7       0.4900      0.58  |Q        |         |         |      V  |
5+ 8       0.4908      0.58  |Q        |         |         |      V  |
5+ 9       0.4915      0.57  |Q        |         |         |      V  |
5+10       0.4923      0.56  |Q        |         |         |      V  |
5+11       0.4931      0.56  |Q        |         |         |      V  |
5+12       0.4939      0.55  |Q        |         |         |      V  |
5+13       0.4946      0.55  |Q        |         |         |      V  |
5+14       0.4954      0.54  |Q        |         |         |      V  |
5+15       0.4961      0.54  |Q        |         |         |      V  |
5+16       0.4968      0.53  |Q        |         |         |      V  |
5+17       0.4976      0.53  |Q        |         |         |      V  |
5+18       0.4983      0.52  |Q        |         |         |      V  |
5+19       0.4990      0.52  |Q        |         |         |      V  |
5+20       0.4997      0.52  |Q        |         |         |      V  |
5+21       0.5004      0.51  |Q        |         |         |       V |
5+22       0.5011      0.51  |Q        |         |         |       V |
5+23       0.5018      0.50  |Q        |         |         |       V |
5+24       0.5025      0.50  |Q        |         |         |       V |
5+25       0.5032      0.50  |Q        |         |         |       V |
5+26       0.5039      0.49  |Q        |         |         |       V |
5+27       0.5045      0.49  |Q        |         |         |       V |
5+28       0.5052      0.48  |Q        |         |         |       V |
```

```
    5+29       0.5059      0.48  |Q        |         |         |        V |
    5+30       0.5065      0.48  |Q        |         |         |        V |
    5+31       0.5072      0.47  |Q        |         |         |        V |
    5+32       0.5078      0.47  |Q        |         |         |        V |
    5+33       0.5085      0.47  |Q        |         |         |        V |
    5+34       0.5091      0.46  |Q        |         |         |        V |
    5+35       0.5097      0.46  |Q        |         |         |        V |
    5+36       0.5104      0.46  |Q        |         |         |        V |
    5+37       0.5110      0.45  |Q        |         |         |        V |
    5+38       0.5116      0.45  |Q        |         |         |        V |
    5+39       0.5122      0.45  |Q        |         |         |        V |
    5+40       0.5128      0.44  |Q        |         |         |        V |
    5+41       0.5134      0.44  |Q        |         |         |         V|
    5+42       0.5140      0.44  |Q        |         |         |         V|
    5+43       0.5146      0.44  |Q        |         |         |         V|
    5+44       0.5152      0.43  |Q        |         |         |         V|
    5+45       0.5158      0.43  |Q        |         |         |         V|
    5+46       0.5164      0.43  Q         |         |         |         V|
    5+47       0.5170      0.42  Q         |         |         |         V|
    5+48       0.5176      0.42  Q         |         |         |         V|
    5+49       0.5182      0.42  Q         |         |         |         V|
    5+50       0.5187      0.42  Q         |         |         |         V|
    5+51       0.5193      0.41  Q         |         |         |         V|
    5+52       0.5199      0.41  Q         |         |         |         V|
    5+53       0.5204      0.41  Q         |         |         |         V|
    5+54       0.5210      0.41  Q         |         |         |         V|
    5+55       0.5216      0.40  Q         |         |         |         V|
    5+56       0.5221      0.40  Q         |         |         |         V|
    5+57       0.5227      0.40  Q         |         |         |         V|
    5+58       0.5232      0.40  Q         |         |         |         V|
    5+59       0.5238      0.40  Q         |         |         |         V|
    6+ 0       0.5243      0.39  Q         |         |         |         V|
    6+ 1       0.5248      0.39  Q         |         |         |         V|
    6+ 2       0.5254      0.39  Q         |         |         |         V|
    6+ 3       0.5259      0.39  Q         |         |         |         V|
    6+ 4       0.5264      0.39  Q         |         |         |          V
---------------------------------------------------------------------------

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        9.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   527.000(Ft.)
Downstream point/station elevation =   525.000(Ft.)
Pipe length  =   250.00(Ft.) Slope =   0.0080  Manning's N = 0.013
```

No. of pipes = 1 Required pipe flow =   17.172(CFS)
Given pipe size =   18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     4.679(Ft.) at the headworks or inlet of the pipe(s)
 Pipe friction loss =   6.679(Ft.)
 Minor friction loss =   0.000(Ft.) K-factor =   0.00
Pipe flow velocity =   9.72(Ft/s)
Travel time through pipe =   0.43 min.
Time of concentration (TC) =   5.13 min.
End of computations, total study area =   11.500 (Ac.)

San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2019 Version 9.1

Rational method hydrology program based on
San Diego County Flood Control Division 2003 hydrology manual
        Rational Hydrology Study   Date: 01/24/23

PROPOSED 100 YEAR

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

Program License Serial Number 6540

Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour, precipitation(inches) = 3.300
24 hour precipitation(inches) = 5.500
P6/P24 =   60.0%
San Diego hydrology manual 'C' values used

++
Process from Point/Station   11.000 to Point/Station   12.000
**** INITIAL AREA EVALUATION ****
_____
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL   ]
(43.0 DU/A or Less   )
Impervious value, Ai = 0.800
Sub-Area C Value = 0.790
Initial subarea total flow distance =   70.000(Ft.)
Highest elevation = 539.000(Ft.)
Lowest elevation = 538.300(Ft.)
Elevation difference =   0.700(Ft.) Slope = 1.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:

```
The maximum overland flow distance is 65.00 (Ft)
for the top area slope value of   1.00 %, in a development type of
 43.0 DU/A or Less
In Accordance With Table 3-2
Initial Area Time of Concentration =   4.70 minutes
 (for slope value of   1.00 %)
Calculated TC of    4.700 minutes is less than 5 minutes,
 resetting TC to 5.0 minutes for rainfall intensity calculations
Rainfall intensity (I) =      8.695(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.790
Subarea runoff =      1.374(CFS)
Total initial stream area =        0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   538.300(Ft.)
End of street segment elevation =   530.000(Ft.)
Length of street segment  =   380.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.991(CFS)
Depth of flow =   0.370(Ft.), Average velocity =   3.722(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.177(Ft.)
Flow velocity =   3.72(Ft/s)
Travel time =    1.70 min.     TC =    6.40  min.
 Adding area flow to street
Rainfall intensity (I) =      7.414(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL                    ]
(43.0 DU/A or Less      )
Impervious value, Ai = 0.800
Sub-Area C Value = 0.790
```

```
Rainfall intensity =      7.414(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.790  CA =      1.422
Subarea runoff =      9.168(CFS) for      1.600(Ac.)
Total runoff =     10.542(CFS)  Total area =       1.800(Ac.)
Street flow at end of street =     10.542(CFS)
Half street flow at end of street =     10.542(CFS)
Depth of flow =   0.433(Ft.), Average velocity =   4.260(Ft/s)
Flow width (from curb towards crown)=  15.323(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** 6 HOUR HYDROGRAPH ****
________________________________________________________________________
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003


Time of Concentration =   6.40
Basin Area =     1.80 Acres
6 Hour Rainfall =  3.300 Inches
Runoff Coefficient =  0.790
Peak Discharge =    10.54 CFS
     Time (Min)     Discharge (CFS)
       0               0.000
       6               0.280
       12               0.283
       18               0.289
       24               0.293
       30               0.300
       36               0.303
       42               0.311
       48               0.315
       54               0.323
       60               0.328
       66               0.337
       72               0.342
       78               0.353
       84               0.359
       90               0.370
       96               0.377
       102               0.390
       108               0.398
       114               0.413
       120               0.422
       126               0.440
       132               0.450
       138               0.471
       144               0.483
```

150	0.509
156	0.524
162	0.556
168	0.574
174	0.616
180	0.640
186	0.696
192	0.728
198	0.808
204	0.857
210	0.982
216	1.065
222	1.301
228	1.482
234	2.176
240	3.067
246	10.542
252	1.746
258	1.168
264	0.914
270	0.765
276	0.666
282	0.594
288	0.539
294	0.496
300	0.460
306	0.430
312	0.405
318	0.383
324	0.364
330	0.348
336	0.333
342	0.319
348	0.307
354	0.296
360	0.286
366	0.277

++

6 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 1 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.6	5.3	7.9	10.5
0+ 0	0.0000	0.00	Q	|	|	|	|
0+ 1	0.0001	0.05	Q	|	|	|	|
0+ 2	0.0002	0.09	Q	|	|	|	|
0+ 3	0.0004	0.14	Q	|	|	|	|

0+ 4	0.0006	0.19	Q	|	|	|	|
0+ 5	0.0010	0.23	Q	|	|	|	|
0+ 6	0.0013	0.28	VQ	|	|	|	|
0+ 7	0.0017	0.28	VQ	|	|	|	|
0+ 8	0.0021	0.28	VQ	|	|	|	|
0+ 9	0.0025	0.28	VQ	|	|	|	|
0+10	0.0029	0.28	VQ	|	|	|	|
0+11	0.0033	0.28	VQ	|	|	|	|
0+12	0.0037	0.28	VQ	|	|	|	|
0+13	0.0041	0.28	VQ	|	|	|	|
0+14	0.0045	0.28	VQ	|	|	|	|
0+15	0.0049	0.29	VQ	|	|	|	|
0+16	0.0052	0.29	VQ	|	|	|	|
0+17	0.0056	0.29	VQ	|	|	|	|
0+18	0.0060	0.29	VQ	|	|	|	|
0+19	0.0064	0.29	VQ	|	|	|	|
0+20	0.0068	0.29	VQ	|	|	|	|
0+21	0.0072	0.29	VQ	|	|	|	|
0+22	0.0076	0.29	VQ	|	|	|	|
0+23	0.0080	0.29	VQ	|	|	|	|
0+24	0.0084	0.29	VQ	|	|	|	|
0+25	0.0089	0.29	VQ	|	|	|	|
0+26	0.0093	0.29	VQ	|	|	|	|
0+27	0.0097	0.30	|Q	|	|	|	|
0+28	0.0101	0.30	|Q	|	|	|	|
0+29	0.0105	0.30	|Q	|	|	|	|
0+30	0.0109	0.30	|Q	|	|	|	|
0+31	0.0113	0.30	|Q	|	|	|	|
0+32	0.0117	0.30	|Q	|	|	|	|
0+33	0.0121	0.30	|Q	|	|	|	|
0+34	0.0126	0.30	|Q	|	|	|	|
0+35	0.0130	0.30	|Q	|	|	|	|
0+36	0.0134	0.30	|Q	|	|	|	|
0+37	0.0138	0.30	|Q	|	|	|	|
0+38	0.0142	0.31	|Q	|	|	|	|
0+39	0.0147	0.31	|Q	|	|	|	|
0+40	0.0151	0.31	|Q	|	|	|	|
0+41	0.0155	0.31	|Q	|	|	|	|
0+42	0.0159	0.31	|Q	|	|	|	|
0+43	0.0164	0.31	|Q	|	|	|	|
0+44	0.0168	0.31	|Q	|	|	|	|
0+45	0.0172	0.31	|Q	|	|	|	|
0+46	0.0177	0.31	|Q	|	|	|	|
0+47	0.0181	0.31	|Q	|	|	|	|
0+48	0.0185	0.31	|Q	|	|	|	|
0+49	0.0190	0.32	|Q	|	|	|	|
0+50	0.0194	0.32	|QV	|	|	|	|
0+51	0.0198	0.32	|QV	|	|	|	|
0+52	0.0203	0.32	|QV	|	|	|	|
0+53	0.0207	0.32	|QV	|	|	|	|

0+54	0.0212	0.32	|QV	|	|	|	|
0+55	0.0216	0.32	|QV	|	|	|	|
0+56	0.0221	0.32	|QV	|	|	|	|
0+57	0.0225	0.33	|QV	|	|	|	|
0+58	0.0230	0.33	|QV	|	|	|	|
0+59	0.0234	0.33	|QV	|	|	|	|
1+ 0	0.0239	0.33	|QV	|	|	|	|
1+ 1	0.0243	0.33	|QV	|	|	|	|
1+ 2	0.0248	0.33	|QV	|	|	|	|
1+ 3	0.0252	0.33	|QV	|	|	|	|
1+ 4	0.0257	0.33	|QV	|	|	|	|
1+ 5	0.0262	0.34	|QV	|	|	|	|
1+ 6	0.0266	0.34	|QV	|	|	|	|
1+ 7	0.0271	0.34	|QV	|	|	|	|
1+ 8	0.0276	0.34	|QV	|	|	|	|
1+ 9	0.0280	0.34	|QV	|	|	|	|
1+10	0.0285	0.34	|QV	|	|	|	|
1+11	0.0290	0.34	|QV	|	|	|	|
1+12	0.0294	0.34	|Q V	|	|	|	|
1+13	0.0299	0.34	|Q V	|	|	|	|
1+14	0.0304	0.35	|Q V	|	|	|	|
1+15	0.0309	0.35	|Q V	|	|	|	|
1+16	0.0313	0.35	|Q V	|	|	|	|
1+17	0.0318	0.35	|Q V	|	|	|	|
1+18	0.0323	0.35	|Q V	|	|	|	|
1+19	0.0328	0.35	|Q V	|	|	|	|
1+20	0.0333	0.35	|Q V	|	|	|	|
1+21	0.0338	0.36	|Q V	|	|	|	|
1+22	0.0343	0.36	|Q V	|	|	|	|
1+23	0.0348	0.36	|Q V	|	|	|	|
1+24	0.0353	0.36	|Q V	|	|	|	|
1+25	0.0358	0.36	|Q V	|	|	|	|
1+26	0.0363	0.36	|Q V	|	|	|	|
1+27	0.0368	0.36	|Q V	|	|	|	|
1+28	0.0373	0.37	|Q V	|	|	|	|
1+29	0.0378	0.37	|Q V	|	|	|	|
1+30	0.0383	0.37	|Q V	|	|	|	|
1+31	0.0388	0.37	|Q V	|	|	|	|
1+32	0.0393	0.37	|Q V	|	|	|	|
1+33	0.0398	0.37	|Q V	|	|	|	|
1+34	0.0403	0.37	|Q V	|	|	|	|
1+35	0.0409	0.38	|Q V	|	|	|	|
1+36	0.0414	0.38	|Q V	|	|	|	|
1+37	0.0419	0.38	|Q V	|	|	|	|
1+38	0.0424	0.38	|Q V	|	|	|	|
1+39	0.0429	0.38	|Q V	|	|	|	|
1+40	0.0435	0.39	|Q V	|	|	|	|
1+41	0.0440	0.39	|Q V	|	|	|	|
1+42	0.0446	0.39	|Q V	|	|	|	|
1+43	0.0451	0.39	|Q V	|	|	|	|

```
1+44       0.0456      0.39  |Q  V     |          |          |          |
1+45       0.0462      0.39  |Q  V     |          |          |          |
1+46       0.0467      0.40  |Q  V     |          |          |          |
1+47       0.0473      0.40  |Q  V     |          |          |          |
1+48       0.0478      0.40  |Q  V     |          |          |          |
1+49       0.0484      0.40  |Q   V    |          |          |          |
1+50       0.0489      0.40  |Q   V    |          |          |          |
1+51       0.0495      0.41  |Q   V    |          |          |          |
1+52       0.0500      0.41  |Q   V    |          |          |          |
1+53       0.0506      0.41  |Q   V    |          |          |          |
1+54       0.0512      0.41  |Q   V    |          |          |          |
1+55       0.0517      0.41  |Q   V    |          |          |          |
1+56       0.0523      0.42  |Q   V    |          |          |          |
1+57       0.0529      0.42  |Q   V    |          |          |          |
1+58       0.0535      0.42  |Q   V    |          |          |          |
1+59       0.0540      0.42  |Q   V    |          |          |          |
2+ 0       0.0546      0.42  |Q   V    |          |          |          |
2+ 1       0.0552      0.42  |Q   V    |          |          |          |
2+ 2       0.0558      0.43  |Q   V    |          |          |          |
2+ 3       0.0564      0.43  |Q   V    |          |          |          |
2+ 4       0.0570      0.43  |Q   V    |          |          |          |
2+ 5       0.0576      0.44  |Q   V    |          |          |          |
