FINAL STORMWATER REPORT

FOR

HCA LSMC ASC

1950 SE Shenandoah Drive Lee's Summit, MO 64063

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TABLE OF CONTENTS

1.0	GENERAL INFORMATION	.4
2.0	METHODOLOGY	.5
3.0	EXISTING CONDITIONS ANALYSIS	.5
3.1	Watershed	. 5
3.2	Calculations	.6
4.0	PROPOSED CONDITIONS ANALYSIS	.6
4.1	Watershed	.6
4.2	Calculations	.6
5.0	CONCLUSIONS AND RECOMMENDATIONS	.8

APPENDICES

Appendix A – Reference Documents

- A1. Aerial Photograph of Project Area
- A2. National Wetland Inventory Map
- A3. NRCS Soils Report
- A4. FEMA Firmette Panel 29095C0439G

Appendix B – Drainage Maps

- B1. Existing Drainage Map
- B2. Proposed Drainage Map

Appendix C – Calculations

C1. PondPack Output

1.0 GENERAL INFORMATION

This stormwater report is in support of a new approximately 20,000 square foot ambulatory surgery center on the HCA Lee's Summit Medical Center campus. The entire campus is approximately 28.5-acres located between SE Shenandoah Drive and SE Blue Parkway to the west of SE Cumberland Drive in Lee's Summit, Missouri. This proposed project will be on an approximately 4-acre piece of the southwest corner of the overall campus property. The site is currently vacant and used for agricultural purposes and is separated on the east by a wooded stream from the main hospital campus. The site lies within the northwest quarter of Section 10, Township 47, Range 31, in Jackson County. The site lies entirely within the South Prairie Lee watershed.

The site is generally rectangular. The site is bounded on the south by SE Blue Parkway and US 50 Highway, to the west by SE Cumberland Drive and vacant land, to the north by undeveloped land, and to the east by the existing Lee's Summit Medical Center campus. Refer to the aerial photograph in Appendix A for existing cover conditions and surrounding land use.

The proposed project consists of a one-story, approximately 20,000 square foot surgery center. The project will include the construction of parking lot and drive aisles, sidewalks, storm drainage improvements, and utility relocations.

The site generally consists of one watershed that slopes gently from the west to east. It eventually works to a wooded stream that runs along the east edge of the property to be developed. The property does not have any special flood hazard areas on it. Thus, there will be no floodplain issues with the project and no permitting will be needed with FEMA. All existing drainage patterns will be generally maintained.

Along the east side of the site is an existing wooded stream area. This stream has an upstream tributary greater than 40 acres but less than 160 acres. This requires a stream buffer of 60 feet on either side of the ordinary high-water mark for the stream. This stream buffer will not be encroached upon with the project.

The soil types that have been identified on the site for the areas to be disturbed are Arisbug-Urban land complex (1-5% slopes) and Udarents-Urban land-Sampsel complex (2-5% slopes). The soil type falls within Hydraulic Soil Group (HSG) C for the site. For additional information pertaining to the soils, refer to the NRCS soils report included in Appendix A.

The purpose of this plan is to identify existing and potential drainage issues, delineate required stormwater facilities and document that stormwater runoff from the development will not have an adverse impact on existing properties adjacent to or downstream of the project.

2.0 METHODOLOGY

To calculate stormwater runoff rates, the software Bentley PondPack V8i was used to model the drainage basins and ponds. The unit hydrograph method is used to determine runoff levels, based on the SCS, Type II 24-hour rainfall. The hydrograph routing through the ponds uses the modified-Puls level pool routing method. Storm events for the 50%, 10%, and 1% chance events were evaluated based on the comprehensive control requirements. As well, the 90% mean annual event was modeled to be released over a 40-hour period. The rainfall depths used are from "Precipitation Frequency Estimates for the Kansas City Metropolitan Area" (McEnroe, 2002) as shown below in Table 1.

1	able I –	Rainfall	Depth (In.)	
Storm Event	90%	50%	10%	1%
Depth	1.37	3.55	5.25	7.94

Table 1 – Rainfall Depth (in.)

Analysis of the storm drainage systems followed all adopted City of Lee's Summit codes, ordinances, and design criteria. The stormwater facility design was analyzed using the current Section 5600 of KCAPWA and APWA/MARC BMP Manual design criteria.

3.0 EXISTING CONDITIONS ANALYSIS

3.1 WATERSHED

The site consists of one watershed that currently sheet drains to the east to the existing wooded area and stream. The entire site is within the South Prairie Lee Watershed. Refer to the Existing Drainage Area Map in Appendix B. Table 2 below summarizes the existing runoff conditions on the property.

			8			
Drainage	Area	Runoff	Time of	50% Runoff	10% Runoff	1% Runoff
Sub-Basin	(acres)	Coeff. (CN)	Conc. (min.)	Rate (cfs)	Rate (cfs)	Rate (cfs)
Existing	4.02	85	10	11.25	19.26	31.99

Table 2 – Existing Runoff Conditions

3.2 CALCULATIONS

The site will need to follow the comprehensive control requirements outlined in section 5608.4 of the APWA design criteria. This allows 0.5 cfs per acre for the 50% event, 2.0 cfs per acre for the 10% event, and 3.0 cfs per acre for the 1% event. Refer to Table 3 below for the allowable release rates the site for each respective storm event

rable o h	mo nubic n	crease nated	
Drainage Sub-Basin	50%	10%	1%
Existing	2.01	8.04	12.06

Table 3 – Allowable Release Rates (cfs)

4.0 PROPOSED CONDITIONS ANALYSIS

4.1 WATERSHED

The site will generally maintain the same drainage patterns as currently exist. The site will be split into three watersheds in the proposed condition. The south part of the site will be conveyed to a detention pond on the southwest corner. The north part of the site and the building will be conveyed to a detention pond on the northeast corner. A small portion of the north end of the site will surface drain off the site undetained. Everything will continue to generally drain and discharge to the wooded area and stream along the east boundary of the site. Refer to the Proposed Drainage Map in Appendix B for more detailed information.

4.2 CALCULATIONS

To analyze the proposed conditions, the software Bentley PondPack V8i was used to model the drainage basins and ponds. The unit hydrograph method was used to determine runoff levels for the proposed conditions, based on the SCS, Type II 24-hour rainfall. The hydrograph routing through the ponds used the modified-Puls level pool routing method. The ponds and their outlets were designed so that the peak flows for the 50%, 10%, and 1% storm events at the proposed condition would not exceed the allowable release rates. The primary outlet control for the ponds will consist of an outlet control structure containing multiple orifices. This will then have a discharge pipe. The ponds are also designed to release the water quality event over a 40-hour period. See Table 4 below for a summary of the peak flows and water surface elevations for the detention and refer to the runoff calculations in Appendix C for detailed calculations. Table 5 shows a comparison between the allowable and proposed peak runoff rates. The proposed condition produces lower peak runoff rates than the allowable runoff rates.