2+ 6       0.0582      0.44  |Q    V   |          |          |          |
2+ 7       0.0588      0.44  |Q    V   |          |          |          |
2+ 8       0.0594      0.44  |Q    V   |          |          |          |
2+ 9       0.0600      0.44  |Q    V   |          |          |          |
2+10       0.0606      0.45  |Q    V   |          |          |          |
2+11       0.0613      0.45  |Q    V   |          |          |          |
2+12       0.0619      0.45  |Q    V   |          |          |          |
2+13       0.0625      0.45  |Q    V   |          |          |          |
2+14       0.0631      0.46  |Q    V   |          |          |          |
2+15       0.0638      0.46  |Q    V   |          |          |          |
2+16       0.0644      0.46  |Q    V   |          |          |          |
2+17       0.0651      0.47  |Q    V   |          |          |          |
2+18       0.0657      0.47  |Q    V   |          |          |          |
2+19       0.0664      0.47  |Q    V   |          |          |          |
2+20       0.0670      0.48  |Q    V   |          |          |          |
2+21       0.0677      0.48  |Q     V  |          |          |          |
2+22       0.0683      0.48  |Q     V  |          |          |          |
2+23       0.0690      0.48  |Q     V  |          |          |          |
2+24       0.0697      0.48  |Q     V  |          |          |          |
2+25       0.0703      0.49  |Q     V  |          |          |          |
2+26       0.0710      0.49  |Q     V  |          |          |          |
2+27       0.0717      0.50  |Q     V  |          |          |          |
2+28       0.0724      0.50  |Q     V  |          |          |          |
2+29       0.0731      0.50  |Q     V  |          |          |          |
2+30       0.0738      0.51  |Q     V  |          |          |          |
2+31       0.0745      0.51  |Q     V  |          |          |          |
2+32       0.0752      0.51  |Q     V  |          |          |          |
2+33       0.0759      0.52  |Q     V  |          |          |          |
```

```
2+34       0.0766      0.52  |Q     V  |          |          |          |
2+35       0.0773      0.52  |Q      V |          |          |          |
2+36       0.0781      0.52  |Q      V |          |          |          |
2+37       0.0788      0.53  | Q     V |          |          |          |
2+38       0.0795      0.53  | Q     V |          |          |          |
2+39       0.0803      0.54  | Q     V |          |          |          |
2+40       0.0810      0.55  | Q     V |          |          |          |
2+41       0.0818      0.55  | Q     V |          |          |          |
2+42       0.0825      0.56  | Q     V |          |          |          |
2+43       0.0833      0.56  | Q     V |          |          |          |
2+44       0.0841      0.56  | Q     V |          |          |          |
2+45       0.0849      0.57  | Q     V |          |          |          |
2+46       0.0856      0.57  | Q     V |          |          |          |
2+47       0.0864      0.57  | Q     V |          |          |          |
2+48       0.0872      0.57  | Q      V|          |          |          |
2+49       0.0880      0.58  | Q      V|          |          |          |
2+50       0.0888      0.59  | Q      V|          |          |          |
2+51       0.0897      0.60  | Q      V|          |          |          |
2+52       0.0905      0.60  | Q      V|          |          |          |
2+53       0.0913      0.61  | Q      V|          |          |          |
2+54       0.0922      0.62  | Q      V|          |          |          |
2+55       0.0930      0.62  | Q      V|          |          |          |
2+56       0.0939      0.62  | Q      V|          |          |          |
2+57       0.0948      0.63  | Q      V|          |          |          |
2+58       0.0956      0.63  | Q      V|          |          |          |
2+59       0.0965      0.64  | Q      V|          |          |          |
3+ 0       0.0974      0.64  | Q       V          |          |          |
3+ 1       0.0983      0.65  | Q       V          |          |          |
3+ 2       0.0992      0.66  | Q       V          |          |          |
3+ 3       0.1001      0.67  | Q       V          |          |          |
3+ 4       0.1010      0.68  | Q       V          |          |          |
3+ 5       0.1020      0.69  | Q       V          |          |          |
3+ 6       0.1029      0.70  | Q       V          |          |          |
3+ 7       0.1039      0.70  | Q       V          |          |          |
3+ 8       0.1049      0.71  | Q       V          |          |          |
3+ 9       0.1059      0.71  | Q       V          |          |          |
3+10       0.1068      0.72  | Q       |V         |          |          |
3+11       0.1078      0.72  | Q       |V         |          |          |
3+12       0.1088      0.73  | Q       |V         |          |          |
3+13       0.1099      0.74  | Q       |V         |          |          |
3+14       0.1109      0.75  | Q       |V         |          |          |
3+15       0.1120      0.77  | Q       |V         |          |          |
3+16       0.1130      0.78  | Q       |V         |          |          |
3+17       0.1141      0.79  |  Q      |V         |          |          |
3+18       0.1152      0.81  |  Q      |V         |          |          |
3+19       0.1164      0.82  |  Q      | V        |          |          |
3+20       0.1175      0.82  |  Q      | V        |          |          |
3+21       0.1187      0.83  |  Q      | V        |          |          |
3+22       0.1198      0.84  |  Q      | V        |          |          |
3+23       0.1210      0.85  |  Q      | V        |          |          |
```

3+24	0.1222	0.86	Q	V			
3+25	0.1234	0.88	Q	V			
3+26	0.1246	0.90	Q	V			
3+27	0.1259	0.92	Q	V			
3+28	0.1272	0.94	Q	V			
3+29	0.1285	0.96	Q	V			
3+30	0.1298	0.98	Q	V			
3+31	0.1312	1.00	Q	V			
3+32	0.1326	1.01	Q	V			
3+33	0.1340	1.02	Q	V			
3+34	0.1354	1.04	Q	V			
3+35	0.1369	1.05	Q	V			
3+36	0.1384	1.06	Q	V			
3+37	0.1399	1.10	Q	V			
3+38	0.1415	1.14	Q	V			
3+39	0.1431	1.18	Q	V			
3+40	0.1448	1.22	Q	V			
3+41	0.1465	1.26	Q	V			
3+42	0.1483	1.30	Q	V			
3+43	0.1501	1.33	Q	V			
3+44	0.1520	1.36	Q	V			
3+45	0.1539	1.39	Q	V			
3+46	0.1559	1.42	Q	V			
3+47	0.1579	1.45	Q	V			
3+48	0.1599	1.48	Q	V			
3+49	0.1621	1.60	Q	V			
3+50	0.1645	1.71	Q	V			
3+51	0.1670	1.83	Q	V			
3+52	0.1697	1.95	Q	V			
3+53	0.1725	2.06	Q	V			
3+54	0.1755	2.18	Q	V			
3+55	0.1787	2.32	Q	V			
3+56	0.1821	2.47	Q	V			
3+57	0.1857	2.62	Q	V			
3+58	0.1896	2.77	Q	V			
3+59	0.1936	2.92	Q	V			
4+ 0	0.1978	3.07	Q	V			
4+ 1	0.2037	4.31	Q	V			
4+ 2	0.2114	5.56	Q	V			
4+ 3	0.2208	6.80	Q	V			
4+ 4	0.2319	8.05	Q	V			
4+ 5	0.2447	9.30	Q	V			
4+ 6	0.2592	10.54	Q	V			
4+ 7	0.2717	9.08	Q	V			
4+ 8	0.2822	7.61	Q	V			
4+ 9	0.2906	6.14	Q	V			
4+10	0.2971	4.68	Q	V			
4+11	0.3015	3.21	Q	V			
4+12	0.3039	1.75	Q	V			
4+13	0.3062	1.65	Q	V			

4+14	0.3083	1.55	Q			V
4+15	0.3103	1.46	Q			V
4+16	0.3122	1.36	Q			V
4+17	0.3139	1.26	Q			V
4+18	0.3155	1.17	Q			V
4+19	0.3171	1.13	Q			V
4+20	0.3186	1.08	Q			V
4+21	0.3200	1.04	Q			V
4+22	0.3214	1.00	Q			V
4+23	0.3227	0.96	Q			V
4+24	0.3240	0.91	Q			V
4+25	0.3252	0.89	Q			V
4+26	0.3264	0.86	Q			V
4+27	0.3275	0.84	Q			V
4+28	0.3287	0.81	Q			V
4+29	0.3298	0.79	Q			V
4+30	0.3308	0.77	Q			V
4+31	0.3318	0.75	Q			V
4+32	0.3328	0.73	Q			V
4+33	0.3338	0.72	Q			V
4+34	0.3348	0.70	Q			V
4+35	0.3357	0.68	Q			V
4+36	0.3367	0.67	Q			V
4+37	0.3376	0.65	Q			V
4+38	0.3384	0.64	Q			V
4+39	0.3393	0.63	Q			V
4+40	0.3402	0.62	Q			V
4+41	0.3410	0.61	Q			V
4+42	0.3418	0.59	Q			V
4+43	0.3426	0.59	Q			V
4+44	0.3434	0.58	Q			V
4+45	0.3442	0.57	Q			V
4+46	0.3450	0.56	Q			V
4+47	0.3457	0.55	Q			V
4+48	0.3465	0.54	Q			V
4+49	0.3472	0.53	Q			V
4+50	0.3479	0.52	Q			V
4+51	0.3486	0.52	Q			V
4+52	0.3493	0.51	Q			V
4+53	0.3500	0.50	Q			V
4+54	0.3507	0.50	Q			V
4+55	0.3514	0.49	Q			V
4+56	0.3521	0.48	Q			V
4+57	0.3527	0.48	Q			V
4+58	0.3534	0.47	Q			V
4+59	0.3540	0.47	Q			V
5+ 0	0.3546	0.46	Q			V
5+ 1	0.3553	0.46	Q			V
5+ 2	0.3559	0.45	Q			V
5+ 3	0.3565	0.45	Q			V

```
5+ 4       0.3571      0.44  |Q        |         |         |     V   |
5+ 5       0.3577      0.44  |Q        |         |         |      V  |
5+ 6       0.3583      0.43  |Q        |         |         |      V  |
5+ 7       0.3589      0.43  |Q        |         |         |      V  |
5+ 8       0.3595      0.42  |Q        |         |         |      V  |
5+ 9       0.3600      0.42  |Q        |         |         |      V  |
5+10       0.3606      0.41  |Q        |         |         |      V  |
5+11       0.3612      0.41  |Q        |         |         |      V  |
5+12       0.3617      0.41  |Q        |         |         |      V  |
5+13       0.3623      0.40  |Q        |         |         |      V  |
5+14       0.3628      0.40  |Q        |         |         |      V  |
5+15       0.3634      0.39  |Q        |         |         |      V  |
5+16       0.3639      0.39  |Q        |         |         |      V  |
5+17       0.3644      0.39  |Q        |         |         |      V  |
5+18       0.3650      0.38  |Q        |         |         |      V  |
5+19       0.3655      0.38  |Q        |         |         |      V  |
5+20       0.3660      0.38  |Q        |         |         |      V  |
5+21       0.3665      0.37  |Q        |         |         |      V  |
5+22       0.3670      0.37  |Q        |         |         |       V |
5+23       0.3676      0.37  |Q        |         |         |       V |
5+24       0.3681      0.36  |Q        |         |         |       V |
5+25       0.3686      0.36  |Q        |         |         |       V |
5+26       0.3690      0.36  |Q        |         |         |       V |
5+27       0.3695      0.36  |Q        |         |         |       V |
5+28       0.3700      0.35  |Q        |         |         |       V |
5+29       0.3705      0.35  |Q        |         |         |       V |
5+30       0.3710      0.35  |Q        |         |         |       V |
5+31       0.3715      0.35  |Q        |         |         |       V |
5+32       0.3719      0.34  |Q        |         |         |       V |
5+33       0.3724      0.34  |Q        |         |         |       V |
5+34       0.3729      0.34  |Q        |         |         |       V |
5+35       0.3733      0.34  |Q        |         |         |       V |
5+36       0.3738      0.33  |Q        |         |         |       V |
5+37       0.3742      0.33  |Q        |         |         |       V |
5+38       0.3747      0.33  |Q        |         |         |       V |
5+39       0.3751      0.33  |Q        |         |         |       V |
5+40       0.3756      0.32  |Q        |         |         |       V |
5+41       0.3760      0.32  |Q        |         |         |       V |
5+42       0.3765      0.32  |Q        |         |         |       V |
5+43       0.3769      0.32  |Q        |         |         |        V|
5+44       0.3773      0.32  |Q        |         |         |        V|
5+45       0.3778      0.31  |Q        |         |         |        V|
5+46       0.3782      0.31  |Q        |         |         |        V|
5+47       0.3786      0.31  |Q        |         |         |        V|
5+48       0.3790      0.31  |Q        |         |         |        V|
5+49       0.3795      0.31  |Q        |         |         |        V|
5+50       0.3799      0.30  |Q        |         |         |        V|
5+51       0.3803      0.30  |Q        |         |         |        V|
5+52       0.3807      0.30  |Q        |         |         |        V|
5+53       0.3811      0.30  |Q        |         |         |        V|
```

```
    5+54       0.3815      0.30  |Q        |         |         |        V|
    5+55       0.3819      0.29  |Q        |         |         |        V|
    5+56       0.3823      0.29  |Q        |         |         |        V|
    5+57       0.3827      0.29  |Q        |         |         |        V|
    5+58       0.3831      0.29  |Q        |         |         |        V|
    5+59       0.3835      0.29  |Q        |         |         |        V|
    6+ 0       0.3839      0.29  |Q        |         |         |        V|
    6+ 1       0.3843      0.28  |Q        |         |         |        V|
    6+ 2       0.3847      0.28  |Q        |         |         |        V|
    6+ 3       0.3851      0.28  |Q        |         |         |        V|
    6+ 4       0.3855      0.28  |Q        |         |         |        V|
    6+ 5       0.3859      0.28  |Q        |         |         |        V|
    6+ 6       0.3862      0.28  |Q        |         |         |         V
---------------------------------------------------------------------------
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       14.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
____________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[HIGH DENSITY RESIDENTIAL                    ]
(43.0 DU/A or Less      )
Impervious value, Ai = 0.800
Sub-Area C Value = 0.790
Rainfall intensity (I) =      7.415(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =   6.40 min.  Rain intensity =       7.41(In/Hr)
Total area =        1.800(Ac.)  Total runoff =     0.900(CFS)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       14.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
____________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                 ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
```

Rainfall intensity (I) = 3.713(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 18.70 min. Rain intensity = 3.71(In/Hr)
Total area = 17.900(Ac.) Total runoff = 23.300(CFS)
End of computations, total study area = 19.7 (Ac.)

PONDPACK REPORT

Project Summary	
Title	PACIFIC NORTH BMP 6A
Engineer	LUNDSTROM
Company	
Date	5/14/2024

Notes

Table of Contents

PONDPACK REPORT

Subsection: User Notifications

User Notifications?	No user notifications generated.

PONDPACK REPORT

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
DMA 3	Base	0	22,901.000	244.000	17.17

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
OUTFALL	Base	0	31,926.000	275.000	0.91

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
DETENTION VAULT BMP 6A (IN)	Base	0	48,079.000	244.000	17.17	(N/A)	(N/A)
DETENTION VAULT BMP 6A (OUT)	Base	0	31,926.000	275.000	0.91	529.52	18,090.000

PONDPACK REPORT

Subsection: Read Hydrograph
Label: DMA 3

Scenario: Base

Peak Discharge	17.17 ft³/s
Time to Peak	244.000 min
Hydrograph Volume	22,900.800 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 4.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	0.00	0.38	0.40	0.40	0.40
20.000	0.41	0.41	0.42	0.42	0.43
40.000	0.43	0.44	0.44	0.45	0.45
60.000	0.46	0.47	0.47	0.48	0.49
80.000	0.49	0.51	0.51	0.52	0.53
100.000	0.54	0.55	0.56	0.57	0.58
120.000	0.60	0.61	0.52	0.65	0.67
140.000	0.67	0.68	0.70	0.72	0.75
160.000	0.76	0.79	0.81	0.85	0.87
180.000	0.92	0.95	1.00	1.04	1.11
200.000	1.15	1.26	1.31	1.45	1.55
220.000	1.77	1.92	2.35	2.67	3.92
240.000	5.53	17.17	3.15	2.10	1.64
260.000	1.38	1.20	1.07	0.97	0.89
280.000	0.83	0.78	0.73	0.69	0.66
300.000	0.63	0.60	0.58	0.55	0.53
320.000	0.52	0.50	0.48	0.47	0.46
340.000	0.44	0.43	0.42	0.41	0.40
360.000	0.39	0.39	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	525.00	525.00	525.00	525.01	525.01
5.000	525.02	525.02	525.03	525.03	525.04
10.000	525.05	525.05	525.06	525.06	525.07
15.000	525.08	525.08	525.09	525.09	525.10
20.000	525.11	525.11	525.12	525.12	525.13
25.000	525.14	525.14	525.15	525.16	525.16
30.000	525.17	525.17	525.18	525.19	525.19
35.000	525.20	525.21	525.21	525.22	525.22
40.000	525.23	525.24	525.24	525.25	525.26
45.000	525.26	525.27	525.28	525.28	525.29
50.000	525.29	525.30	525.31	525.31	525.32
55.000	525.33	525.33	525.34	525.35	525.35
60.000	525.36	525.37	525.37	525.38	525.39
65.000	525.39	525.40	525.41	525.41	525.42
70.000	525.43	525.43	525.44	525.45	525.46
75.000	525.46	525.47	525.48	525.48	525.49
80.000	525.50	525.50	525.51	525.52	525.53
85.000	525.53	525.54	525.55	525.56	525.56
90.000	525.57	525.58	525.59	525.59	525.60
95.000	525.61	525.62	525.62	525.63	525.64
100.000	525.65	525.65	525.66	525.67	525.68
105.000	525.69	525.69	525.70	525.71	525.72
110.000	525.73	525.73	525.74	525.75	525.76
115.000	525.77	525.77	525.78	525.79	525.80
120.000	525.81	525.82	525.83	525.83	525.84
125.000	525.85	525.86	525.87	525.87	525.88
130.000	525.89	525.90	525.91	525.92	525.93
135.000	525.94	525.95	525.96	525.96	525.97
140.000	525.98	525.99	526.00	526.01	526.02
145.000	526.03	526.04	526.05	526.06	526.07
150.000	526.08	526.09	526.10	526.11	526.12
155.000	526.13	526.15	526.16	526.17	526.18
160.000	526.19	526.20	526.21	526.22	526.23
165.000	526.24	526.26	526.27	526.28	526.29
170.000	526.30	526.31	526.33	526.34	526.35
175.000	526.36	526.38	526.39	526.40	526.41
180.000	526.43	526.44	526.45	526.47	526.48
185.000	526.49	526.51	526.52	526.54	526.55
190.000	526.57	526.58	526.60	526.61	526.63
195.000	526.64	526.66	526.67	526.69	526.71
200.000	526.72	526.74	526.76	526.78	526.79

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
205.000	526.81	526.83	526.85	526.87	526.89
210.000	526.91	526.93	526.95	526.97	526.99
215.000	527.01	527.04	527.06	527.08	527.11
220.000	527.13	527.16	527.19	527.21	527.24
225.000	527.27	527.30	527.33	527.37	527.40
230.000	527.44	527.47	527.51	527.55	527.60
235.000	527.65	527.71	527.77	527.84	527.91
240.000	527.99	528.09	528.24	528.43	528.67
245.000	528.89	529.07	529.19	529.25	529.29
250.000	529.32	529.34	529.37	529.39	529.40
255.000	529.42	529.43	529.44	529.46	529.46
260.000	529.47	529.48	529.49	529.49	529.50
265.000	529.50	529.51	529.51	529.51	529.52
270.000	529.52	529.52	529.52	529.52	529.52
275.000	529.52	529.52	529.52	529.52	529.52
280.000	529.52	529.52	529.52	529.52	529.51
285.000	529.51	529.51	529.51	529.51	529.50
290.000	529.50	529.50	529.50	529.49	529.49
295.000	529.49	529.48	529.48	529.48	529.47
300.000	529.47	529.47	529.47	529.46	529.46
305.000	529.45	529.45	529.45	529.44	529.44
310.000	529.44	529.43	529.43	529.43	529.42
315.000	529.42	529.41	529.41	529.41	529.40
320.000	529.40	529.40	529.39	529.39	529.38
325.000	529.38	529.38	529.37	529.37	529.36
330.000	529.36	529.36	529.35	529.35	529.35
335.000	529.34	529.34	529.33	529.33	529.33
340.000	529.32	529.32	529.32	529.31	529.31
345.000	529.30	529.30	529.30	529.29	529.29
350.000	529.29	529.28	529.28	529.28	529.27
355.000	529.27	529.27	529.26	529.26	529.26
360.000	529.25	529.25	529.25	529.24	529.24
365.000	529.24	529.23	529.23	529.23	529.22
370.000	529.22	529.22	529.22	529.21	529.21
375.000	529.21	529.20	529.20	529.20	529.20
380.000	529.19	529.19	529.19	529.19	529.18
385.000	529.18	529.18	529.18	529.18	529.17
390.000	529.17	529.17	529.17	529.17	529.16
395.000	529.16	529.16	529.16	529.16	529.15
400.000	529.15	529.15	529.15	529.15	529.14
405.000	529.14	529.14	529.14	529.14	529.14

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
410.000	529.14	529.13	529.13	529.13	529.13
415.000	529.13	529.13	529.13	529.12	529.12
420.000	529.12	529.12	529.12	529.12	529.12
425.000	529.11	529.11	529.11	529.11	529.11
430.000	529.11	529.11	529.11	529.11	529.10
435.000	529.10	529.10	529.10	529.10	529.10
440.000	529.10	529.10	529.10	529.10	529.09
445.000	529.09	529.09	529.09	529.09	529.09
450.000	529.09	529.09	529.09	529.09	529.09
455.000	529.09	529.09	529.08	529.08	529.08
460.000	529.08	529.08	529.08	529.08	529.08
465.000	529.08	529.08	529.08	529.08	529.08
470.000	529.08	529.08	529.07	529.07	529.07
475.000	529.07	529.07	529.07	529.07	529.07
480.000	529.07	529.07	529.07	529.07	529.07
485.000	529.07	529.07	529.07	529.07	529.07
490.000	529.07	529.07	529.06	529.06	529.06
495.000	529.06	529.06	529.06	529.06	529.06
500.000	529.06	529.06	529.06	529.06	529.06
505.000	529.06	529.06	529.06	529.06	529.06
510.000	529.06	529.06	529.06	529.06	529.06
515.000	529.06	529.06	529.06	529.06	529.06
520.000	529.06	529.06	529.05	529.05	529.05
525.000	529.05	529.05	529.05	529.05	529.05
530.000	529.05	529.05	529.05	529.05	529.05
535.000	529.05	529.05	529.05	529.05	529.05
540.000	529.05	529.05	529.05	529.05	529.05
545.000	529.05	529.05	529.05	529.05	529.05
550.000	529.05	529.05	529.05	529.05	529.05
555.000	529.05	529.05	529.05	529.05	529.05
560.000	529.05	529.05	529.05	529.05	529.05
565.000	529.05	529.05	529.05	529.05	529.05
570.000	529.05	529.05	529.05	529.05	529.05
575.000	529.05	529.05	529.05	529.05	529.05
580.000	529.04	529.04	529.04	529.04	529.04
585.000	529.04	529.04	529.04	529.04	529.04
590.000	529.04	529.04	529.04	529.04	529.04
595.000	529.04	529.04	529.04	529.04	529.04
600.000	529.04	529.04	529.04	529.04	529.04
605.000	529.04	529.04	529.04	529.04	529.04
610.000	529.04	529.04	529.04	529.04	529.04

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
615.000	529.04	529.04	529.04	529.04	529.04
620.000	529.04	529.04	529.04	529.04	529.04
625.000	529.04	529.04	529.04	529.04	529.04
630.000	529.04	529.04	529.04	529.04	529.04
635.000	529.04	529.04	529.04	529.04	529.04
640.000	529.04	529.04	529.04	529.04	529.04
645.000	529.04	529.04	529.04	529.04	529.04
650.000	529.04	529.04	529.04	529.04	529.04
655.000	529.04	529.04	529.04	529.04	529.04
660.000	529.04	529.04	529.04	529.04	529.04
665.000	529.04	529.04	529.04	529.04	529.04
670.000	529.04	529.04	529.04	529.04	529.04
675.000	529.04	529.04	529.04	529.04	529.04
680.000	529.04	529.04	529.04	529.04	529.04
685.000	529.04	529.04	529.04	529.04	529.04
690.000	529.04	529.04	529.04	529.04	529.04
695.000	529.04	529.04	529.04	529.04	529.04
700.000	529.04	529.04	529.04	529.04	529.04
705.000	529.04	529.04	529.04	529.04	529.04
710.000	529.04	529.04	529.04	529.04	529.04
715.000	529.04	529.04	529.04	529.04	529.04
720.000	529.04	529.04	529.04	529.04	529.04
725.000	529.04	529.04	529.04	529.04	529.04
730.000	529.04	529.04	529.04	529.04	529.04
735.000	529.04	529.04	529.04	529.04	529.04
740.000	529.04	529.04	529.04	529.04	529.04
745.000	529.04	529.04	529.04	529.04	529.04
750.000	529.04	529.04	529.04	529.04	529.04
755.000	529.04	529.04	529.04	529.04	529.04
760.000	529.04	529.04	529.04	529.04	529.04
765.000	529.04	529.04	529.04	529.04	529.04
770.000	529.04	529.04	529.04	529.04	529.04
775.000	529.04	529.04	529.04	529.04	529.04
780.000	529.04	529.04	529.04	529.04	529.04
785.000	529.04	529.04	529.04	529.04	529.04
790.000	529.04	529.04	529.04	529.04	529.04
795.000	529.04	529.04	529.04	529.04	529.04
800.000	529.04	529.04	529.04	529.04	529.04
805.000	529.04	529.04	529.04	529.04	529.04
810.000	529.04	529.04	529.04	529.04	529.04
815.000	529.04	529.04	529.04	529.04	529.04

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
820.000	529.04	529.04	529.04	529.04	529.04
825.000	529.04	529.04	529.04	529.04	529.04
830.000	529.04	529.04	529.04	529.04	529.04
835.000	529.04	529.04	529.04	529.04	529.04
840.000	529.04	529.04	529.04	529.04	529.04
845.000	529.04	529.04	529.04	529.04	529.04
850.000	529.04	529.04	529.04	529.04	529.04
855.000	529.04	529.04	529.04	529.04	529.04
860.000	529.04	529.04	529.04	529.04	529.04
865.000	529.04	529.04	529.04	529.04	529.04
870.000	529.04	529.04	529.04	529.04	529.04
875.000	529.04	529.04	529.04	529.04	529.04
880.000	529.04	529.04	529.04	529.04	529.04
885.000	529.04	529.04	529.04	529.04	529.04
890.000	529.04	529.04	529.04	529.04	529.04
895.000	529.04	529.04	529.04	529.04	529.04
900.000	529.04	529.04	529.04	529.04	529.04
905.000	529.04	529.04	529.04	529.04	529.04
910.000	529.04	529.04	529.04	529.04	529.04
915.000	529.04	529.04	529.04	529.04	529.04
920.000	529.04	529.04	529.04	529.04	529.04
925.000	529.04	529.04	529.04	529.04	529.04
930.000	529.04	529.04	529.04	529.04	529.04
935.000	529.04	529.04	529.04	529.04	529.04
940.000	529.04	529.04	529.04	529.04	529.04
945.000	529.04	529.04	529.04	529.04	529.04
950.000	529.04	529.04	529.04	529.04	529.04
955.000	529.04	529.04	529.04	529.04	529.04
960.000	529.04	529.04	529.04	529.04	529.04
965.000	529.04	529.04	529.04	529.04	529.04
970.000	529.04	529.04	529.04	529.04	529.04
975.000	529.04	529.04	529.04	529.04	529.04
980.000	529.04	529.04	529.04	529.04	529.04
985.000	529.04	529.04	529.04	529.04	529.04
990.000	529.04	529.04	529.04	529.04	529.04
995.000	529.04	529.04	529.04	529.04	529.04
1,000.000	529.04	529.04	529.04	529.04	529.04
1,005.000	529.04	529.04	529.04	529.04	529.04
1,010.000	529.04	529.04	529.04	529.04	529.04
1,015.000	529.04	529.04	529.04	529.04	529.04
1,020.000	529.04	529.04	529.04	529.04	529.04

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base

Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,025.000	529.04	529.04	529.04	529.04	529.04
1,030.000	529.04	529.04	529.04	529.04	529.04
1,035.000	529.04	529.04	529.04	529.04	529.04
1,040.000	529.04	529.04	529.04	529.04	529.04
1,045.000	529.04	529.04	529.04	529.04	529.04
1,050.000	529.04	529.04	529.04	529.04	529.04
1,055.000	529.04	529.04	529.04	529.04	529.04
1,060.000	529.04	529.04	529.04	529.04	529.04
1,065.000	529.04	529.04	529.04	529.04	529.04
1,070.000	529.04	529.04	529.04	529.04	529.04
1,075.000	529.04	529.04	529.04	529.04	529.04
1,080.000	529.04	529.04	529.04	529.04	529.04
1,085.000	529.04	529.04	529.04	529.04	529.04
1,090.000	529.04	529.04	529.04	529.04	529.04
1,095.000	529.04	529.04	529.04	529.04	529.04
1,100.000	529.04	529.04	529.04	529.04	529.04
1,105.000	529.04	529.04	529.04	529.04	529.04
1,110.000	529.04	529.04	529.04	529.04	529.04
1,115.000	529.04	529.04	529.04	529.04	529.04
1,120.000	529.04	529.04	529.04	529.04	529.04
1,125.000	529.04	529.04	529.04	529.04	529.04
1,130.000	529.04	529.04	529.04	529.04	529.04
1,135.000	529.04	529.04	529.04	529.04	529.04
1,140.000	529.04	529.04	529.04	529.04	529.04
1,145.000	529.04	529.04	529.04	529.04	529.04
1,150.000	529.04	529.04	529.04	529.04	529.04
1,155.000	529.04	529.04	529.04	529.04	529.04
1,160.000	529.04	529.04	529.04	529.04	529.04
1,165.000	529.04	529.04	529.04	529.04	529.04
1,170.000	529.04	529.04	529.04	529.04	529.04
1,175.000	529.04	529.04	529.04	529.04	529.04
1,180.000	529.04	529.04	529.04	529.04	529.04
1,185.000	529.04	529.04	529.04	529.04	529.04
1,190.000	529.04	529.04	529.04	529.04	529.04
1,195.000	529.04	529.04	529.04	529.04	529.04
1,200.000	529.04	529.04	529.04	529.04	529.04
1,205.000	529.04	529.04	529.04	529.04	529.04
1,210.000	529.04	529.04	529.04	529.04	529.04
1,215.000	529.04	529.04	529.04	529.04	529.04
1,220.000	529.04	529.04	529.04	529.04	529.04
1,225.000	529.04	529.04	529.04	529.04	529.04

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,230.000	529.04	529.04	529.04	529.04	529.04
1,235.000	529.04	529.04	529.04	529.04	529.04
1,240.000	529.04	529.04	529.04	529.04	529.04
1,245.000	529.04	529.04	529.04	529.04	529.04
1,250.000	529.04	529.04	529.04	529.04	529.04
1,255.000	529.04	529.04	529.04	529.04	529.04
1,260.000	529.04	529.04	529.04	529.04	529.04
1,265.000	529.04	529.04	529.04	529.04	529.04
1,270.000	529.04	529.04	529.04	529.04	529.04
1,275.000	529.04	529.04	529.04	529.04	529.04
1,280.000	529.04	529.04	529.04	529.04	529.04
1,285.000	529.04	529.04	529.04	529.04	529.04
1,290.000	529.04	529.04	529.04	529.04	529.04
1,295.000	529.04	529.04	529.04	529.04	529.04
1,300.000	529.04	529.04	529.04	529.04	529.04
1,305.000	529.04	529.04	529.04	529.04	529.04
1,310.000	529.04	529.04	529.04	529.04	529.04
1,315.000	529.04	529.04	529.04	529.04	529.04
1,320.000	529.04	529.04	529.04	529.04	529.04
1,325.000	529.04	529.04	529.04	529.04	529.04
1,330.000	529.04	529.04	529.04	529.04	529.04
1,335.000	529.04	529.04	529.04	529.04	529.04
1,340.000	529.04	529.04	529.04	529.04	529.04
1,345.000	529.04	529.04	529.04	529.04	529.04
1,350.000	529.04	529.04	529.04	529.04	529.04
1,355.000	529.04	529.04	529.04	529.04	529.04
1,360.000	529.04	529.04	529.04	529.04	529.04
1,365.000	529.04	529.04	529.04	529.04	529.04
1,370.000	529.04	529.04	529.04	529.04	529.04
1,375.000	529.04	529.04	529.04	529.04	529.04
1,380.000	529.04	529.04	529.04	529.04	529.04
1,385.000	529.04	529.04	529.04	529.04	529.04
1,390.000	529.04	529.04	529.04	529.04	529.04
1,395.000	529.04	529.04	529.04	529.04	529.04
1,400.000	529.04	529.04	529.04	529.04	529.04
1,405.000	529.04	529.04	529.04	529.04	529.04
1,410.000	529.04	529.04	529.04	529.04	529.04
1,415.000	529.04	529.04	529.04	529.04	529.04
1,420.000	529.04	529.04	529.04	529.04	529.04
1,425.000	529.04	529.04	529.04	529.04	529.04
1,430.000	529.04	529.04	529.04	529.04	529.04

PONDPACK REPORT

Subsection: Time vs. Elevation
Scenario: Base
Label: DETENTION VAULT BMP 6A (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,435.000	529.04	529.04	529.04	529.04	529.04
1,440.000	529.04	(N/A)	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Time vs. Volume
Scenario: Base
Label: DETENTION VAULT BMP 6A

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	3.000	11.000	26.000	46.000
5.000	68.000	92.000	115.000	139.000	163.000
10.000	187.000	211.000	234.000	258.000	282.000
15.000	306.000	330.000	354.000	378.000	402.000
20.000	426.000	450.000	475.000	499.000	523.000
25.000	547.000	572.000	597.000	621.000	646.000
30.000	671.000	696.000	720.000	745.000	770.000
35.000	795.000	820.000	846.000	871.000	896.000
40.000	921.000	947.000	972.000	998.000	1,023.000
45.000	1,049.000	1,075.000	1,100.000	1,126.000	1,152.000
50.000	1,178.000	1,204.000	1,230.000	1,256.000	1,282.000
55.000	1,308.000	1,335.000	1,361.000	1,387.000	1,414.000
60.000	1,440.000	1,467.000	1,494.000	1,521.000	1,548.000
65.000	1,575.000	1,602.000	1,629.000	1,657.000	1,684.000
70.000	1,711.000	1,739.000	1,766.000	1,794.000	1,822.000
75.000	1,850.000	1,878.000	1,906.000	1,934.000	1,962.000
80.000	1,991.000	2,019.000	2,047.000	2,076.000	2,105.000
85.000	2,135.000	2,164.000	2,193.000	2,222.000	2,252.000
90.000	2,281.000	2,311.000	2,341.000	2,370.000	2,401.000
95.000	2,431.000	2,461.000	2,491.000	2,522.000	2,553.000
100.000	2,584.000	2,615.000	2,646.000	2,677.000	2,709.000
105.000	2,740.000	2,772.000	2,804.000	2,836.000	2,868.000
110.000	2,900.000	2,933.000	2,965.000	2,998.000	3,031.000
115.000	3,064.000	3,097.000	3,130.000	3,164.000	3,198.000
120.000	3,232.000	3,266.000	3,301.000	3,336.000	3,371.000
125.000	3,405.000	3,438.000	3,469.000	3,499.000	3,530.000
130.000	3,562.000	3,596.000	3,632.000	3,669.000	3,707.000
135.000	3,745.000	3,783.000	3,821.000	3,860.000	3,898.000
140.000	3,936.000	3,975.000	4,013.000	4,052.000	4,091.000
145.000	4,130.000	4,169.000	4,209.000	4,249.000	4,289.000
150.000	4,330.000	4,371.000	4,412.000	4,453.000	4,495.000
155.000	4,537.000	4,580.000	4,623.000	4,666.000	4,710.000
160.000	4,753.000	4,797.000	4,841.000	4,886.000	4,931.000
165.000	4,977.000	5,022.000	5,068.000	5,115.000	5,162.000
170.000	5,209.000	5,257.000	5,305.000	5,354.000	5,404.000
175.000	5,453.000	5,503.000	5,554.000	5,605.000	5,657.000
180.000	5,709.000	5,762.000	5,816.000	5,870.000	5,925.000
185.000	5,980.000	6,035.000	6,092.000	6,149.000	6,207.000
190.000	6,266.000	6,325.000	6,385.000	6,445.000	6,507.000
195.000	6,569.000	6,633.000	6,698.000	6,763.000	6,828.000
200.000	6,895.000	6,962.000	7,031.000	7,102.000	7,174.000

PONDPACK REPORT

Subsection: Time vs. Volume
Scenario: Base
Label: DETENTION VAULT BMP 6A

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
205.000	7,247.000	7,322.000	7,396.000	7,472.000	7,549.000
210.000	7,628.000	7,710.000	7,793.000	7,878.000	7,965.000
215.000	8,053.000	8,142.000	8,234.000	8,329.000	8,428.000
220.000	8,530.000	8,634.000	8,741.000	8,850.000	8,961.000
225.000	9,077.000	9,199.000	9,328.000	9,462.000	9,603.000
230.000	9,748.000	9,898.000	10,053.000	10,220.000	10,405.000
235.000	10,609.000	10,832.000	11,076.000	11,344.000	11,636.000
240.000	11,953.000	12,369.000	12,959.000	13,724.000	14,660.000
245.000	15,572.000	16,266.000	16,741.000	17,001.000	17,144.000
250.000	17,269.000	17,377.000	17,467.000	17,545.000	17,615.000
255.000	17,676.000	17,730.000	17,778.000	17,821.000	17,860.000