Drainage Sub-Basin	Runoff Coeff. (CN)	Time of Conc. (min)	Area (AC)	Proposed 50% Peak Flow (cfs)	50% Max. W.S.E.	Proposed 10% Peak Flow (cfs)	10% Max. W.S.E.	Proposed 1% Peak Flow (cfs)	1% Max. W.S.E.
North	92	6	1.97	7.56	-	11.84	-	18.52	-
N Detention	-	-	-	0.42	997.12	2.09	998.02	6.34	999.11
South	90	6	1.52	5.45	-	8.78	-	13.99	-
S Detention	-	-	-	0.28	1000.42	1.07	1000.94	3.15	1001.64
Undetained	80	6	0.53	1.34	-	2.46	-	4.30	-

Table 4 - Proposed Watershed Conditions

Table 5 - Allowable vs. Proposed Release Rates (cfs)

Condition	50%	10%	1%
Allowable	2.01	8.04	12.06
Proposed	1.86	4.15	11.77

The north detention basin has an emergency overflow spillway that consists of the entire east side of the basin, which is approximately 170 feet long. The elevation of this spillway is set to 999.61, which is 0.5 feet above the 1% water surface elevation in Table 4 above. This allows the 1% storm event to pass through with a flow depth of 0.1 feet. The top of the embankment at both ends of the spillway is then set 1-foot above this flow elevation through the spillway.

The south detention basin has an emergency overflow spillway that consists of the entire east side of the basin as well, which is approximately 250 feet long. The elevation of this spillway is set to 1002.14, which is 0.5 feet above the 1% water surface elevation in Table 4 above. This allows the 1% storm event to pass through with a flow depth of 0.07 feet. Due to the existing grades, it is not feasible to have an embankment that is 1-foot above the flow elevation over the spillway. However, the spillway and embankment discharge directly into a stream buffer with no structure or roads between the basin and the stream.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This stormwater report is in support of a new approximately 20,000 square foot ambulatory surgery center on the HCA Lee's Summit Medical Center campus. The entire campus is approximately 28.5-acres located between SE Shenandoah Drive and SE Blue Parkway to the west of SE Cumberland Drive in Lee's Summit, Missouri. This proposed project will be on an approximately 4-acre piece of the southwest corner of the overall campus property. The site is currently vacant and used for agricultural purposes and is separated on the east by a wooded stream from the main hospital campus.

The proposed project consists of a one-story, approximately 20,000 square foot surgery center. The project will include the construction of parking lot and drive aisles, sidewalks, storm drainage improvements, and utility relocations.

The site consists of one watershed currently that slopes gently from the west to east. It eventually works to a wooded stream that runs along the east edge of the property to be developed. All existing drainage patterns will be generally maintained. The existing wooded stream area along the east edge of the site will require a stream buffer of 60 feet on either side of the ordinary high-water mark for the stream. This stream buffer will not be encroached upon with the project. The general drainage patterns will be maintained by the proposed site. The site will have two detention ponds, one that handles the north parking area and one that handles the south parking area and building. A small portion of the north end of the site will sheet drain undetained off the site.

Based on the codes of the City of Lee's Summit, detention is being provided to limit the proposed peak runoff rates to the allowable rates for the 50%, 10%, and 1% storm events.

An extended dry detention basin is proposed to release the water quality event over a 40-hour period utilizing a small orifice and trash rack in the outlet structure.

The project will not produce any impacts to the downstream system as the rates of runoff will be limited to below the allowed rate, which are also below existing conditions. The project will not impact any FEMA floodplains and will respect the existing stream buffer.

APPENDIX A – REFERENCE DOCUMENTS





U.S. Fish and Wildlife Service National Wetlands Inventory

Wetlands



October 19, 2022

Wetlands



Estuarine and Marine Deepwater

Estuarine and Marine Wetland

- ater Freshwater Forested/Shrub Wetland
 - Freshwater Pond

Freshwater Emergent Wetland

Lake Other Riverine This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



United States Department of Agriculture

Natural Resources Conservation

Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Jackson County, Missouri



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface	2
Soil Map	5
Soil Map	6
Legend	7
Map Unit Legend	8
Map Unit Descriptions	8
Jackson County, Missouri	10
10082—Arisburg-Urban land complex, 1 to 5 percent slopes	10
10180—Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes.	11
Soil Information for All Uses	14
Soil Properties and Qualities	14
Soil Qualities and Features	14
Hydrologic Soil Group	14

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



	MAP L	EGEND		MAP INFORMATION
Area of Inte	erest (AOI)	100	Spoil Area	The soil surveys that comprise your AOI were mapped at
	Area of Interest (AOI)	۵	Stony Spot	1.24,000.
Soils	Sail Man Linit Dalvaana	0	Very Stony Spot	Warning: Soil Map may not be valid at this scale.
		Ŷ	Wet Spot	
~	Soil Map Unit Lines	Δ	Other	Enlargement of maps beyond the scale of mapping can cause
	Soil Map Unit Points		Special Line Features	line placement. The maps do not show the small areas of
Special P	Point Features	Water Fea	tures	contrasting soils that could have been shown at a more detailed
S	Borrow Pit	\sim	Streams and Canals	
X		Transport	ation	Please rely on the bar scale on each map sheet for map
英		+++	Rails	measurements.
\diamond	Closed Depression	~	Interstate Highways	Source of Map: Natural Resources Conservation Service
X	Gravel Pit	~	US Routes	Web Soil Survey URL:
00	Gravelly Spot	\sim	Major Roads	Coordinate System: Web Mercator (EPSG:3857)
Ø	Landfill	~	Local Roads	Maps from the Web Soil Survey are based on the Web Mercator
Α.	Lava Flow	Backgrou	nd	projection, which preserves direction and shape but distorts
عليه	Marsh or swamp	and the second second	Aerial Photography	Albers equal-area conic projection, should be used if more
~	Mine or Quarry			accurate calculations of distance or area are required.
0	Miscellaneous Water			This product is generated from the USDA-NRCS certified data as
0	Perennial Water			of the version date(s) listed below.
V	Rock Outcrop			Soil Survey Area: Jackson County Missouri
+	Saline Spot			Survey Area Data: Version 24, Aug 31, 2022
°*°	Sandy Spot			Soil man units are labeled (as snace allows) for man scales
-	Severely Eroded Spot			1:50,000 or larger.
۵	Sinkhole			Data(c) agrial images were photographed: Sep 6, 2010 New
à	Slide or Slip			16, 2019
ø	Sodic Spot			The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident

Map Unit Legend

	1		
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10082	Arisburg-Urban land complex, 1 to 5 percent slopes	1.9	44.3%
10180	Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes	2.4	55.7%
Totals for Area of Interest	·	4.3	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Jackson County, Missouri

10082—Arisburg-Urban land complex, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2w7ld Elevation: 750 to 1,130 feet Mean annual precipitation: 39 to 45 inches Mean annual air temperature: 50 to 55 degrees F Frost-free period: 177 to 220 days Farmland classification: All areas are prime farmland

Map Unit Composition

Arisburg and similar soils: 61 percent Urban land: 30 percent Minor components: 9 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arisburg

Setting

Landform: Interfluves Landform position (two-dimensional): Summit Landform position (three-dimensional): Interfluve Down-slope shape: Convex Across-slope shape: Convex Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam A - 6 to 13 inches: silt loam Bt - 13 to 19 inches: silty clay loam Btg - 19 to 56 inches: silty clay loam BCg - 56 to 79 inches: silty clay loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C Ecological site: R107XB007MO - Loess Upland Prairie Hydric soil rating: No