260.000	17,894.000	17,924.000	17,951.000	17,975.000	17,996.000
265.000	18,014.000	18,030.000	18,044.000	18,056.000	18,065.000
270.000	18,073.000	18,079.000	18,084.000	18,087.000	18,089.000
275.000	18,090.000	18,090.000	18,088.000	18,086.000	18,083.000
280.000	18,079.000	18,074.000	18,068.000	18,062.000	18,056.000
285.000	18,048.000	18,041.000	18,032.000	18,023.000	18,014.000
290.000	18,004.000	17,993.000	17,983.000	17,972.000	17,960.000
295.000	17,949.000	17,937.000	17,925.000	17,912.000	17,900.000
300.000	17,887.000	17,873.000	17,860.000	17,846.000	17,833.000
305.000	17,819.000	17,804.000	17,790.000	17,776.000	17,762.000
310.000	17,747.000	17,732.000	17,717.000	17,702.000	17,687.000
315.000	17,672.000	17,656.000	17,641.000	17,626.000	17,610.000
320.000	17,595.000	17,580.000	17,565.000	17,550.000	17,535.000
325.000	17,520.000	17,504.000	17,489.000	17,473.000	17,458.000
330.000	17,443.000	17,427.000	17,412.000	17,397.000	17,382.000
335.000	17,367.000	17,352.000	17,338.000	17,323.000	17,308.000
340.000	17,293.000	17,278.000	17,263.000	17,248.000	17,233.000
345.000	17,219.000	17,204.000	17,190.000	17,175.000	17,161.000
350.000	17,147.000	17,132.000	17,118.000	17,104.000	17,090.000
355.000	17,076.000	17,063.000	17,049.000	17,035.000	17,022.000
360.000	17,008.000	16,995.000	16,981.000	16,968.000	16,956.000
365.000	16,943.000	16,931.000	16,918.000	16,906.000	16,895.000
370.000	16,883.000	16,871.000	16,860.000	16,849.000	16,838.000
375.000	16,827.000	16,817.000	16,806.000	16,796.000	16,786.000
380.000	16,776.000	16,766.000	16,757.000	16,747.000	16,738.000
385.000	16,729.000	16,720.000	16,711.000	16,702.000	16,693.000
390.000	16,685.000	16,677.000	16,668.000	16,660.000	16,652.000
395.000	16,645.000	16,637.000	16,629.000	16,622.000	16,614.000
400.000	16,607.000	16,600.000	16,593.000	16,586.000	16,579.000
405.000	16,573.000	16,566.000	16,560.000	16,553.000	16,547.000

PONDPACK REPORT

Subsection: Time vs. Volume
Scenario: Base
Label: DETENTION VAULT BMP 6A

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
410.000	16,541.000	16,535.000	16,529.000	16,523.000	16,517.000
415.000	16,511.000	16,506.000	16,500.000	16,495.000	16,489.000
420.000	16,484.000	16,479.000	16,474.000	16,469.000	16,464.000
425.000	16,459.000	16,454.000	16,449.000	16,445.000	16,440.000
430.000	16,436.000	16,431.000	16,427.000	16,423.000	16,418.000
435.000	16,414.000	16,410.000	16,406.000	16,402.000	16,398.000
440.000	16,394.000	16,391.000	16,387.000	16,383.000	16,380.000
445.000	16,376.000	16,373.000	16,369.000	16,366.000	16,362.000
450.000	16,359.000	16,356.000	16,353.000	16,350.000	16,346.000
455.000	16,343.000	16,340.000	16,338.000	16,335.000	16,332.000
460.000	16,329.000	16,326.000	16,324.000	16,321.000	16,318.000
465.000	16,316.000	16,313.000	16,311.000	16,308.000	16,306.000
470.000	16,303.000	16,301.000	16,299.000	16,296.000	16,294.000
475.000	16,292.000	16,290.000	16,288.000	16,285.000	16,283.000
480.000	16,281.000	16,279.000	16,277.000	16,275.000	16,273.000
485.000	16,272.000	16,270.000	16,268.000	16,266.000	16,264.000
490.000	16,263.000	16,261.000	16,259.000	16,258.000	16,256.000
495.000	16,254.000	16,253.000	16,251.000	16,250.000	16,248.000
500.000	16,247.000	16,245.000	16,244.000	16,242.000	16,241.000
505.000	16,240.000	16,238.000	16,237.000	16,236.000	16,234.000
510.000	16,233.000	16,232.000	16,231.000	16,229.000	16,228.000
515.000	16,227.000	16,226.000	16,225.000	16,224.000	16,222.000
520.000	16,221.000	16,220.000	16,219.000	16,218.000	16,217.000
525.000	16,216.000	16,215.000	16,214.000	16,213.000	16,212.000
530.000	16,211.000	16,210.000	16,210.000	16,209.000	16,208.000
535.000	16,207.000	16,206.000	16,205.000	16,204.000	16,204.000
540.000	16,203.000	16,202.000	16,201.000	16,201.000	16,200.000
545.000	16,199.000	16,198.000	16,198.000	16,197.000	16,196.000
550.000	16,196.000	16,195.000	16,194.000	16,194.000	16,193.000
555.000	16,192.000	16,192.000	16,191.000	16,191.000	16,190.000
560.000	16,189.000	16,189.000	16,188.000	16,188.000	16,187.000
565.000	16,187.000	16,186.000	16,186.000	16,185.000	16,185.000
570.000	16,184.000	16,184.000	16,183.000	16,183.000	16,182.000
575.000	16,182.000	16,181.000	16,181.000	16,181.000	16,180.000
580.000	16,180.000	16,179.000	16,179.000	16,178.000	16,178.000
585.000	16,178.000	16,177.000	16,177.000	16,177.000	16,176.000
590.000	16,176.000	16,175.000	16,175.000	16,175.000	16,174.000
595.000	16,174.000	16,174.000	16,173.000	16,173.000	16,173.000
600.000	16,173.000	16,172.000	16,172.000	16,172.000	16,171.000
605.000	16,171.000	16,171.000	16,171.000	16,170.000	16,170.000
610.000	16,170.000	16,169.000	16,169.000	16,169.000	16,169.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6A

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
615.000	16,169.000	16,168.000	16,168.000	16,168.000	16,168.000
620.000	16,167.000	16,167.000	16,167.000	16,167.000	16,167.000
625.000	16,166.000	16,166.000	16,166.000	16,166.000	16,166.000
630.000	16,165.000	16,165.000	16,165.000	16,165.000	16,165.000
635.000	16,164.000	16,164.000	16,164.000	16,164.000	16,164.000
640.000	16,164.000	16,163.000	16,163.000	16,163.000	16,163.000
645.000	16,163.000	16,163.000	16,163.000	16,162.000	16,162.000
650.000	16,162.000	16,162.000	16,162.000	16,162.000	16,162.000
655.000	16,161.000	16,161.000	16,161.000	16,161.000	16,161.000
660.000	16,161.000	16,161.000	16,161.000	16,160.000	16,160.000
665.000	16,160.000	16,160.000	16,160.000	16,160.000	16,160.000
670.000	16,160.000	16,160.000	16,160.000	16,159.000	16,159.000
675.000	16,159.000	16,159.000	16,159.000	16,159.000	16,159.000
680.000	16,159.000	16,159.000	16,159.000	16,159.000	16,158.000
685.000	16,158.000	16,158.000	16,158.000	16,158.000	16,158.000
690.000	16,158.000	16,158.000	16,158.000	16,158.000	16,158.000
695.000	16,158.000	16,158.000	16,158.000	16,157.000	16,157.000
700.000	16,157.000	16,157.000	16,157.000	16,157.000	16,157.000
705.000	16,157.000	16,157.000	16,157.000	16,157.000	16,157.000
710.000	16,157.000	16,157.000	16,157.000	16,157.000	16,157.000
715.000	16,157.000	16,156.000	16,156.000	16,156.000	16,156.000
720.000	16,156.000	16,156.000	16,156.000	16,156.000	16,156.000
725.000	16,156.000	16,156.000	16,156.000	16,156.000	16,156.000
730.000	16,156.000	16,156.000	16,156.000	16,156.000	16,156.000
735.000	16,156.000	16,156.000	16,156.000	16,156.000	16,156.000
740.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
745.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
750.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
755.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
760.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
765.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
770.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
775.000	16,155.000	16,155.000	16,155.000	16,155.000	16,155.000
780.000	16,155.000	16,154.000	16,154.000	16,154.000	16,154.000
785.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
790.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
795.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
800.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
805.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
810.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
815.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6A

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
820.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
825.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
830.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
835.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
840.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
845.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
850.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
855.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
860.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
865.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
870.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
875.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
880.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
885.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
890.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
895.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
900.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
905.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
910.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
915.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
920.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
925.000	16,154.000	16,154.000	16,154.000	16,154.000	16,154.000
930.000	16,154.000	16,154.000	16,154.000	16,153.000	16,153.000
935.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
940.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
945.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
950.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
955.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
960.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
965.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
970.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
975.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
980.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
985.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
990.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
995.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,000.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,005.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,010.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,015.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,020.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6A

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,025.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,030.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,035.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,040.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,045.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,050.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,055.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,060.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,065.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,070.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,075.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,080.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,085.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,090.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,095.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,100.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,105.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,110.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,115.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,120.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,125.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,130.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,135.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,140.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,145.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,150.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,155.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,160.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,165.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,170.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,175.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,180.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,185.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,190.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,195.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,200.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,205.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,210.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,215.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,220.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,225.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6A

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,230.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,235.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,240.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,245.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,250.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,255.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,260.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,265.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,270.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,275.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,280.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,285.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,290.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,295.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,300.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,305.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,310.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,315.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,320.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,325.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,330.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,335.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,340.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,345.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,350.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,355.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,360.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,365.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,370.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,375.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,380.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,385.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,390.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,395.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,400.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,405.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,410.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,415.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,420.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,425.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,430.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000

PONDPACK REPORT

Subsection: Time vs. Volume
Scenario: Base
Label: DETENTION VAULT BMP 6A

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,435.000	16,153.000	16,153.000	16,153.000	16,153.000	16,153.000
1,440.000	16,153.000	(N/A)	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Outlet Input Data Scenario: Base

Label: Composite Outlet Structure - 1

Requested Pond Water Surface Elevations	
Minimum (Headwater)	525.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	531.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	528.50	531.00
Stand Pipe	Riser - 1	Forward	TW	530.00	531.00
Orifice-Circular	Orifice - 1	Forward	TW	525.00	531.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser - 1 Structure Type: Stand Pipe	
Number of Openings	1
Elevation	530.00 ft
Diameter	54.0 in
Orifice Area	15.9 ft²
Orifice Coefficient	0.600
Weir Length	14.14 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	528.50 ft
Weir Length	0.27 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	525.00 ft
Orifice Diameter	1.1 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft

Convergence Tolerances	
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

PONDPACK REPORT

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Base

Label: DETENTION VAULT BMP 6A

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	525.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
525.00	0.00	0.000	0	0.00	0.00	0.00
525.50	0.02	2,000.000	0	0.00	0.02	66.69
526.00	0.03	4,000.000	0	0.00	0.03	133.36
526.50	0.04	6,000.000	0	0.00	0.04	200.04
527.00	0.04	8,000.000	0	0.00	0.04	266.71
527.50	0.05	10,000.000	0	0.00	0.05	333.38
528.00	0.05	12,000.000	0	0.00	0.05	400.05
528.50	0.06	14,000.000	0	0.00	0.06	466.73
529.00	0.35	16,000.000	0	0.00	0.35	533.68
529.50	0.88	18,000.000	0	0.00	0.88	600.88
530.00	1.56	20,000.000	0	0.00	1.56	668.23
530.50	17.36	22,000.000	0	0.00	17.36	750.69
531.00	45.69	24,000.000	0	0.00	45.69	845.69

PONDPACK REPORT

Subsection: Level Pool Pond Routing Summary
Scenario: Base
Label: DETENTION VAULT BMP 6A (IN)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	525.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	17.17 ft³/s	Time to Peak (Flow, In)	244.000 min
Flow (Peak Outlet)	0.91 ft³/s	Time to Peak (Flow, Outlet)	275.000 min

Elevation (Water Surface, Peak)	529.52 ft
Volume (Peak)	18,090.054 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	48,079.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	31,926.000 ft³
Volume (Retained)	16,130.000 ft³
Volume (Unrouted)	-23.000 ft³
Error (Mass Balance)	0.0 %

Summary for Hydrograph Addition at 'DETENTION VAULT BMP 6A'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DMA 3

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	DMA 3	22,900.800	244.000	17.17
Flow (In)	DETENTION VAULT BMP 6A	48,079.200	244.000	17.17

PONDPACK REPORT

Index

PONDPACK REPORT

Project Summary	
Title	PACIFIC NORTH BMP 6B
Engineer	LUNDSTROM
Company	
Date	5/14/2024

Notes

Table of Contents

PONDPACK REPORT

Subsection: User Notifications

User Notifications?	No user notifications generated.