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydric soil rating: No

Minor Components

Sampsel

Percent of map unit: 3 percent Landform: Hills Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Down-slope shape: Convex Across-slope shape: Concave Ecological site: R109XY010MO - Interbedded Sedimentary Upland Savanna Hydric soil rating: Yes

Greenton

Percent of map unit: 3 percent Landform: Hillslopes Landform position (two-dimensional): Shoulder Landform position (three-dimensional): Side slope Down-slope shape: Convex Across-slope shape: Convex Ecological site: R109XY002MO - Loess Upland Prairie Hydric soil rating: No

Sharpsburg

Percent of map unit: 3 percent Landform: Ridges Landform position (two-dimensional): Summit Landform position (three-dimensional): Interfluve Down-slope shape: Linear Across-slope shape: Linear Ecological site: R109XY002MO - Loess Upland Prairie Hydric soil rating: No

10180—Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1n85h Elevation: 600 to 900 feet Mean annual precipitation: 33 to 43 inches Mean annual air temperature: 50 to 57 degrees F Frost-free period: 175 to 220 days Farmland classification: All areas are prime farmland

Map Unit Composition

Udarents and similar soils: 46 percent Urban land: 39 percent Sampsel and similar soils: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udarents

Setting

Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Convex Across-slope shape: Convex Parent material: Mine spoil or earthy fill

Typical profile

C1 - 0 to 5 inches: silt loam C2 - 5 to 80 inches: silty clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: C Ecological site: R107XB002MO - Deep Loess Upland Prairie Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation) Hydric soil rating: No

Description of Urban Land

Setting

Landform: Interfluves Landform position (two-dimensional): Summit Landform position (three-dimensional): Interfluve Across-slope shape: Convex

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydric soil rating: No

Description of Sampsel

Setting

Landform: Hillslopes

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Convex Parent material: Residuum weathered from shale

Typical profile

Ap - 0 to 13 inches: silty clay loam *Bt - 13 to 80 inches:* silty clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C/D Ecological site: R109XY010MO - Interbedded Sedimentary Upland Savanna Other vegetative classification: Grass/Prairie (Herbaceous Vegetation) Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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

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

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

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

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

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

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





Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10082	Arisburg-Urban land complex, 1 to 5 percent slopes	С	1.9	44.3%
10180	Udarents-Urban land- Sampsel complex, 2 to 5 percent slopes	C	2.4	55.7%
Totals for Area of Interes	st		4.3	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher

National Flood Hazard Layer FIRMette



Legend



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

APPENDIX B – DRAINAGE MAPS



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	TM te:									_
3	IS ber									_
	Dra			CIVIL ENGINEERING / SURVEYING / UTILITIES						
1	awr 1			/ TOT COTTEGE BIVE., JOINE 400 Dverland Park Kansas 66910						_
	n: 1/1: 1/2/			p. (913) 663-1900						_
	TMS ERB 3/23			BHC is a trademark of Brungardt Honomichl & Company, P.A.	Re	ev. Date	Description	By	App.	

DRAINAGE LEGEND

Field _____980 _____ PROPERTY LINE RIGHT-OF-WAY LINE R/W

AREA/DIRECTION OF DRAINAGE BOUNDARY EXISTING GRADE MAJOR CONTOUR

DRAINAGE AREA BOUNDARY

DRAINAGE DIRECTION

EXISTING GRADE MINOR CONTOUR

GRAPHIC SCALE 30 0 30



Feb 15, 2023 - 8:28am Plotted By: Eric.Byrd V:\034660-HCA LSMC ASC\04-DWG\Eng\Sheet\PDP\034660-SHTS-DMAP.dwg Layout: Proposed Drain Map

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			CIVIL ENGINEERING / SURVEYING / UTILITIES 7101 follogo blud - Cuito Ann					
			/ 101 College bivu., Julie 400 Overland Park Kansas 66210					
n: 2/1: 034			p. (913) 663-1900					
TMS ERB 5/23 1660			BHC is a trademark of Brungardt Honomicht & Company, P.A.	Rev	Date	Description	By	App.

DRAINAGE LEGEND

Field
980
982
980
982
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DRAINAGE DIRECTION AREA/DIRECTION OF DRAINAGE BOUNDARY PROPOSED FINISH GRADE MAJOR CONTOUR PROPOSED FINISH GRADE MINOR CONTOUR EXISTING GRADE MAJOR CONTOUR EXISTING GRADE MINOR CONTOUR

DRAINAGE AREA BOUNDARY

PROPERTY LINE

RIGHT-OF-WAY LINE



APPENDIX C – CALCULATIONS

Table of Contents

	Master Network Summary	1
Time-Depth - 1		
	Time-Depth Curve, 100 years	3
	Time-Depth Curve, 10 years	5
	Time-Depth Curve, 2 years	7
	Time-Depth Curve, 1 years	9
CM-1	Time of Concentration Calculations, 1 years	11
CM-1	Runoff CN-Area, 1 years	13
CM-1		
	Unit Hydrograph Summary, 1 years	14
	Unit Hydrograph Summary, 1 years	14
	Unit Hydrograph Summary, 2 years	16
	Unit Hydrograph Summary, 2 years	16
	Unit Hydrograph Summary, 10 years	18
	Unit Hydrograph Summary, 10 years	18
	Unit Hydrograph Summary, 100 years	20
	Unit Hydrograph Summary, 100 years	20
CM-2		
	Unit Hydrograph Summary, 1 years	22
	Unit Hydrograph Summary, 2 years	23
	Unit Hydrograph Summary, 10 years	24
	Unit Hydrograph Summary, 100 years	25
CM-3		
	Unit Hydrograph Summary, 1 years	26
	Unit Hydrograph Summary, 2 years	27
	Unit Hydrograph Summary, 10 years	28
	Unit Hydrograph Summary, 100 years	29
PO-1		
	Elevation-Area Volume Curve, 1 years	30
PO-2		
	Elevation-Area Volume Curve, 1 years	31
Composite Outlet Structure - 1		
	Outlet Input Data, 1 years	32
	Individual Outlet Curves, 1 years	35
	Composite Rating Curve, 1 years	41
Composite Outlet Structure - 2		
	Outlet Input Data, 1 years	43

Table of Contents

	Individual Outlet Curves, 1 years	46
	Composite Rating Curve, 1 years	51
PO-1		
	Elevation-Volume-Flow Table (Pond), 1 years	52
PO-1 (IN)		
	Level Pool Pond Routing Summary, 1 years	53
	Level Pool Pond Routing Summary, 2 years	54
	Level Pool Pond Routing Summary, 10 years	55
	Level Pool Pond Routing Summary, 100 years	56
PO-1 (OUT)		
	Pond Routed Hydrograph (total out), 1 years	57
	Pond Routed Hydrograph (total out), 2 years	59
	Pond Routed Hydrograph (total out), 10 years	61
	Pond Routed Hydrograph (total out), 100 years	63
PO-2		
	Elevation-Volume-Flow Table (Pond), 1 years	65
PO-2 (IN)		
	Level Pool Pond Routing Summary, 1 years	66
	Level Pool Pond Routing Summary, 2 years	67
	Level Pool Pond Routing Summary, 10 years	68
	Level Pool Pond Routing Summary, 100 years	69
PO-2 (OUT)		
	Pond Routed Hydrograph (total out), 1 years	70
	Pond Routed Hydrograph (total out), 2 years	72
	Pond Routed Hydrograph (total out), 10 years	74
	Pond Routed Hydrograph (total out), 100 years	76
Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
CM-1	Existing WQ	1	0.124	12.000	1.92
CM-1	Proposed WQ	1	0.114	11.950	2.05
CM-1	Existing 2-yr	2	0.689	12.000	11.25
CM-1	Proposed 2-yr	2	0.440	11.950	7.56
CM-1	Existing 10-yr	10	1.204	12.000	19.26
CM-1	Proposed 10-yr	10	0.711	11.950	11.84
CM-1	Existing 100-yr	100	2.058	12.000	31.99
CM-1	Proposed 100-yr	100	1.145	11.950	18.52
CM-2	Proposed WQ	1	0.071	11.950	1.28
CM-2	Proposed 2-yr	2	0.311	11.950	5.45
CM-2	Proposed 10-yr	10	0.515	11.950	8.78
CM-2	Proposed 100-yr	100	0.848	11.950	13.99
CM-3	Proposed WQ	1	0.010	12.000	0.15
CM-3	Proposed 2-yr	2	0.074	11.950	1.34
CM-3	Proposed 10-yr	10	0.137	11.950	2.46
CM-3	Proposed 100-yr	100	0.246	11.950	4.30

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
0-1	Existing WQ	1	0.124	12.000	1.92
0-1	Proposed WQ	1	0.137	12.000	0.26
0-1	Existing 2-yr	2	0.689	12.000	11.25
0-1	Proposed 2-yr	2	0.664	11.950	1.86
0-1	Existing 10-yr	10	1.204	12.000	19.26
0-1	Proposed 10-yr	10	1.135	12.050	4.15
0-1	Existing 100-yr	100	2.058	12.000	31.99
0-1	Proposed 100-yr	100	1.934	12.050	11.77

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-1 (IN)	Proposed WQ	1	0.114	11.950	2.05	(N/A)	(N/A)
PO-1 (OUT)	Proposed WQ	1	0.082	14.000	0.08	995.21	0.062
PO-1 (IN)	Proposed 2-yr	2	0.440	11.950	7.56	(N/A)	(N/A)
PO-1 (OUT)	Proposed 2-yr	2	0.353	13.000	0.42	997.12	0.249
PO-1 (IN)	Proposed 10- yr	10	0.711	11.950	11.84	(N/A)	(N/A)
PO-1 (OUT)	Proposed 10- yr	10	0.589	12.200	2.09	998.02	0.368
PO-1 (IN)	Proposed 100- yr	100	1.145	11.950	18.52	(N/A)	(N/A)
PO-1 (OUT)	Proposed 100- yr	100	0.981	12.100	6.34	999.11	0.541
PO-2 (IN)	Proposed WQ	1	0.071	11.950	1.28	(N/A)	(N/A)
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27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-2 (OUT)	Proposed WQ	1	0.046	14.650	0.05	999.41	0.040
PO-2 (IN)	Proposed 2-yr	2	0.311	11.950	5.45	(N/A)	(N/A)
PO-2 (OUT)	Proposed 2-yr	2	0.237	13.200	0.28	1,000.42	0.178
PO-2 (IN)	Proposed 10- yr	10	0.515	11.950	8.78	(N/A)	(N/A)
PO-2 (OUT)	Proposed 10- yr	10	0.409	12.350	1.07	1,000.94	0.276
PO-2 (IN)	Proposed 100- yr	100	0.848	11.950	13.99	(N/A)	(N/A)
PO-2 (OUT)	Proposed 100- yr	100	0.707	12.150	3.15	1,001.64	0.428

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Return Event: 100 years Storm Event: 100-yr

Time-Depth Curve: 100-yr	
Label	100-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

Time	Depth	Depth	Depth	Depth	Depth
(hours)	(in)	(in)	(in)	(in)	(in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.2	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.3	0.3
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.3	0.4	0.4
4.000	0.4	0.4	0.4	0.4	0.4
4.500	0.4	0.5	0.5	0.5	0.5
5.000	0.5	0.5	0.5	0.5	0.6
5.500	0.6	0.6	0.6	0.6	0.6
6.000	0.6	0.6	0.7	0.7	0.7
6.500	0.7	0.7	0.7	0.8	0.8
7.000	0.8	0.8	0.8	0.8	0.9
7.500	0.9	0.9	0.9	0.9	0.9
8.000	1.0	1.0	1.0	1.0	1.0
8.500	1.1	1.1	1.1	1.1	1.1
9.000	1.2	1.2	1.2	1.2	1.3
9.500	1.3	1.3	1.3	1.4	1.4
10.000	1.4	1.5	1.5	1.5	1.6
10.500	1.6	1.7	1.7	1.8	1.8
11.000	1.9	1.9	2.0	2.1	2.2
11.500	2.2	2.4	2.8	3.4	4.5
12.000	5.3	5.4	5.5	5.7	5.8
12.500	5.8	5.9	6.0	6.0	6.1
13.000	6.1	6.2	6.2	6.3	6.3
13.500	6.3	6.4	6.4	6.4	6.5
14.000	6.5	6.5	6.6	6.6	6.6
14.500	6.7	6.7	6.7	6.7	6.8
15.000	6.8	6.8	6.8	6.8	6.9
15.500	6.9	6.9	6.9	6.9	7.0
16.000	7.0	7.0	7.0	7.0	7.1
16.500	7.1	7.1	7.1	7.1	7.1
17.000	7.2	7.2	7.2	7.2	7.2
17.500	7.2	7.3	7.3	7.3	7.3
18.000	7.3	7.3	7.3	7.4	7.4
18.500	7.4	7.4	7.4	7.4	7.4
19.000	7.4	7.5	7.5	7.5	7.5
19.500	7.5	7.5	7.5	7.5	7.5

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Bentley PondPack V8i [08.11.01.56] Page 3 of 79

Return Event: 100 years Storm Event: 100-yr

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

	This of ferrepresents time for hist value in each rown						
Ti (ho	me urs)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	
	20.000	7.6	7.6	7.6	7.6	7.6	
	20.500	7.6	7.6	7.6	7.6	7.7	
	21.000	7.7	7.7	7.7	7.7	7.7	
	21.500	7.7	7.7	7.7	7.7	7.7	
	22.000	7.8	7.8	7.8	7.8	7.8	
	22.500	7.8	7.8	7.8	7.8	7.8	
	23.000	7.9	7.9	7.9	7.9	7.9	
	23.500	7.9	7.9	7.9	7.9	7.9	
	24.000	7.9	(N/A)	(N/A)	(N/A)	(N/A)	

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Return Event: 10 years Storm Event: 10-yr

Time-Depth Curve: 10-yr	
Label	10-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