PONDPACK REPORT

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
DMA 1 & DMA 2	Base	0	85,541.000	252.000	43.28

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
OUTFALL	Base	0	57,664.000	259.000	13.03

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
DETENTION VAULT BMP 6B (IN)	Base	0	85,499.000	252.000	43.28	(N/A)	(N/A)
DETENTION VAULT BMP 6B (OUT)	Base	0	57,664.000	259.000	13.03	530.16	61,949.000

PONDPACK REPORT

Subsection: Read Hydrograph
Label: DMA 1 & DMA 2

Scenario: Base

Peak Discharge	43.28 ft³/s
Time to Peak	252.000 min
Hydrograph Volume	85,540.860 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 9.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	0.00	1.38	1.43	1.45	1.50
45.000	1.53	1.59	1.62	1.69	1.73
90.000	1.81	1.86	1.96	2.01	2.14
135.000	2.21	2.37	2.46	2.68	2.80
180.000	3.11	3.30	3.78	4.10	5.01
225.000	5.71	8.38	11.81	43.28	6.72
270.000	4.50	3.52	2.95	2.57	2.29
315.000	2.08	1.91	1.77	1.66	1.56
360.000	1.48	1.40	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	525.00	525.00	525.00	525.00	525.01
5.000	525.01	525.01	525.02	525.02	525.03
10.000	525.04	525.04	525.05	525.06	525.07
15.000	525.07	525.08	525.09	525.09	525.10
20.000	525.11	525.11	525.12	525.13	525.14
25.000	525.14	525.15	525.16	525.16	525.17
30.000	525.18	525.19	525.19	525.20	525.21
35.000	525.22	525.22	525.23	525.24	525.24
40.000	525.25	525.26	525.27	525.27	525.28
45.000	525.29	525.30	525.30	525.31	525.32
50.000	525.33	525.33	525.34	525.35	525.36
55.000	525.36	525.37	525.38	525.39	525.40
60.000	525.40	525.41	525.42	525.43	525.43
65.000	525.44	525.45	525.46	525.47	525.47
70.000	525.48	525.49	525.50	525.51	525.51
75.000	525.52	525.53	525.54	525.55	525.55
80.000	525.56	525.57	525.58	525.59	525.60
85.000	525.60	525.61	525.62	525.63	525.64
90.000	525.65	525.65	525.66	525.67	525.68
95.000	525.69	525.70	525.71	525.72	525.72
100.000	525.73	525.74	525.75	525.76	525.77
105.000	525.78	525.79	525.80	525.81	525.81
110.000	525.82	525.83	525.84	525.85	525.86
115.000	525.87	525.88	525.89	525.90	525.91
120.000	525.92	525.93	525.94	525.95	525.96
125.000	525.97	525.98	525.99	526.00	526.01
130.000	526.02	526.03	526.04	526.05	526.06
135.000	526.07	526.08	526.09	526.10	526.11
140.000	526.12	526.13	526.15	526.16	526.17
145.000	526.18	526.19	526.20	526.21	526.22
150.000	526.24	526.25	526.26	526.27	526.28
155.000	526.29	526.31	526.32	526.33	526.34
160.000	526.35	526.37	526.38	526.39	526.41
165.000	526.42	526.43	526.44	526.46	526.47
170.000	526.48	526.50	526.51	526.52	526.54
175.000	526.55	526.56	526.58	526.59	526.61
180.000	526.62	526.64	526.65	526.67	526.68
185.000	526.70	526.71	526.73	526.74	526.76
190.000	526.78	526.79	526.81	526.82	526.84
195.000	526.86	526.88	526.89	526.91	526.93
200.000	526.95	526.97	526.98	527.00	527.02

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
205.000	527.04	527.06	527.08	527.10	527.12
210.000	527.14	527.16	527.18	527.21	527.23
215.000	527.25	527.28	527.30	527.33	527.35
220.000	527.38	527.40	527.43	527.46	527.48
225.000	527.51	527.54	527.57	527.60	527.63
230.000	527.67	527.70	527.74	527.78	527.82
235.000	527.86	527.90	527.95	528.00	528.05
240.000	528.10	528.15	528.21	528.26	528.33
245.000	528.41	528.51	528.63	528.76	528.90
250.000	529.06	529.24	529.43	529.61	529.77
255.000	529.90	530.01	530.09	530.14	530.16
260.000	530.16	530.14	530.12	530.09	530.07
265.000	530.05	530.04	530.02	530.01	530.00
270.000	529.99	529.97	529.96	529.95	529.93
275.000	529.92	529.90	529.89	529.88	529.86
280.000	529.85	529.83	529.82	529.80	529.79
285.000	529.78	529.76	529.75	529.73	529.72
290.000	529.71	529.69	529.68	529.67	529.65
295.000	529.64	529.63	529.61	529.60	529.59
300.000	529.58	529.56	529.55	529.54	529.53
305.000	529.52	529.51	529.50	529.48	529.47
310.000	529.46	529.45	529.44	529.43	529.42
315.000	529.41	529.40	529.39	529.38	529.37
320.000	529.36	529.35	529.34	529.33	529.33
325.000	529.32	529.31	529.30	529.29	529.28
330.000	529.27	529.26	529.26	529.25	529.24
335.000	529.23	529.22	529.22	529.21	529.20
340.000	529.19	529.19	529.18	529.17	529.17
345.000	529.16	529.15	529.15	529.14	529.13
350.000	529.13	529.12	529.11	529.11	529.10
355.000	529.10	529.09	529.08	529.08	529.07
360.000	529.07	529.06	529.06	529.05	529.05
365.000	529.04	529.04	529.03	529.03	529.02
370.000	529.01	528.99	528.98	528.97	528.96
375.000	528.95	528.94	528.93	528.92	528.91
380.000	528.90	528.89	528.88	528.87	528.86
385.000	528.85	528.84	528.83	528.82	528.82
390.000	528.81	528.80	528.79	528.78	528.77
395.000	528.77	528.76	528.75	528.74	528.74
400.000	528.73	528.72	528.72	528.71	528.70
405.000	528.70	528.69	528.68	528.68	528.67

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
410.000	528.66	528.66	528.65	528.65	528.64
415.000	528.63	528.63	528.62	528.62	528.61
420.000	528.61	528.60	528.60	528.59	528.59
425.000	528.58	528.58	528.57	528.57	528.56
430.000	528.56	528.55	528.55	528.55	528.54
435.000	528.54	528.53	528.53	528.53	528.52
440.000	528.52	528.51	528.51	528.51	528.50
445.000	528.50	528.50	528.49	528.49	528.49
450.000	528.48	528.48	528.48	528.47	528.47
455.000	528.47	528.46	528.46	528.46	528.45
460.000	528.45	528.45	528.44	528.44	528.44
465.000	528.43	528.43	528.43	528.43	528.42
470.000	528.42	528.42	528.41	528.41	528.41
475.000	528.41	528.40	528.40	528.40	528.39
480.000	528.39	528.39	528.39	528.38	528.38
485.000	528.38	528.38	528.37	528.37	528.37
490.000	528.37	528.36	528.36	528.36	528.36
495.000	528.35	528.35	528.35	528.35	528.35
500.000	528.34	528.34	528.34	528.34	528.33
505.000	528.33	528.33	528.33	528.33	528.32
510.000	528.32	528.32	528.32	528.32	528.31
515.000	528.31	528.31	528.31	528.31	528.30
520.000	528.30	528.30	528.30	528.30	528.29
525.000	528.29	528.29	528.29	528.29	528.28
530.000	528.28	528.28	528.28	528.28	528.28
535.000	528.27	528.27	528.27	528.27	528.27
540.000	528.27	528.26	528.26	528.26	528.26
545.000	528.26	528.26	528.25	528.25	528.25
550.000	528.25	528.25	528.25	528.25	528.24
555.000	528.24	528.24	528.24	528.24	528.24
560.000	528.24	528.23	528.23	528.23	528.23
565.000	528.23	528.23	528.23	528.22	528.22
570.000	528.22	528.22	528.22	528.22	528.22
575.000	528.22	528.21	528.21	528.21	528.21
580.000	528.21	528.21	528.21	528.21	528.20
585.000	528.20	528.20	528.20	528.20	528.20
590.000	528.20	528.20	528.20	528.19	528.19
595.000	528.19	528.19	528.19	528.19	528.19
600.000	528.19	528.19	528.18	528.18	528.18
605.000	528.18	528.18	528.18	528.18	528.18
610.000	528.18	528.17	528.17	528.17	528.17

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base

Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
615.000	528.17	528.17	528.17	528.17	528.17
620.000	528.16	528.16	528.16	528.16	528.16
625.000	528.16	528.16	528.16	528.16	528.15
630.000	528.15	528.15	528.15	528.15	528.15
635.000	528.15	528.15	528.15	528.14	528.14
640.000	528.14	528.14	528.14	528.14	528.14
645.000	528.14	528.14	528.13	528.13	528.13
650.000	528.13	528.13	528.13	528.13	528.13
655.000	528.13	528.12	528.12	528.12	528.12
660.000	528.12	528.12	528.12	528.12	528.12
665.000	528.11	528.11	528.11	528.11	528.11
670.000	528.11	528.11	528.11	528.11	528.10
675.000	528.10	528.10	528.10	528.10	528.10
680.000	528.10	528.10	528.10	528.09	528.09
685.000	528.09	528.09	528.09	528.09	528.09
690.000	528.09	528.09	528.08	528.08	528.08
695.000	528.08	528.08	528.08	528.08	528.08
700.000	528.08	528.07	528.07	528.07	528.07
705.000	528.07	528.07	528.07	528.07	528.07
710.000	528.07	528.06	528.06	528.06	528.06
715.000	528.06	528.06	528.06	528.06	528.06
720.000	528.05	528.05	528.05	528.05	528.05
725.000	528.05	528.05	528.05	528.05	528.04
730.000	528.04	528.04	528.04	528.04	528.04
735.000	528.04	528.04	528.04	528.03	528.03
740.000	528.03	528.03	528.03	528.03	528.03
745.000	528.03	528.03	528.02	528.02	528.02
750.000	528.02	528.02	528.02	528.02	528.02
755.000	528.02	528.01	528.01	528.01	528.01
760.000	528.01	528.01	528.01	528.01	528.01
765.000	528.01	528.00	528.00	528.00	528.00
770.000	528.00	528.00	528.00	528.00	528.00
775.000	527.99	527.99	527.99	527.99	527.99
780.000	527.99	527.99	527.99	527.99	527.98
785.000	527.98	527.98	527.98	527.98	527.98
790.000	527.98	527.98	527.98	527.97	527.97
795.000	527.97	527.97	527.97	527.97	527.97
800.000	527.97	527.97	527.97	527.96	527.96
805.000	527.96	527.96	527.96	527.96	527.96
810.000	527.96	527.96	527.95	527.95	527.95
815.000	527.95	527.95	527.95	527.95	527.95

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
820.000	527.95	527.94	527.94	527.94	527.94
825.000	527.94	527.94	527.94	527.94	527.94
830.000	527.93	527.93	527.93	527.93	527.93
835.000	527.93	527.93	527.93	527.93	527.93
840.000	527.92	527.92	527.92	527.92	527.92
845.000	527.92	527.92	527.92	527.92	527.91
850.000	527.91	527.91	527.91	527.91	527.91
855.000	527.91	527.91	527.91	527.91	527.90
860.000	527.90	527.90	527.90	527.90	527.90
865.000	527.90	527.90	527.90	527.89	527.89
870.000	527.89	527.89	527.89	527.89	527.89
875.000	527.89	527.89	527.88	527.88	527.88
880.000	527.88	527.88	527.88	527.88	527.88
885.000	527.88	527.88	527.87	527.87	527.87
890.000	527.87	527.87	527.87	527.87	527.87
895.000	527.87	527.86	527.86	527.86	527.86
900.000	527.86	527.86	527.86	527.86	527.86
905.000	527.86	527.85	527.85	527.85	527.85
910.000	527.85	527.85	527.85	527.85	527.85
915.000	527.84	527.84	527.84	527.84	527.84
920.000	527.84	527.84	527.84	527.84	527.84
925.000	527.83	527.83	527.83	527.83	527.83
930.000	527.83	527.83	527.83	527.83	527.82
935.000	527.82	527.82	527.82	527.82	527.82
940.000	527.82	527.82	527.82	527.82	527.81
945.000	527.81	527.81	527.81	527.81	527.81
950.000	527.81	527.81	527.81	527.80	527.80
955.000	527.80	527.80	527.80	527.80	527.80
960.000	527.80	527.80	527.80	527.79	527.79
965.000	527.79	527.79	527.79	527.79	527.79
970.000	527.79	527.79	527.79	527.78	527.78
975.000	527.78	527.78	527.78	527.78	527.78
980.000	527.78	527.78	527.77	527.77	527.77
985.000	527.77	527.77	527.77	527.77	527.77
990.000	527.77	527.77	527.76	527.76	527.76
995.000	527.76	527.76	527.76	527.76	527.76
1,000.000	527.76	527.75	527.75	527.75	527.75
1,005.000	527.75	527.75	527.75	527.75	527.75
1,010.000	527.75	527.74	527.74	527.74	527.74
1,015.000	527.74	527.74	527.74	527.74	527.74
1,020.000	527.74	527.73	527.73	527.73	527.73

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,025.000	527.73	527.73	527.73	527.73	527.73
1,030.000	527.72	527.72	527.72	527.72	527.72
1,035.000	527.72	527.72	527.72	527.72	527.72
1,040.000	527.71	527.71	527.71	527.71	527.71
1,045.000	527.71	527.71	527.71	527.71	527.71
1,050.000	527.70	527.70	527.70	527.70	527.70
1,055.000	527.70	527.70	527.70	527.70	527.70
1,060.000	527.69	527.69	527.69	527.69	527.69
1,065.000	527.69	527.69	527.69	527.69	527.68
1,070.000	527.68	527.68	527.68	527.68	527.68
1,075.000	527.68	527.68	527.68	527.68	527.67
1,080.000	527.67	527.67	527.67	527.67	527.67
1,085.000	527.67	527.67	527.67	527.67	527.66
1,090.000	527.66	527.66	527.66	527.66	527.66
1,095.000	527.66	527.66	527.66	527.66	527.65
1,100.000	527.65	527.65	527.65	527.65	527.65
1,105.000	527.65	527.65	527.65	527.65	527.64
1,110.000	527.64	527.64	527.64	527.64	527.64
1,115.000	527.64	527.64	527.64	527.64	527.63
1,120.000	527.63	527.63	527.63	527.63	527.63
1,125.000	527.63	527.63	527.63	527.63	527.62
1,130.000	527.62	527.62	527.62	527.62	527.62
1,135.000	527.62	527.62	527.62	527.61	527.61
1,140.000	527.61	527.61	527.61	527.61	527.61
1,145.000	527.61	527.61	527.61	527.60	527.60
1,150.000	527.60	527.60	527.60	527.60	527.60
1,155.000	527.60	527.60	527.60	527.59	527.59
1,160.000	527.59	527.59	527.59	527.59	527.59
1,165.000	527.59	527.59	527.59	527.58	527.58
1,170.000	527.58	527.58	527.58	527.58	527.58
1,175.000	527.58	527.58	527.58	527.57	527.57
1,180.000	527.57	527.57	527.57	527.57	527.57
1,185.000	527.57	527.57	527.57	527.56	527.56
1,190.000	527.56	527.56	527.56	527.56	527.56
1,195.000	527.56	527.56	527.56	527.55	527.55
1,200.000	527.55	527.55	527.55	527.55	527.55
1,205.000	527.55	527.55	527.55	527.54	527.54
1,210.000	527.54	527.54	527.54	527.54	527.54
1,215.000	527.54	527.54	527.54	527.53	527.53
1,220.000	527.53	527.53	527.53	527.53	527.53
1,225.000	527.53	527.53	527.53	527.53	527.52

PONDPACK REPORT

Subsection: Time vs. Elevation Scenario: Base
Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,230.000	527.52	527.52	527.52	527.52	527.52