Time (bours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
	(11)	(11)	(11)	(11)	(11)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.4	0.4
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.5
6.500	0.5	0.5	0.5	0.5	0.5
7.000	0.5	0.5	0.5	0.6	0.6
7.500	0.6	0.6	0.6	0.6	0.6
8.000	0.6	0.6	0.7	0.7	0.7
8.500	0.7	0.7	0.7	0.7	0.8
9.000	0.8	0.8	0.8	0.8	0.8
9.500	0.9	0.9	0.9	0.9	0.9
10.000	1.0	1.0	1.0	1.0	1.0
10.500	1.1	1.1	1.1	1.2	1.2
11.000	1.2	1.3	1.3	1.4	1.4
11.500	1.5	1.6	1.9	2.3	3.0
12.000	3.5	3.6	3.7	3.7	3.8
12.500	3.9	3.9	3.9	4.0	4.0
13.000	4.1	4.1	4.1	4.1	4.2
13.500	4.2	4.2	4.2	4.3	4.3
14.000	4.3	4.3	4.3	4.4	4.4
14.500	4.4	4.4	4.4	4.4	4.5
15.000	4.5	4.5	4.5	4.5	4.5
15.500	4.6	4.6	4.6	4.6	4.6
16.000	4.6	4.6	4.6	4.7	4.7
16.500	4.7	4.7	4.7	4.7	4.7
17.000	4.7	4.7	4.8	4.8	4.8
17.500	4.8	4.8	4.8	4.8	4.8
18.000	4.8	4.8	4.9	4.9	4.9
18.500	4.9	4.9	4.9	4.9	4.9
19.000	4.9	4.9	4.9	4.9	5.0
19.500	5.0	5.0	5.0	5.0	5.0

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Return Event: 10 years Storm Event: 10-yr

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

•••							
Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)		
20.000	5.0	5.0	5.0	5.0	5.0		
20.500	5.0	5.0	5.0	5.1	5.1		
21.000	5.1	5.1	5.1	5.1	5.1		
21.500	5.1	5.1	5.1	5.1	5.1		
22.000	5.1	5.1	5.1	5.1	5.2		
22.500	5.2	5.2	5.2	5.2	5.2		
23.000	5.2	5.2	5.2	5.2	5.2		
23.500	5.2	5.2	5.2	5.2	5.2		
24.000	5.3	(N/A)	(N/A)	(N/A)	(N/A)		

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Return Event: 2 years Storm Event: 2-yr

Time-Depth Curve: 2-yr	
Label	2-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

Time	Depth	Depth	Depth	Depth	Depth
(hours)	(in)	(in)	(in)	(in)	(in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.3	0.3
7.000	0.4	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.4	0.4	0.4	0.5	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.5	0.5	0.5	0.6	0.6
9.500	0.6	0.6	0.6	0.6	0.6
10.000	0.6	0.7	0.7	0.7	0.7
10.500	0.7	0.7	0.8	0.8	0.8
11.000	0.8	0.9	0.9	0.9	1.0
11.500	1.0	1.1	1.3	1.5	2.0
12.000	2.4	2.4	2.5	2.5	2.6
12.500	2.6	2.6	2.7	2.7	2.7
13.000	2.7	2.8	2.8	2.8	2.8
13.500	2.8	2.9	2.9	2.9	2.9
14.000	2.9	2.9	2.9	2.9	3.0
14.500	3.0	3.0	3.0	3.0	3.0
15.000	3.0	3.0	3.1	3.1	3.1
15.500	3.1	3.1	3.1	3.1	3.1
16.000	3.1	3.1	3.1	3.1	3.2
16.500	3.2	3.2	3.2	3.2	3.2
17.000	3.2	3.2	3.2	3.2	3.2
17.500	3.2	3.2	3.2	3.3	3.3
18.000	3.3	3.3	3.3	3.3	3.3
18.500	3.3	3.3	3.3	3.3	3.3
19.000	3.3	3.3	3.3	3.3	3.4
19.500	3.4	3.4	3.4	3.4	3.4

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Return Event: 2 years Storm Event: 2-yr

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	3.4	3.4	3.4	3.4	3.4
20.500	3.4	3.4	3.4	3.4	3.4
21.000	3.4	3.4	3.4	3.4	3.4
21.500	3.4	3.5	3.5	3.5	3.5
22.000	3.5	3.5	3.5	3.5	3.5
22.500	3.5	3.5	3.5	3.5	3.5
23.000	3.5	3.5	3.5	3.5	3.5
23.500	3.5	3.5	3.5	3.5	3.5
24.000	3.6	(N/A)	(N/A)	(N/A)	(N/A)

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Return Event: 1 years Storm Event: WQ

Time-Depth Curve: WQ	
Label	WQ
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

Time	Depth	Depth	Depth	Depth	Depth
(nours)	(in)	(IN)	(IN)	(IN)	(IN)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.0	0.0	0.0	0.0
2.500	0.0	0.0	0.0	0.0	0.0
3.000	0.0	0.0	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.1	0.1
5.500	0.1	0.1	0.1	0.1	0.1
6.000	0.1	0.1	0.1	0.1	0.1
6.500	0.1	0.1	0.1	0.1	0.1
7.000	0.1	0.1	0.1	0.1	0.1
7.500	0.1	0.2	0.2	0.2	0.2
8.000	0.2	0.2	0.2	0.2	0.2
8.500	0.2	0.2	0.2	0.2	0.2
9.000	0.2	0.2	0.2	0.2	0.2
9.500	0.2	0.2	0.2	0.2	0.2
10.000	0.2	0.3	0.3	0.3	0.3
10.500	0.3	0.3	0.3	0.3	0.3
11.000	0.3	0.3	0.3	0.4	0.4
11.500	0.4	0.4	0.5	0.6	0.8
12.000	0.9	0.9	1.0	1.0	1.0
12.500	1.0	1.0	1.0	1.0	1.0
13.000	1.1	1.1	1.1	1.1	1.1
13.500	1.1	1.1	1.1	1.1	1.1
14.000	1.1	1.1	1.1	1.1	1.1
14.500	1.1	1.2	1.2	1.2	1.2
15.000	1.2	1.2	1.2	1.2	1.2
15.500	1.2	1.2	1.2	1.2	1.2
16.000	1.2	1.2	1.2	1.2	1.2
16.500	1.2	1.2	1.2	1.2	1.2
17.000	1.2	1.2	1.2	1.2	1.2
17.500	1.2	1.3	1.3	1.3	1.3
18.000	1.3	1.3	1.3	1.3	1.3
18.500	1.3	1.3	1.3	1.3	1.3
19.000	1.3	1.3	1.3	1.3	1.3
19.500	1.3	1.3	1.3	1.3	1.3

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Bentley PondPack V8i [08.11.01.56] Page 9 of 79

Return Event: 1 years Storm Event: WQ

CUMULATIVE RAINFALL (in) Output Time Increment = 0.100 hours Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	1.3	1.3	1.3	1.3	1.3
20.500	1.3	1.3	1.3	1.3	1.3
21.000	1.3	1.3	1.3	1.3	1.3
21.500	1.3	1.3	1.3	1.3	1.3
22.000	1.3	1.3	1.3	1.3	1.3
22.500	1.3	1.3	1.3	1.4	1.4
23.000	1.4	1.4	1.4	1.4	1.4
23.500	1.4	1.4	1.4	1.4	1.4
24.000	1.4	(N/A)	(N/A)	(N/A)	(N/A)

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Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.170
Slope	0.030 ft/ft
2 Year 24 Hour Depth	3.6 in
Average Velocity	0.19 ft/s
Segment Time of Concentration	0.146 hours
Segment #2: TR-55 Shallow Con	centrated Flow
Hydraulic Length	230.00 ft
Is Paved?	False
Slope	0.030 ft/ft
Average Velocity	2.79 ft/s
Segment Time of Concentration	0.023 hours
Time of Concentration (Composite	
	=)
Time of Concentration (Composite)	0.169 hours