1,235.000	527.52	527.52	527.52	527.52	527.51
1,240.000	527.51	527.51	527.51	527.51	527.51
1,245.000	527.51	527.51	527.51	527.51	527.50
1,250.000	527.50	527.50	527.50	527.50	527.50
1,255.000	527.50	527.50	527.50	527.50	527.49
1,260.000	527.49	527.49	527.49	527.49	527.49
1,265.000	527.49	527.49	527.49	527.49	527.48
1,270.000	527.48	527.48	527.48	527.48	527.48
1,275.000	527.48	527.48	527.48	527.48	527.47
1,280.000	527.47	527.47	527.47	527.47	527.47
1,285.000	527.47	527.47	527.47	527.47	527.46
1,290.000	527.46	527.46	527.46	527.46	527.46
1,295.000	527.46	527.46	527.46	527.46	527.46
1,300.000	527.45	527.45	527.45	527.45	527.45
1,305.000	527.45	527.45	527.45	527.45	527.45
1,310.000	527.44	527.44	527.44	527.44	527.44
1,315.000	527.44	527.44	527.44	527.44	527.44
1,320.000	527.43	527.43	527.43	527.43	527.43
1,325.000	527.43	527.43	527.43	527.43	527.43
1,330.000	527.42	527.42	527.42	527.42	527.42
1,335.000	527.42	527.42	527.42	527.42	527.42
1,340.000	527.42	527.41	527.41	527.41	527.41
1,345.000	527.41	527.41	527.41	527.41	527.41
1,350.000	527.41	527.40	527.40	527.40	527.40
1,355.000	527.40	527.40	527.40	527.40	527.40
1,360.000	527.40	527.40	527.39	527.39	527.39
1,365.000	527.39	527.39	527.39	527.39	527.39
1,370.000	527.39	527.39	527.38	527.38	527.38
1,375.000	527.38	527.38	527.38	527.38	527.38
1,380.000	527.38	527.38	527.37	527.37	527.37
1,385.000	527.37	527.37	527.37	527.37	527.37
1,390.000	527.37	527.37	527.37	527.36	527.36
1,395.000	527.36	527.36	527.36	527.36	527.36
1,400.000	527.36	527.36	527.36	527.35	527.35
1,405.000	527.35	527.35	527.35	527.35	527.35
1,410.000	527.35	527.35	527.35	527.35	527.34
1,415.000	527.34	527.34	527.34	527.34	527.34
1,420.000	527.34	527.34	527.34	527.34	527.33
1,425.000	527.33	527.33	527.33	527.33	527.33
1,430.000	527.33	527.33	527.33	527.33	527.33

PONDPACK REPORT

Subsection: Time vs. Elevation
Scenario: Base
Label: DETENTION VAULT BMP 6B (OUT)

Time vs. Elevation (ft)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,435.000	527.32	527.32	527.32	527.32	527.32
1,440.000	527.32	(N/A)	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6B

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	5.000	18.000	41.000	74.000
5.000	115.000	165.000	225.000	294.000	372.000
10.000	454.000	537.000	620.000	704.000	787.000
15.000	871.000	955.000	1,039.000	1,124.000	1,209.000
20.000	1,293.000	1,378.000	1,463.000	1,548.000	1,633.000
25.000	1,719.000	1,804.000	1,889.000	1,975.000	2,061.000
30.000	2,147.000	2,234.000	2,320.000	2,407.000	2,495.000
35.000	2,582.000	2,670.000	2,758.000	2,846.000	2,935.000
40.000	3,023.000	3,111.000	3,200.000	3,289.000	3,378.000
45.000	3,467.000	3,556.000	3,645.000	3,735.000	3,825.000
50.000	3,916.000	4,006.000	4,097.000	4,189.000	4,281.000
55.000	4,373.000	4,465.000	4,557.000	4,649.000	4,742.000
60.000	4,834.000	4,927.000	5,020.000	5,113.000	5,206.000
65.000	5,300.000	5,394.000	5,488.000	5,583.000	5,678.000
70.000	5,774.000	5,870.000	5,966.000	6,063.000	6,160.000
75.000	6,257.000	6,354.000	6,452.000	6,550.000	6,648.000
80.000	6,746.000	6,844.000	6,943.000	7,043.000	7,142.000
85.000	7,243.000	7,344.000	7,445.000	7,547.000	7,649.000
90.000	7,752.000	7,855.000	7,958.000	8,062.000	8,166.000
95.000	8,270.000	8,375.000	8,480.000	8,585.000	8,691.000
100.000	8,797.000	8,903.000	9,011.000	9,118.000	9,227.000
105.000	9,336.000	9,446.000	9,556.000	9,667.000	9,778.000
110.000	9,890.000	10,002.000	10,114.000	10,227.000	10,340.000
115.000	10,453.000	10,566.000	10,680.000	10,794.000	10,909.000
120.000	11,025.000	11,142.000	11,260.000	11,378.000	11,497.000
125.000	11,617.000	11,738.000	11,859.000	11,981.000	12,104.000
130.000	12,226.000	12,349.000	12,473.000	12,597.000	12,721.000
135.000	12,846.000	12,972.000	13,099.000	13,226.000	13,355.000
140.000	13,485.000	13,615.000	13,747.000	13,880.000	14,014.000
145.000	14,148.000	14,284.000	14,419.000	14,556.000	14,692.000
150.000	14,830.000	14,968.000	15,106.000	15,245.000	15,386.000
155.000	15,527.000	15,670.000	15,814.000	15,960.000	16,107.000
160.000	16,256.000	16,406.000	16,557.000	16,710.000	16,863.000
165.000	17,017.000	17,172.000	17,328.000	17,484.000	17,641.000
170.000	17,799.000	17,958.000	18,118.000	18,280.000	18,444.000
175.000	18,610.000	18,778.000	18,948.000	19,120.000	19,294.000
180.000	19,470.000	19,648.000	19,827.000	20,007.000	20,189.000
185.000	20,372.000	20,555.000	20,741.000	20,927.000	21,115.000
190.000	21,304.000	21,497.000	21,693.000	21,893.000	22,095.000
195.000	22,300.000	22,509.000	22,721.000	22,936.000	23,153.000
200.000	23,373.000	23,595.000	23,819.000	24,044.000	24,272.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6B

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
205.000	24,502.000	24,735.000	24,969.000	25,207.000	25,451.000
210.000	25,702.000	25,958.000	26,220.000	26,489.000	26,763.000
215.000	27,043.000	27,330.000	27,621.000	27,918.000	28,218.000
220.000	28,524.000	28,834.000	29,149.000	29,468.000	29,792.000
225.000	30,120.000	30,460.000	30,817.000	31,192.000	31,585.000
230.000	31,995.000	32,424.000	32,870.000	33,333.000	33,815.000
235.000	34,316.000	34,841.000	35,388.000	35,958.000	36,550.000
240.000	37,166.000	37,804.000	38,465.000	39,145.000	39,936.000
245.000	40,930.000	42,124.000	43,512.000	45,086.000	46,843.000
250.000	48,779.000	50,883.000	53,149.000	55,346.000	57,246.000
255.000	58,856.000	60,170.000	61,123.000	61,695.000	61,949.000
260.000	61,937.000	61,703.000	61,390.000	61,115.000	60,871.000
265.000	60,655.000	60,461.000	60,286.000	60,126.000	59,977.000
270.000	59,827.000	59,671.000	59,512.000	59,351.000	59,188.000
275.000	59,022.000	58,855.000	58,686.000	58,514.000	58,341.000
280.000	58,167.000	57,994.000	57,822.000	57,650.000	57,480.000
285.000	57,310.000	57,141.000	56,972.000	56,804.000	56,638.000
290.000	56,473.000	56,311.000	56,150.000	55,990.000	55,833.000
295.000	55,677.000	55,523.000	55,370.000	55,219.000	55,071.000
300.000	54,924.000	54,779.000	54,637.000	54,496.000	54,357.000
305.000	54,220.000	54,085.000	53,952.000	53,820.000	53,690.000
310.000	53,561.000	53,434.000	53,308.000	53,183.000	53,060.000
315.000	52,938.000	52,818.000	52,699.000	52,581.000	52,465.000
320.000	52,350.000	52,237.000	52,125.000	52,014.000	51,905.000
325.000	51,797.000	51,690.000	51,585.000	51,481.000	51,379.000
330.000	51,277.000	51,178.000	51,079.000	50,981.000	50,885.000
335.000	50,790.000	50,697.000	50,605.000	50,514.000	50,424.000
340.000	50,336.000	50,249.000	50,163.000	50,078.000	49,994.000
345.000	49,912.000	49,831.000	49,750.000	49,671.000	49,593.000
350.000	49,516.000	49,440.000	49,365.000	49,291.000	49,218.000
355.000	49,147.000	49,076.000	49,006.000	48,938.000	48,870.000
360.000	48,803.000	48,737.000	48,672.000	48,608.000	48,545.000
365.000	48,483.000	48,421.000	48,361.000	48,301.000	48,200.000
370.000	48,060.000	47,922.000	47,787.000	47,654.000	47,523.000
375.000	47,394.000	47,268.000	47,143.000	47,020.000	46,899.000
380.000	46,780.000	46,663.000	46,548.000	46,434.000	46,323.000
385.000	46,213.000	46,104.000	45,998.000	45,893.000	45,790.000
390.000	45,688.000	45,588.000	45,490.000	45,393.000	45,298.000
395.000	45,204.000	45,112.000	45,021.000	44,932.000	44,844.000
400.000	44,757.000	44,672.000	44,588.000	44,505.000	44,424.000
405.000	44,344.000	44,265.000	44,188.000	44,111.000	44,036.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6B

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
410.000	43,962.000	43,890.000	43,818.000	43,747.000	43,678.000
415.000	43,610.000	43,543.000	43,476.000	43,411.000	43,347.000
420.000	43,284.000	43,222.000	43,161.000	43,101.000	43,042.000
425.000	42,984.000	42,926.000	42,870.000	42,814.000	42,760.000
430.000	42,706.000	42,653.000	42,601.000	42,549.000	42,499.000
435.000	42,449.000	42,400.000	42,352.000	42,305.000	42,258.000
440.000	42,212.000	42,167.000	42,123.000	42,079.000	42,036.000
445.000	41,993.000	41,951.000	41,910.000	41,868.000	41,827.000
450.000	41,787.000	41,747.000	41,707.000	41,667.000	41,628.000
455.000	41,588.000	41,550.000	41,511.000	41,473.000	41,435.000
460.000	41,398.000	41,361.000	41,324.000	41,287.000	41,251.000
465.000	41,215.000	41,179.000	41,143.000	41,108.000	41,073.000
470.000	41,039.000	41,004.000	40,970.000	40,936.000	40,903.000
475.000	40,870.000	40,837.000	40,804.000	40,771.000	40,739.000
480.000	40,707.000	40,675.000	40,644.000	40,613.000	40,582.000
485.000	40,551.000	40,520.000	40,490.000	40,460.000	40,430.000
490.000	40,401.000	40,372.000	40,343.000	40,314.000	40,285.000
495.000	40,257.000	40,229.000	40,201.000	40,173.000	40,146.000
500.000	40,118.000	40,091.000	40,064.000	40,038.000	40,011.000
505.000	39,985.000	39,959.000	39,933.000	39,908.000	39,882.000
510.000	39,857.000	39,832.000	39,808.000	39,783.000	39,759.000
515.000	39,734.000	39,710.000	39,687.000	39,663.000	39,640.000
520.000	39,616.000	39,593.000	39,570.000	39,548.000	39,525.000
525.000	39,503.000	39,481.000	39,459.000	39,437.000	39,415.000
530.000	39,394.000	39,373.000	39,351.000	39,330.000	39,310.000
535.000	39,289.000	39,269.000	39,248.000	39,228.000	39,208.000
540.000	39,188.000	39,169.000	39,149.000	39,130.000	39,111.000
545.000	39,092.000	39,073.000	39,054.000	39,036.000	39,017.000
550.000	38,999.000	38,981.000	38,963.000	38,945.000	38,927.000
555.000	38,909.000	38,892.000	38,875.000	38,858.000	38,841.000
560.000	38,824.000	38,807.000	38,790.000	38,774.000	38,757.000
565.000	38,741.000	38,725.000	38,709.000	38,693.000	38,678.000
570.000	38,662.000	38,647.000	38,631.000	38,616.000	38,601.000
575.000	38,586.000	38,571.000	38,556.000	38,542.000	38,527.000
580.000	38,513.000	38,498.000	38,484.000	38,470.000	38,456.000
585.000	38,442.000	38,429.000	38,415.000	38,402.000	38,388.000
590.000	38,375.000	38,361.000	38,348.000	38,334.000	38,321.000
595.000	38,308.000	38,294.000	38,281.000	38,267.000	38,254.000
600.000	38,240.000	38,227.000	38,214.000	38,200.000	38,187.000
605.000	38,173.000	38,160.000	38,147.000	38,133.000	38,120.000
610.000	38,106.000	38,093.000	38,080.000	38,066.000	38,053.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6B

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
615.000	38,040.000	38,026.000	38,013.000	37,999.000	37,986.000
620.000	37,973.000	37,959.000	37,946.000	37,933.000	37,919.000
625.000	37,906.000	37,893.000	37,879.000	37,866.000	37,853.000
630.000	37,839.000	37,826.000	37,813.000	37,799.000	37,786.000
635.000	37,773.000	37,759.000	37,746.000	37,733.000	37,719.000
640.000	37,706.000	37,693.000	37,679.000	37,666.000	37,653.000
645.000	37,639.000	37,626.000	37,613.000	37,600.000	37,586.000
650.000	37,573.000	37,560.000	37,546.000	37,533.000	37,520.000
655.000	37,507.000	37,493.000	37,480.000	37,467.000	37,453.000
660.000	37,440.000	37,427.000	37,414.000	37,400.000	37,387.000
665.000	37,374.000	37,361.000	37,347.000	37,334.000	37,321.000
670.000	37,308.000	37,294.000	37,281.000	37,268.000	37,255.000
675.000	37,242.000	37,228.000	37,215.000	37,202.000	37,189.000
680.000	37,175.000	37,162.000	37,149.000	37,136.000	37,123.000
685.000	37,109.000	37,096.000	37,083.000	37,070.000	37,057.000
690.000	37,043.000	37,030.000	37,017.000	37,004.000	36,991.000
695.000	36,977.000	36,964.000	36,951.000	36,938.000	36,925.000
700.000	36,912.000	36,898.000	36,885.000	36,872.000	36,859.000
705.000	36,846.000	36,833.000	36,819.000	36,806.000	36,793.000
710.000	36,780.000	36,767.000	36,754.000	36,741.000	36,727.000
715.000	36,714.000	36,701.000	36,688.000	36,675.000	36,662.000
720.000	36,649.000	36,636.000	36,622.000	36,609.000	36,596.000
725.000	36,583.000	36,570.000	36,557.000	36,544.000	36,531.000
730.000	36,518.000	36,505.000	36,491.000	36,478.000	36,465.000
735.000	36,452.000	36,439.000	36,426.000	36,413.000	36,400.000
740.000	36,387.000	36,374.000	36,361.000	36,348.000	36,335.000
745.000	36,321.000	36,308.000	36,295.000	36,282.000	36,269.000
750.000	36,256.000	36,243.000	36,230.000	36,217.000	36,204.000
755.000	36,191.000	36,178.000	36,165.000	36,152.000	36,139.000
760.000	36,126.000	36,113.000	36,100.000	36,087.000	36,074.000
765.000	36,061.000	36,048.000	36,035.000	36,022.000	36,009.000
770.000	35,996.000	35,983.000	35,970.000	35,957.000	35,944.000
775.000	35,931.000	35,918.000	35,905.000	35,892.000	35,879.000