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==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n
	(Lf / V) / 3600
Where:	R= Hydraulic radius
	Aq= Flow area, square feet
	Wp= Wetted perimeter, feet
	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	n= Manning's n
	Tc= Time of concentration, hours
	Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5)
	Paved Surface: V = 20.3282 * (Sf**0.5)
Where:	(Lf / V) / 3600 V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

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Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Row crops - Straight row (SR), good - Soil	85.000	4.020	0.0	0.0	85.000
COMPOSITE AREA & WEIGHTED CN>	(N/A)	4.020	(N/A)	(N/A)	85.000

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Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.4 in
Time of Concentration	0.169 hours
(Composite)	4.020 20100
Area (User Defined)	4.020 acres
Computational Time	
Increment	0.022 hours
Time to Peak (Computed)	12.025 hours
Flow (Peak, Computed)	1.95 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak	12 000 hours
Interpolated Output)	12.000 110013
Flow (Peak Interpolated	1.92 ft ³ /s
Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	4.020 acres
Maximum Retention	1.0 in
(Pervious)	1.8 IN
Maximum Retention	0.4 in
(Pervious, 20 percent)	
Cumulative Runoff	
Cumulative Runoff Depth	0.4 %
(Pervious)	0.4 IN
Runoff Volume (Pervious)	0.125 ac-ft
Hydrograph Volume (Area und	or Hydrograph ouryo)
Volume	0.124 ac-ft
SCS Unit Hydrograph Paramet	ters
Time of Concentration	0.100 h and
(Composite)	0.169 hours
Computational Time	0.022 hours
Increment	0.022 10013
Unit Hydrograph Shape	483.432
K Factor	0 749
Receding/Rising Tr/Tn	1 670
Unit peak, ap	27.02 ft ³ /s
Unit peak time. To	0.112 hours
Unit receding limb. Tr	0.450 hours
Total unit time. Tb	0.562 hours

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Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.4 in
Time of Concentration	0.100 hours
(Composite)	1.070
Area (User Defined)	1.970 acres
Increment	0.013 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	2.08 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	11.950 hours
Interpolated Output)	
Output)	2.05 ft³/s
· · ·	
Drainage Area	
SCS CN (Composite)	92.000
Area (User Defined)	1.970 acres
Maximum Retention	0.9 in
(Pervious)	
(Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth	0.7 in
(Pervious)	0 114 ac ft
	0.114 dC-10
Hydrograph Volume (Area unde	er Hydrograph curve)
Volume	0.114 ac-ft
SCS Unit Undragraph Daramate	
	515
Time of Concentration	0.100 hours
Computational Time	
Increment	0.013 hours
Unit Hydrograph Shape	483 432
Factor	105.152
K Factor	0.749
Recealing/Rising, Tr/Tp	1.6/0
Unit peak, qp	22.32 ft ³ /s
Unit peak time, 1p	
Total unit time Th	0.20/ NOURS
	0.000 110015

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Storm Event	2-yr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration	0 169 hours
(Composite)	0.109 110013
Area (User Defined)	4.020 acres
Increment	0.022 hours
Time to Peak (Computed)	11.980 hours
Flow (Peak, Computed)	11.26 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	12,000 hours
Interpolated Output)	12.000 Hours
Flow (Peak Interpolated	11.25 ft ³ /s
Output)	ŕ
Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	4.020 acres
Maximum Retention	
(Pervious)	1.8 IN
Maximum Retention	0.4 in
(Pervious, 20 percent)	
Cumulative Runoff	
Cumulative Runoff Depth	2.1 :
(Pervious)	2.1 IN
Runoff Volume (Pervious)	0.690 ac-ft
Hydrograph Volume (Area under	· Hydrograph curve)
volume	0.689 ac-π
SCS Unit Hydrograph Parameter	rs
Time of Concentration	0.160 hours
(Composite)	0.109 110015
Computational Time	0.022 hours
Unit Hydrograph Snape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	27.02 ft ³ /s
Unit peak time, Tp	0.112 hours
Unit receding limb, Tr	0.450 hours
Total unit time, Tb	0.562 hours

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Storm Event	2-yr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration	0 100 hours
(Composite)	0.100 110013
Area (User Defined)	1.970 acres
Computational Time	0.013 hours
Time to Peak (Computed)	11 933 hours
Flow (Peak, Computed)	7.77 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	
Interpolated Output)	11.950 hours
Flow (Peak Interpolated	7 56 ft ³ /s
Output)	7.501175
SCS CN (Composite)	92.000
Area (User Defined)	1.970 acres
Maximum Retention (Pervious)	0.9 in
Maximum Retention	
(Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth	2.7 in
(Pervious)	
Runoff Volume (Pervious)	0.441 ac-ft
Hydrograph Volume (Area unde	r Hydrograph curve)
	0.440 as ft
volume	0.440 ac-π
SCS Unit Hydrograph Paramete	rs
Time of Concentration	0 100 hours
(Composite)	0.100 10015
Computational Time	0.013 hours
Init Hydrograph Shape	
Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	22.32 ft ³ /s
Unit peak time, Tp	0.067 hours
Unit receding limb, Tr	0.267 hours
Total unit time, Tb	0.333 hours

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Storm Event	10-yr
Return Event	10 years
Duration	24.000 hours
Depth	5.3 in
Time of Concentration	0.169 hours
(Composite)	4.020 20100
Alea (User Defilied)	4.020 dcies
Computational Time	
Increment	0.022 hours
Time to Peak (Computed)	11.980 hours
Flow (Peak, Computed)	19.40 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	12.000 hours
Interpolated Output)	
Plow (Peak Interpolated Output)	19.26 ft ³ /s
т х	
Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	4.020 acres
Maximum Retention	1.8 in
(Pervious)	
Maximum Retention (Pervious, 20 percent)	0.4 in
Cumulative Runoff	
Cumulative Runoff Depth	3.6 in
(Pervious)	5.0 11
Runoff Volume (Pervious)	1.206 ac-ft
Hydrograph Volume (Area unde	er Hydrograph curve)
	1 204 as ft
volume	1.204 ac-n
SCS Unit Hydrograph Paramete	ers
Time of Concentration	0.160 k
(Composite)	0.169 NOURS
Computational Time	0.022 hours
Increment	
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	27.02 ft ³ /s
Unit peak time, Tp	0.112 hours
Unit receding limb, Tr	0.450 hours
	0 = 40 1

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Bentley PondPack V8i [08.11.01.56] Page 18 of 79