780.000	35,866.000	35,853.000	35,840.000	35,827.000	35,814.000
785.000	35,801.000	35,788.000	35,775.000	35,762.000	35,749.000
790.000	35,736.000	35,723.000	35,710.000	35,697.000	35,684.000
795.000	35,672.000	35,659.000	35,646.000	35,633.000	35,620.000
800.000	35,607.000	35,594.000	35,581.000	35,568.000	35,555.000
805.000	35,542.000	35,529.000	35,516.000	35,504.000	35,491.000
810.000	35,478.000	35,465.000	35,452.000	35,439.000	35,426.000
815.000	35,413.000	35,400.000	35,388.000	35,375.000	35,362.000

PONDPACK REPORT

Subsection: Time vs. Volume
Scenario: Base
Label: DETENTION VAULT BMP 6B

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
820.000	35,349.000	35,336.000	35,323.000	35,310.000	35,297.000
825.000	35,285.000	35,272.000	35,259.000	35,246.000	35,233.000
830.000	35,220.000	35,207.000	35,195.000	35,182.000	35,169.000
835.000	35,156.000	35,143.000	35,130.000	35,118.000	35,105.000
840.000	35,092.000	35,079.000	35,066.000	35,053.000	35,041.000
845.000	35,028.000	35,015.000	35,002.000	34,989.000	34,977.000
850.000	34,964.000	34,951.000	34,938.000	34,925.000	34,913.000
855.000	34,900.000	34,887.000	34,874.000	34,861.000	34,849.000
860.000	34,836.000	34,823.000	34,810.000	34,798.000	34,785.000
865.000	34,772.000	34,759.000	34,747.000	34,734.000	34,721.000
870.000	34,708.000	34,696.000	34,683.000	34,670.000	34,657.000
875.000	34,645.000	34,632.000	34,619.000	34,606.000	34,594.000
880.000	34,581.000	34,568.000	34,556.000	34,543.000	34,530.000
885.000	34,517.000	34,505.000	34,492.000	34,479.000	34,467.000
890.000	34,454.000	34,441.000	34,428.000	34,416.000	34,403.000
895.000	34,390.000	34,378.000	34,365.000	34,352.000	34,340.000
900.000	34,327.000	34,314.000	34,302.000	34,289.000	34,276.000
905.000	34,264.000	34,251.000	34,238.000	34,226.000	34,213.000
910.000	34,200.000	34,188.000	34,175.000	34,162.000	34,150.000
915.000	34,137.000	34,125.000	34,112.000	34,099.000	34,087.000
920.000	34,074.000	34,061.000	34,049.000	34,036.000	34,024.000
925.000	34,011.000	33,998.000	33,986.000	33,973.000	33,960.000
930.000	33,948.000	33,935.000	33,923.000	33,910.000	33,897.000
935.000	33,885.000	33,872.000	33,860.000	33,847.000	33,835.000
940.000	33,822.000	33,809.000	33,797.000	33,784.000	33,772.000
945.000	33,759.000	33,747.000	33,734.000	33,721.000	33,709.000
950.000	33,696.000	33,684.000	33,671.000	33,659.000	33,646.000
955.000	33,634.000	33,621.000	33,609.000	33,596.000	33,583.000
960.000	33,571.000	33,558.000	33,546.000	33,533.000	33,521.000
965.000	33,508.000	33,496.000	33,483.000	33,471.000	33,458.000
970.000	33,446.000	33,433.000	33,421.000	33,408.000	33,396.000
975.000	33,383.000	33,371.000	33,358.000	33,346.000	33,333.000
980.000	33,321.000	33,308.000	33,296.000	33,283.000	33,271.000
985.000	33,259.000	33,246.000	33,234.000	33,221.000	33,209.000
990.000	33,196.000	33,184.000	33,171.000	33,159.000	33,146.000
995.000	33,134.000	33,122.000	33,109.000	33,097.000	33,084.000
1,000.000	33,072.000	33,059.000	33,047.000	33,035.000	33,022.000
1,005.000	33,010.000	32,997.000	32,985.000	32,972.000	32,960.000
1,010.000	32,948.000	32,935.000	32,923.000	32,910.000	32,898.000
1,015.000	32,886.000	32,873.000	32,861.000	32,848.000	32,836.000
1,020.000	32,824.000	32,811.000	32,799.000	32,787.000	32,774.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT BMP 6B

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,025.000	32,762.000	32,749.000	32,737.000	32,725.000	32,712.000
1,030.000	32,700.000	32,688.000	32,675.000	32,663.000	32,651.000
1,035.000	32,638.000	32,626.000	32,614.000	32,601.000	32,589.000
1,040.000	32,577.000	32,564.000	32,552.000	32,540.000	32,527.000
1,045.000	32,515.000	32,503.000	32,490.000	32,478.000	32,466.000
1,050.000	32,453.000	32,441.000	32,429.000	32,416.000	32,404.000
1,055.000	32,392.000	32,380.000	32,367.000	32,355.000	32,343.000
1,060.000	32,330.000	32,318.000	32,306.000	32,294.000	32,281.000
1,065.000	32,269.000	32,257.000	32,244.000	32,232.000	32,220.000
1,070.000	32,208.000	32,195.000	32,183.000	32,171.000	32,159.000
1,075.000	32,146.000	32,134.000	32,122.000	32,110.000	32,097.000
1,080.000	32,085.000	32,073.000	32,061.000	32,048.000	32,036.000
1,085.000	32,024.000	32,012.000	32,000.000	31,987.000	31,975.000
1,090.000	31,963.000	31,951.000	31,939.000	31,926.000	31,914.000
1,095.000	31,902.000	31,890.000	31,878.000	31,865.000	31,853.000
1,100.000	31,841.000	31,829.000	31,817.000	31,804.000	31,792.000
1,105.000	31,780.000	31,768.000	31,756.000	31,743.000	31,731.000
1,110.000	31,719.000	31,707.000	31,695.000	31,683.000	31,671.000
1,115.000	31,658.000	31,646.000	31,634.000	31,622.000	31,610.000
1,120.000	31,598.000	31,585.000	31,573.000	31,561.000	31,549.000
1,125.000	31,537.000	31,525.000	31,513.000	31,501.000	31,488.000
1,130.000	31,476.000	31,464.000	31,452.000	31,440.000	31,428.000
1,135.000	31,416.000	31,404.000	31,392.000	31,379.000	31,367.000
1,140.000	31,355.000	31,343.000	31,331.000	31,319.000	31,307.000
1,145.000	31,295.000	31,283.000	31,271.000	31,259.000	31,246.000
1,150.000	31,234.000	31,222.000	31,210.000	31,198.000	31,186.000
1,155.000	31,174.000	31,162.000	31,150.000	31,138.000	31,126.000
1,160.000	31,114.000	31,102.000	31,090.000	31,078.000	31,066.000
1,165.000	31,054.000	31,042.000	31,030.000	31,018.000	31,005.000
1,170.000	30,993.000	30,981.000	30,969.000	30,957.000	30,945.000
1,175.000	30,933.000	30,921.000	30,909.000	30,897.000	30,885.000
1,180.000	30,873.000	30,861.000	30,849.000	30,837.000	30,825.000
1,185.000	30,813.000	30,801.000	30,789.000	30,777.000	30,765.000
1,190.000	30,753.000	30,741.000	30,729.000	30,718.000	30,706.000
1,195.000	30,694.000	30,682.000	30,670.000	30,658.000	30,646.000
1,200.000	30,634.000	30,622.000	30,610.000	30,598.000	30,586.000
1,205.000	30,574.000	30,562.000	30,550.000	30,538.000	30,526.000
1,210.000	30,514.000	30,502.000	30,491.000	30,479.000	30,467.000
1,215.000	30,455.000	30,443.000	30,431.000	30,419.000	30,407.000
1,220.000	30,395.000	30,383.000	30,371.000	30,359.000	30,348.000
1,225.000	30,336.000	30,324.000	30,312.000	30,300.000	30,288.000

PONDPACK REPORT

Subsection: Time vs. Volume
Scenario: Base
Label: DETENTION VAULT BMP 6B

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,230.000	30,276.000	30,264.000	30,252.000	30,241.000	30,229.000
1,235.000	30,217.000	30,205.000	30,193.000	30,181.000	30,169.000
1,240.000	30,157.000	30,146.000	30,134.000	30,122.000	30,110.000
1,245.000	30,098.000	30,086.000	30,075.000	30,063.000	30,051.000
1,250.000	30,039.000	30,027.000	30,015.000	30,003.000	29,992.000
1,255.000	29,980.000	29,968.000	29,956.000	29,944.000	29,933.000
1,260.000	29,921.000	29,909.000	29,897.000	29,885.000	29,873.000
1,265.000	29,862.000	29,850.000	29,838.000	29,826.000	29,815.000
1,270.000	29,803.000	29,791.000	29,779.000	29,767.000	29,756.000
1,275.000	29,744.000	29,732.000	29,720.000	29,709.000	29,697.000
1,280.000	29,685.000	29,673.000	29,661.000	29,650.000	29,638.000
1,285.000	29,626.000	29,614.000	29,603.000	29,591.000	29,579.000
1,290.000	29,567.000	29,556.000	29,544.000	29,532.000	29,521.000
1,295.000	29,509.000	29,497.000	29,485.000	29,474.000	29,462.000
1,300.000	29,450.000	29,439.000	29,427.000	29,415.000	29,403.000
1,305.000	29,392.000	29,380.000	29,368.000	29,357.000	29,345.000
1,310.000	29,333.000	29,322.000	29,310.000	29,298.000	29,287.000
1,315.000	29,275.000	29,263.000	29,252.000	29,240.000	29,228.000
1,320.000	29,217.000	29,205.000	29,193.000	29,182.000	29,170.000
1,325.000	29,158.000	29,147.000	29,135.000	29,123.000	29,112.000
1,330.000	29,100.000	29,088.000	29,077.000	29,065.000	29,054.000
1,335.000	29,042.000	29,030.000	29,019.000	29,007.000	28,995.000
1,340.000	28,984.000	28,972.000	28,961.000	28,949.000	28,937.000
1,345.000	28,926.000	28,914.000	28,903.000	28,891.000	28,879.000
1,350.000	28,868.000	28,856.000	28,845.000	28,833.000	28,822.000
1,355.000	28,810.000	28,798.000	28,787.000	28,775.000	28,764.000
1,360.000	28,752.000	28,741.000	28,729.000	28,717.000	28,706.000
1,365.000	28,694.000	28,683.000	28,671.000	28,660.000	28,648.000
1,370.000	28,637.000	28,625.000	28,614.000	28,602.000	28,591.000
1,375.000	28,579.000	28,567.000	28,556.000	28,544.000	28,533.000
1,380.000	28,521.000	28,510.000	28,498.000	28,487.000	28,475.000
1,385.000	28,464.000	28,452.000	28,441.000	28,429.000	28,418.000
1,390.000	28,406.000	28,395.000	28,383.000	28,372.000	28,360.000
1,395.000	28,349.000	28,338.000	28,326.000	28,315.000	28,303.000
1,400.000	28,292.000	28,280.000	28,269.000	28,257.000	28,246.000
1,405.000	28,234.000	28,223.000	28,212.000	28,200.000	28,189.000
1,410.000	28,177.000	28,166.000	28,154.000	28,143.000	28,131.000
1,415.000	28,120.000	28,109.000	28,097.000	28,086.000	28,074.000
1,420.000	28,063.000	28,052.000	28,040.000	28,029.000	28,017.000
1,425.000	28,006.000	27,995.000	27,983.000	27,972.000	27,960.000
1,430.000	27,949.000	27,938.000	27,926.000	27,915.000	27,903.000

PONDPACK REPORT

Subsection: Time vs. Volume
Scenario: Base
Label: DETENTION VAULT BMP 6B

Time vs. Volume (ft³)

Output Time increment = 1.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,435.000	27,892.000	27,881.000	27,869.000	27,858.000	27,847.000
1,440.000	27,835.000	(N/A)	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Outlet Input Data Scenario: Base

Label: Composite Outlet Structure - 1

Requested Pond Water Surface Elevations	
Minimum (Headwater)	525.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	531.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	528.20	531.00
Stand Pipe	Riser - 1	Forward	TW	530.00	531.00
Orifice-Circular	Orifice - 1	Forward	TW	525.00	531.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser - 1 Structure Type: Stand Pipe	
Number of Openings	1
Elevation	530.00 ft
Diameter	54.0 in
Orifice Area	15.9 ft²
Orifice Coefficient	0.600
Weir Length	14.14 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	528.20 ft
Weir Length	0.95 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	525.00 ft
Orifice Diameter	2.2 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft

PONDPACK REPORT

Subsection: Outlet Input Data Scenario: Base

Label: Composite Outlet Structure - 1

Convergence Tolerances	
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

PONDPACK REPORT

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Base

Label: DETENTION VAULT BMP 6B

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	525.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
525.00	0.00	0.000	0	0.00	0.00	0.00
525.50	0.08	6,000.000	0	0.00	0.08	200.08
526.00	0.12	12,000.000	0	0.00	0.12	400.12
526.50	0.15	18,000.000	0	0.00	0.15	600.15
527.00	0.18	24,000.000	0	0.00	0.18	800.18
527.50	0.20	30,000.000	0	0.00	0.20	1,000.20
528.00	0.22	36,000.000	0	0.00	0.22	1,200.22
528.20	0.22	38,400.000	0	0.00	0.22	1,280.22
528.50	0.70	42,000.000	0	0.00	0.70	1,400.70
529.00	2.29	48,000.000	0	0.00	2.29	1,602.29
529.50	4.49	54,000.000	0	0.00	4.49	1,804.49
530.00	7.16	60,000.000	0	0.00	7.16	2,007.16
530.50	25.23	66,000.000	0	0.00	25.23	2,225.23
531.00	56.07	72,000.000	0	0.00	56.07	2,456.07

PONDPACK REPORT

Subsection: Level Pool Pond Routing Summary
Scenario: Base
Label: DETENTION VAULT BMP 6B (IN)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	525.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	43.28 ft³/s	Time to Peak (Flow, In)	252.000 min
Flow (Peak Outlet)	13.03 ft³/s	Time to Peak (Flow, Outlet)	259.000 min

Elevation (Water Surface, Peak)	530.16 ft
Volume (Peak)	61,948.534 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	85,499.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	57,664.000 ft³
Volume (Retained)	27,824.000 ft³
Volume (Unrouted)	-11.000 ft³
Error (Mass Balance)	0.0 %

Summary for Hydrograph Addition at 'DETENTION VAULT BMP 6B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DMA 1 & DMA 2

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	DMA 1 & DMA 2	85,540.860	252.000	43.28
Flow (In)	DETENTION VAULT BMP 6B	85,498.860	252.000	43.28

PONDPACK REPORT

Index

PONDPACK REPORT

Project Summary	
Title	BMP #7
Engineer	
Company	
Date	

Notes

Table of Contents

PONDPACK REPORT

Subsection: User Notifications

User Notifications?	No user notifications generated.