Storm Event	10-yr
Return Event	10 years
Duration	24.000 hours
Depth	5.3 in
Time of Concentration	0.100 hours
(Composite)	1.070
Area (User Defined)	1.970 acres
Computational Time	
Increment	0.013 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	12.21 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	11.950 hours
Interpolated Output)	
Flow (Peak Interpolated Output)	11.84 ft ³ /s
Drainage Area	
SCS CN (Composite)	92.000
Area (User Defined)	1.970 acres
Maximum Retention	0.9 in
(Pervious)	
Maximum Recencion	0.0 :
(Pervious, 20 percent)	0.2 IN
(Pervious, 20 percent)	0.2 IN
(Pervious, 20 percent) Cumulative Runoff	0.2 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth	4.3 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious)	4.3 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious)	0.2 in 4.3 in 0.711 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under	4.3 in 0.711 ac-ft Hydrograph curve)
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume	4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume	4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter	4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite)	4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time	4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment	4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape	0.2 in 4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours 483 432
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor	0.2 in 4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours 483.432
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor	0.2 in 4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours 483.432 0.749
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp	0.2 in 4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours 483.432 0.749 1.670
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp	0.2 in 4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours 483.432 0.749 1.670 22.32 ft ³ /s 2.32 ft ³ /s
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit peak time, Tp	0.2 in 4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours 483.432 0.749 1.670 22.32 ft ³ /s 0.067 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit receding limb, Tr Total unit time. Th	0.2 in 4.3 in 0.711 ac-ft Hydrograph curve) 0.711 ac-ft s 0.100 hours 0.013 hours 483.432 0.749 1.670 22.32 ft ³ /s 0.067 hours 0.267 hours 0.322 hours

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Bentley PondPack V8i [08.11.01.56] Page 19 of 79

Storm Event	100-yr
Return Event	100 years
Duration	24.000 hours
Depth	7.9 in
Time of Concentration	0.169 hours
	4.020
Area (User Defined)	4.020 acres
Computational Time	
Increment	0.022 hours
Time to Peak (Computed)	11.980 hours
Flow (Peak, Computed)	32.36 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	12.000 hours
Interpolated Output)	
Output)	31.99 ft ³ /s
Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	4.020 acres
Maximum Retention	1.8 in
(Pervious)	
Maximum Relencion	• • •
(Pervious, 20 percent)	0.4 in
(Pervious, 20 percent)	0.4 in
(Pervious, 20 percent) Cumulative Runoff	0.4 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth	0.4 in 6.2 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious)	0.4 in 6.2 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious)	0.4 in 6.2 in 2.062 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H	0.4 in 6.2 in 2.062 ac-ft lydrograph curve)
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite)	0.4 in 6.2 in 2.062 ac-ft lydrograph curve) 2.058 ac-ft 0.169 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft 0.169 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape	0.4 in 6.2 in 2.062 ac-ft 4ydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours 483.432
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours 483.432 0.749
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp	0.4 in 6.2 in 2.062 ac-ft 4ydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours 483.432 0.749 1.670
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours 483.432 0.749 1.670 27.02 ft ³ /s
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit peak time, Tp	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours 483.432 0.749 1.670 27.02 ft ³ /s 0.112 hours 0.4 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under H Volume SCS Unit Hydrograph Parameters Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit receding limb, Tr Total unit time. Th	0.4 in 6.2 in 2.062 ac-ft Hydrograph curve) 2.058 ac-ft 0.169 hours 0.022 hours 483.432 0.749 1.670 27.02 ft ³ /s 0.112 hours 0.450 hours 0.562 hours

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Bentley PondPack V8i [08.11.01.56] Page 20 of 79

Storm Event	100-yr
Return Event	100 years
Duration	24.000 hours
Depth	7.9 in
Time of Concentration	0.100 hours
(Composite)	1.070
Area (User Defined)	1.970 acres
Increment	0.013 hours
Time to Peak (Computed)	11.920 hours
Flow (Peak, Computed)	19.15 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak	11.950 hours
Interpolated Output)	
Output)	18.52 ft ³ /s
Drainage Area	
SCS CN (Composite)	92.000
Area (User Defined)	1.970 acres
Maximum Retention	0.9 in
(Pervious)	
Maximum Recencion	0.2 in
(Pervious, 20 percent)	0.2 11
(Pervious, 20 percent)	0.2 11
(Pervious, 20 percent) Cumulative Runoff	0.2 111
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth	7.0 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Dupoff Volume (Pervious)	7.0 in
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious)	7.0 in 1.147 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under	7.0 in 1.147 ac-ft Hydrograph curve)
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Compacing)	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft rs 0.100 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft rs 0.100 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft rs 0.100 hours 0.013 hours
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft 7S 0.100 hours 0.013 hours 482.422
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft rs 0.100 hours 0.013 hours 483.432
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft 's 0.100 hours 0.013 hours 483.432 0.749
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft rs 0.100 hours 0.013 hours 483.432 0.749 1.670
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft rs 0.100 hours 0.013 hours 483.432 0.749 1.670 22.32 ft ³ /s
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft 's 0.100 hours 0.013 hours 483.432 0.749 1.670 22.32 ft ³ /s 0.067 hours 0.27 i
(Pervious, 20 percent) Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit receding limb, Tr Total unit time, Tb	7.0 in 1.147 ac-ft Hydrograph curve) 1.145 ac-ft 7S 0.100 hours 0.013 hours 483.432 0.749 1.670 22.32 ft ³ /s 0.067 hours 0.267 hours 0.221 hours 0.222 hours 0.222 hours

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Bentley PondPack V8i [08.11.01.56] Page 21 of 79

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.4 in
Time of Concentration	0.100 hours
	1 520
Area (User Defined)	1.520 acres
Computational Time	
Increment	0.013 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	1.29 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	11.950 hours
Interpolated Output)	
Output)	1.28 ft ³ /s
Drainage Area	
SCS CN (Composite)	89.592
Area (User Defined)	1.520 acres
Maximum Retention	1.2 in
(Pervious)	
(Pervious, 20 percent)	0.2 in
Cumulative Runoff	
Cumulative Runoff Depth	0.6 in
(Pervious)	0.071 ac ft
Runon volume (Pervious)	0.071 dC-11
Hydrograph Volume (Area under	⁻ Hydrograph curve)
Volume	0.071 ac-ft
SCS Unit Hydrograph Daramata	ro.
	15
Time of Concentration	0.100 hours
Computational Time	
Increment	0.013 hours
Unit Hydrograph Shape	483 432
Factor	105.152
K Factor	0.749
Receding/Rising, Tr/Tp	1.6/0
Unit peak, qp	17.22 ft ³ /S
Unit peak time, 1p	
Total unit time. Th	
	0.333 HUUIS

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Storm Event	2-yr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration	0 100 hours
(Composite)	0.100 10013
Area (User Defined)	1.520 acres
Computational Time	0.013 hours
Time to Peak (Computed)	11 933 hours
Flow (Peak Computed)	5 59 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	0.050 110015
Interpolated Output)	11.950 hours
Flow (Peak Interpolated	5 45 ft3/c
Output)	5.45 11-75
SCS CN (Composite)	89.592
Area (User Defined)	1.520 acres
Maximum Retention (Pervious)	1.2 in
Maximum Retention	
(Pervious, 20 percent)	0.2 in
Cumulative Runoff Depth	2.5 in
(Pervious)	0.211 #
	0.311 ac-π
Hydrograph Volume (Area unde	er Hydrograph curve)
Volume	0.311 ac-ft
	0.511 de fe
SCS Unit Hydrograph Paramete	ers
Time of Concentration	0.100 hours
(Composite)	0.100 hours
Computational Time	0.013 hours
Increment	
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, gp	17.22 ft ³ /s
Unit peak time, Tp	0.067 hours
Unit receding limb, Tr	0.267 hours
Total unit time. Tb	0.333 hours