PONDPACK REPORT

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
DMA 1	Base	0	16,778.000	246.000	10.54

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
OUTFALL	Base	0	22,930.000	264.000	0.93

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
DETENTION VAULT (IN)	Base	0	34,177.000	246.000	10.54	(N/A)	(N/A)
DETENTION VAULT (OUT)	Base	0	22,930.000	264.000	0.93	525.68	13,054.000

PONDPACK REPORT

Subsection: Read Hydrograph
Label: DMA 1

Scenario: Base

Peak Discharge	10.54 ft³/s
Time to Peak	246.000 min
Hydrograph Volume	16,777.800 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 6.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	0.00	0.28	0.28	0.29	0.29
30.000	0.30	0.30	0.31	0.32	0.32
60.000	0.33	0.33	0.34	0.35	0.35
90.000	0.37	0.37	0.39	0.40	0.41
120.000	0.42	0.44	0.45	0.47	0.48
150.000	0.51	0.52	0.56	0.57	0.62
180.000	0.64	0.70	0.73	0.81	0.86
210.000	0.98	1.06	1.30	1.48	2.17
240.000	3.06	10.54	1.75	1.17	0.91
270.000	0.77	0.66	0.59	0.53	0.49
300.000	0.46	0.43	0.40	0.38	0.36
330.000	0.34	0.33	0.32	0.31	0.29
360.000	0.28	0.27	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Time vs. Elevation
Label: DETENTION VAULT (OUT)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	520.00	520.01	520.02	520.04	520.07
15.000	520.09	520.11	520.13	520.16	520.18
30.000	520.20	520.23	520.25	520.27	520.30
45.000	520.32	520.35	520.37	520.40	520.42
60.000	520.45	520.47	520.50	520.52	520.55
75.000	520.58	520.60	520.63	520.66	520.69
90.000	520.72	520.75	520.77	520.80	520.83
105.000	520.86	520.90	520.93	520.96	520.99
120.000	521.02	521.06	521.09	521.13	521.16
135.000	521.19	521.23	521.27	521.30	521.34
150.000	521.38	521.42	521.46	521.50	521.54
165.000	521.58	521.63	521.67	521.72	521.76
180.000	521.81	521.86	521.91	521.97	522.02
195.000	522.08	522.14	522.20	522.26	522.33
210.000	522.40	522.48	522.56	522.64	522.74
225.000	522.84	522.95	523.08	523.23	523.41
240.000	523.63	524.02	524.69	525.31	525.56
255.000	525.62	525.66	525.67	525.68	525.67
270.000	525.66	525.65	525.63	525.62	525.60
285.000	525.58	525.55	525.53	525.51	525.49
300.000	525.47	525.45	525.43	525.41	525.39
315.000	525.37	525.35	525.33	525.32	525.30
330.000	525.28	525.26	525.25	525.23	525.22
345.000	525.20	525.19	525.17	525.16	525.15
360.000	525.13	525.12	525.11	525.10	525.09
375.000	525.08	525.07	525.06	525.05	525.04
390.000	525.04	525.03	525.02	525.02	525.01
405.000	525.01	525.00	525.00	524.99	524.99
420.000	524.99	524.98	524.98	524.97	524.97
435.000	524.97	524.96	524.96	524.96	524.96
450.000	524.95	524.95	524.95	524.95	524.94
465.000	524.94	524.94	524.94	524.94	524.93
480.000	524.93	524.93	524.93	524.93	524.93
495.000	524.92	524.92	524.92	524.92	524.92
510.000	524.92	524.92	524.92	524.91	524.91
525.000	524.91	524.91	524.91	524.91	524.91
540.000	524.91	524.91	524.91	524.91	524.91
555.000	524.90	524.90	524.90	524.90	524.90
570.000	524.90	524.90	524.90	524.90	524.90
585.000	524.90	524.90	524.90	524.90	524.90
600.000	524.90	524.90	524.90	524.90	524.90

PONDPACK REPORT

Subsection: Time vs. Elevation
Label: DETENTION VAULT (OUT)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
615.000	524.90	524.90	524.90	524.90	524.90
630.000	524.90	524.89	524.89	524.89	524.89
645.000	524.89	524.89	524.89	524.89	524.89
660.000	524.89	524.89	524.89	524.89	524.89
675.000	524.89	524.89	524.89	524.89	524.89
690.000	524.89	524.89	524.89	524.89	524.89
705.000	524.89	524.89	524.89	524.89	524.89
720.000	524.89	524.89	524.89	524.89	524.89
735.000	524.89	524.89	524.89	524.89	524.89
750.000	524.89	524.89	524.89	524.89	524.89
765.000	524.89	524.89	524.89	524.89	524.89
780.000	524.89	524.89	524.89	524.89	524.89
795.000	524.89	524.89	524.89	524.89	524.89
810.000	524.89	524.89	524.89	524.89	524.89
825.000	524.89	524.89	524.89	524.89	524.89
840.000	524.89	524.89	524.89	524.89	524.89
855.000	524.89	524.89	524.89	524.89	524.89
870.000	524.89	524.89	524.89	524.89	524.89
885.000	524.89	524.89	524.89	524.89	524.89
900.000	524.89	524.89	524.89	524.89	524.89
915.000	524.89	524.89	524.89	524.89	524.89
930.000	524.89	524.89	524.89	524.89	524.89
945.000	524.89	524.89	524.89	524.89	524.89
960.000	524.89	524.89	524.89	524.89	524.89
975.000	524.89	524.89	524.89	524.89	524.89
990.000	524.89	524.89	524.89	524.89	524.89
1,005.000	524.89	524.89	524.89	524.89	524.89
1,020.000	524.89	524.89	524.89	524.89	524.89
1,035.000	524.89	524.89	524.89	524.89	524.89
1,050.000	524.89	524.89	524.89	524.89	524.89
1,065.000	524.89	524.89	524.89	524.89	524.89
1,080.000	524.89	524.89	524.89	524.89	524.89
1,095.000	524.89	524.89	524.89	524.89	524.89
1,110.000	524.89	524.89	524.89	524.89	524.89
1,125.000	524.89	524.89	524.89	524.89	524.89
1,140.000	524.89	524.89	524.89	524.89	524.89
1,155.000	524.89	524.89	524.89	524.89	524.89
1,170.000	524.89	524.89	524.89	524.89	524.89
1,185.000	524.89	524.89	524.89	524.89	524.89
1,200.000	524.89	524.89	524.89	524.89	524.89
1,215.000	524.89	524.89	524.89	524.89	524.89

PONDPACK REPORT

Subsection: Time vs. Elevation
Label: DETENTION VAULT (OUT)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,230.000	524.89	524.89	524.89	524.89	524.89
1,245.000	524.89	524.89	524.89	524.89	524.89
1,260.000	524.89	524.89	524.89	524.89	524.89
1,275.000	524.89	524.89	524.89	524.89	524.89
1,290.000	524.89	524.89	524.89	524.89	524.89
1,305.000	524.89	524.89	524.89	524.89	524.89
1,320.000	524.89	524.89	524.89	524.89	524.89
1,335.000	524.89	524.89	524.89	524.89	524.89
1,350.000	524.89	524.89	524.89	524.89	524.89
1,365.000	524.89	524.89	524.89	524.89	524.89
1,380.000	524.89	524.89	524.89	524.89	524.89
1,395.000	524.89	524.89	524.89	524.89	524.89
1,410.000	524.89	524.89	524.89	524.89	524.89
1,425.000	524.89	524.89	524.89	524.89	524.89
1,440.000	524.89	(N/A)	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	13.000	50.000	101.000	151.000
15.000	202.000	254.000	306.000	358.000	411.000
30.000	464.000	518.000	572.000	627.000	682.000
45.000	738.000	796.000	853.000	911.000	969.000
60.000	1,028.000	1,087.000	1,147.000	1,206.000	1,267.000
75.000	1,329.000	1,391.000	1,454.000	1,517.000	1,581.000
90.000	1,647.000	1,714.000	1,780.000	1,848.000	1,917.000
105.000	1,988.000	2,059.000	2,132.000	2,205.000	2,279.000
120.000	2,354.000	2,431.000	2,508.000	2,587.000	2,667.000
135.000	2,748.000	2,830.000	2,914.000	2,998.000	3,084.000
150.000	3,172.000	3,262.000	3,353.000	3,445.000	3,541.000
165.000	3,639.000	3,738.000	3,839.000	3,945.000	4,054.000
180.000	4,165.000	4,279.000	4,398.000	4,521.000	4,647.000
195.000	4,777.000	4,915.000	5,058.000	5,206.000	5,361.000
210.000	5,527.000	5,702.000	5,884.000	6,080.000	6,297.000
225.000	6,533.000	6,786.000	7,077.000	7,430.000	7,854.000
240.000	8,358.000	9,238.000	10,780.000	12,214.000	12,799.000
255.000	12,936.000	13,012.000	13,046.000	13,054.000	13,045.000
270.000	13,024.000	12,994.000	12,957.000	12,916.000	12,871.000
285.000	12,824.000	12,776.000	12,727.000	12,679.000	12,631.000
300.000	12,584.000	12,537.000	12,491.000	12,445.000	12,399.000
315.000	12,354.000	12,310.000	12,267.000	12,225.000	12,184.000
330.000	12,144.000	12,105.000	12,068.000	12,032.000	11,997.000
345.000	11,964.000	11,932.000	11,901.000	11,870.000	11,839.000
360.000	11,810.000	11,782.000	11,754.000	11,728.000	11,703.000
375.000	11,680.000	11,659.000	11,639.000	11,620.000	11,602.000
390.000	11,586.000	11,570.000	11,556.000	11,542.000	11,529.000
405.000	11,517.000	11,506.000	11,496.000	11,486.000	11,476.000
420.000	11,467.000	11,458.000	11,449.000	11,441.000	11,433.000
435.000	11,426.000	11,418.000	11,411.000	11,405.000	11,398.000
450.000	11,392.000	11,386.000	11,381.000	11,375.000	11,370.000
465.000	11,365.000	11,360.000	11,356.000	11,351.000	11,347.000
480.000	11,343.000	11,339.000	11,335.000	11,332.000	11,328.000
495.000	11,325.000	11,322.000	11,319.000	11,316.000	11,313.000
510.000	11,310.000	11,308.000	11,305.000	11,303.000	11,301.000
525.000	11,299.000	11,296.000	11,294.000	11,292.000	11,291.000
540.000	11,289.000	11,287.000	11,285.000	11,284.000	11,282.000
555.000	11,281.000	11,280.000	11,278.000	11,277.000	11,276.000
570.000	11,275.000	11,273.000	11,272.000	11,271.000	11,270.000
585.000	11,269.000	11,268.000	11,268.000	11,267.000	11,266.000
600.000	11,265.000	11,264.000	11,264.000	11,263.000	11,262.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
615.000	11,262.000	11,261.000	11,260.000	11,260.000	11,259.000
630.000	11,259.000	11,258.000	11,258.000	11,257.000	11,257.000
645.000	11,256.000	11,256.000	11,256.000	11,255.000	11,255.000
660.000	11,255.000	11,254.000	11,254.000	11,254.000	11,253.000
675.000	11,253.000	11,253.000	11,253.000	11,252.000	11,252.000
690.000	11,252.000	11,252.000	11,251.000	11,251.000	11,251.000
705.000	11,251.000	11,251.000	11,251.000	11,250.000	11,250.000
720.000	11,250.000	11,250.000	11,250.000	11,250.000	11,249.000
735.000	11,249.000	11,249.000	11,249.000	11,249.000	11,249.000
750.000	11,249.000	11,249.000	11,249.000	11,249.000	11,248.000
765.000	11,248.000	11,248.000	11,248.000	11,248.000	11,248.000
780.000	11,248.000	11,248.000	11,248.000	11,248.000	11,248.000
795.000	11,248.000	11,248.000	11,248.000	11,248.000	11,248.000
810.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
825.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
840.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
855.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
870.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
885.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
900.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
915.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
930.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
945.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
960.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
975.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
990.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
1,005.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
1,020.000	11,247.000	11,247.000	11,247.000	11,247.000	11,247.000
1,035.000	11,247.000	11,247.000	11,246.000	11,246.000	11,246.000
1,050.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,065.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,080.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,095.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,110.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,125.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,140.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,155.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,170.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,185.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,200.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,215.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000

PONDPACK REPORT

Subsection: Time vs. Volume
Label: DETENTION VAULT

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,230.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,245.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,260.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,275.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,290.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,305.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,320.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,335.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,350.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,365.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,380.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,395.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,410.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,425.000	11,246.000	11,246.000	11,246.000	11,246.000	11,246.000
1,440.000	11,246.000	(N/A)	(N/A)	(N/A)	(N/A)

PONDPACK REPORT

Subsection: Outlet Input Data Scenario: Base

Label: Composite Outlet Structure - 1

Requested Pond Water Surface Elevations	
Minimum (Headwater)	520.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	526.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	524.40	526.00
Stand Pipe	Riser - 1	Forward	TW	526.00	526.00
Orifice-Circular	Orifice - 1	Forward	TW	521.00	526.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Riser - 1 Structure Type: Stand Pipe	
Number of Openings	1
Elevation	526.00 ft
Diameter	54.0 in
Orifice Area	15.9 ft²
Orifice Coefficient	0.600
Weir Length	14.14 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	524.40 ft
Weir Length	0.20 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	521.00 ft
Orifice Diameter	1.0 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft

Convergence Tolerances	
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

PONDPACK REPORT

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Base
Label: DETENTION VAULT

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	520.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
520.00	0.00	0.000	0	0.00	0.00	0.00
520.50	0.00	1,150.000	0	0.00	0.00	12.78
521.00	0.00	2,300.000	0	0.00	0.00	25.56
521.50	0.02	3,450.000	0	0.00	0.02	38.35
522.00	0.02	4,600.000	0	0.00	0.02	51.14
522.50	0.03	5,750.000	0	0.00	0.03	63.92
523.00	0.03	6,900.000	0	0.00	0.03	76.70
523.50	0.04	8,050.000	0	0.00	0.04	89.48
524.00	0.04	9,200.000	0	0.00	0.04	102.26
524.40	0.05	10,120.000	0	0.00	0.05	112.49
524.50	0.06	10,350.000	0	0.00	0.06	115.06
525.00	0.33	11,500.000	0	0.00	0.33	128.11
525.50	0.74	12,650.000	0	0.00	0.74	141.30
526.00	1.27	13,800.000	0	0.00	1.27	154.60

PONDPACK REPORT

Subsection: Level Pool Pond Routing Summary
Scenario: Base
Label: DETENTION VAULT (IN)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	520.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	10.54 ft³/s	Time to Peak (Flow, In)	246.000 min
Flow (Peak Outlet)	0.93 ft³/s	Time to Peak (Flow, Outlet)	264.000 min

Elevation (Water Surface, Peak)	525.68 ft
Volume (Peak)	13,054.259 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	34,177.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	22,930.000 ft³
Volume (Retained)	11,199.000 ft³
Volume (Unrouted)	-48.000 ft³
Error (Mass Balance)	0.1 %

PONDPACK REPORT

Subsection: Pond Inflow Summary
Label: DETENTION VAULT (IN)

Scenario: Base

Summary for Hydrograph Addition at 'DETENTION VAULT'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DMA 1

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	DMA 1	16,777.800	246.000	10.54
Flow (In)	DETENTION VAULT	34,176.600	246.000	10.54

PONDPACK REPORT

Index