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Storm Event	10-yr
Return Event	10 years
Duration	24.000 hours
Depth	5.3 in
Time of Concentration	0.100 hours
	1 520
Area (User Defined)	1.520 acres
Increment	0.013 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	9.04 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	11.0E0 hours
Interpolated Output)	11.950 110015
Flow (Peak Interpolated	8.78 ft³/s
	,
Drainage Area	
SCS CN (Composite)	89 592
Area (User Defined)	1.520 acres
Maximum Retention	
(Pervious)	1.2 in
Maximum Retention	0.2 in
(Pervious, 20 percent)	
Cumulative Runoff	
Cumulative Runoff Depth	
(Pervious)	4.1 in
Runoff Volume (Pervious)	0.516 ac-ft
Hydrograph Volume (Area unde	er Hydrograph curve)
Volume	0.515 ac-ft
SCS Unit Hydrograph Paramete	ers
Time of Concentration	
(Composite)	0.100 hours
Computational Time	0.012 k
Increment	0.013 hours
Unit Hydrograph Shape	483.432
Factor	
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1/.22 ft ³ /s
Unit peak time, 1p	
Unit recealing IIMD, Tr	0.20/ NOURS
Total unit unie, TD	U.333 NOURS

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Bentley PondPack V8i [08.11.01.56] Page 24 of 79

Storm Event	100-yr
Return Event	100 years
Duration	24.000 hours
Depth	7.9 in
Time of Concentration	0.100 hours
(Composite)	1 520 acres
	1.520 acres
Computational Time	
Increment	0.013 hours
Time to Peak (Computed)	11.920 hours
Flow (Peak, Computed)	14.44 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	11.950 hours
Flow (Peak Interpolated	
Output)	13.99 ft³/s
Drainage Area	
SCS CN (Composite)	89.592
Area (User Defined)	1.520 acres
Maximum Retention (Pervious)	1.2 in
Maximum Retention	0.2 in
(Pervious, 20 percent)	0.2 m
Cumulative Runoff	
Cumulative Runoff Depth	
(Pervious)	6.7 in
Runoff Volume (Pervious)	0.848 ac-ft
Hydrograph Volume (Area under	Hydrograph curve)
volume	0.848 ac-π
SCS Unit Uvdrograph Daramator	8
SCS Unit Hydrograph Parameters	
Time of Concentration	0.100 bours
Time of Concentration (Composite)	0.100 hours
Time of Concentration (Composite) Computational Time	0.100 hours 0.013 hours
Time of Concentration (Composite) Computational Time Increment	0.100 hours 0.013 hours
Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor	0.100 hours 0.013 hours 483.432
Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor	0.100 hours 0.013 hours 483.432 0.749
Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp	0.100 hours 0.013 hours 483.432 0.749 1.670
Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp	0.100 hours 0.013 hours 483.432 0.749 1.670 17.22 ft ³ /s
Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp	0.100 hours 0.013 hours 483.432 0.749 1.670 17.22 ft ³ /s 0.067 hours
Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit receding limb, Tr	0.100 hours 0.013 hours 483.432 0.749 1.670 17.22 ft ³ /s 0.067 hours 0.267 hours

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Bentley PondPack V8i [08.11.01.56] Page 25 of 79

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.4 in
Time of Concentration	0.100 hours
	0.520
Area (User Defined)	0.530 acres
Computational Time	
Increment	0.013 hours
Time to Peak (Computed)	12.013 hours
Flow (Peak, Computed)	0.15 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak	12.000 hours
Interpolated Output)	
Flow (Peak Interpolated Output)	0.15 ft³/s
Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	0.530 acres
Maximum Retention	2.5 in
(Pervious)	
(Pervious, 20 percent)	0.5 in
(
Cumulative Runoff	
Cumulative Runoff Depth	0.2 in
(Pervious)	0.12
Runoff Volume (Pervious)	0.010 ac-ft
Hydrograph Volume (Area under H	lydrograph curve)
Volume	0.010 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration	0.100 hours
(Composite)	01200
Computational Lime Increment	0.013 hours
Unit Hydrograph Shape	
Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.01 ft³/s
Unit peak time, Tp	0.067 hours
Unit receding limb, Tr	0.267 hours
Total unit time, Tb	0.333 hours

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Storm Event	2-yr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration	0.100 hours
(Composite)	0.100 10013
Area (User Defined)	0.530 acres
Computational Time	0.013 hours
Time to Peak (Computed)	11 933 hours
Flow (Peak Computed)	1 35 ft3/c
Output Increment	0.050 hours
Time to Flow (Peak	0.050 110015
Interpolated Output)	11.950 hours
Flow (Peak Interpolated	1 34 ft3/c
Output)	1.54 10-75
SCS CN (Composite)	80.000
Area (User Defined)	0.530 acres
Maximum Retention	2.5 in
(reivious) Maximum Retention	
(Pervious, 20 percent)	0.5 in
Cumulative Runoff	
Cumulative Runoff Depth	1 7 in
(Pervious)	1.7 11
Runoff Volume (Pervious)	0.074 ac-ft
Hydrograph Volume (Area unde	or Hydrograph curve)
Volume	0.074 ac-ft
SCS Unit Hydrograph Paramete	ers
Time of Concentration	
(Composite)	0.100 hours
Computational Time	0.012 hours
Increment	0.013 10015
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, gp	6.01 ft ³ /s
Unit peak time. To	0.067 hours
Unit receding limb. Tr	0.267 hours
Total unit time, Tb	0.333 hours

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Storm Event	10-yr
Return Event	10 years
Duration	24.000 hours
Depth	5.3 in
Time of Concentration	0.100 hours
	0.520
Area (User Defined)	0.530 acres
Computational Time	
Increment	0.013 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	2.51 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	11.950 hours
Interpolated Output)	
Output)	2.46 ft ³ /s
Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	0.530 acres
Maximum Retention	2.5 in
(Pervious)	
(Pervious, 20 percent)	0.5 in
Cumulative Runoff	
Cumulative Runoff Depth	3.1 in
(Pervious)	0.127 0
Runoff Volume (Pervious)	0.137 ac-m
Hydrograph Volume (Area under H	ydrograph curve)
Volume	0.137 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration	0.100 hours
(Composite)	
Increment	0.013 hours
Unit Hydrograph Shape	
	402,422
Factor	483.432
Factor K Factor	483.432 0.749
Factor K Factor Receding/Rising, Tr/Tp	483.432 0.749 1.670
Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp	483.432 0.749 1.670 6.01 ft ³ /s
Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp	483.432 0.749 1.670 6.01 ft ³ /s 0.067 hours
Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit receding limb, Tr	483.432 0.749 1.670 6.01 ft ³ /s 0.067 hours 0.267 hours

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Bentley PondPack V8i [08.11.01.56] Page 28 of 79

Storm Event	100-yr
Return Event	100 years
Duration	24.000 hours
Depth	7.9 in
Time of Concentration	0.100 hours
	0.520
Area (User Defined)	0.530 acres
Computational Time	
Increment	0.013 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	4.41 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak	11.950 hours
Interpolated Output)	
Output)	4.30 ft ³ /s
Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	0.530 acres
Maximum Retention	2.5 in
(Pervious)	
(Penvious 20 percent)	0.5 in
(i el vious, zo percent)	
Cumulative Runoff	
Cumulative Runoff Depth	5.6 in
Cumulative Runoff Cumulative Runoff Depth (Pervious)	5.6 in
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious)	5.6 in 0.246 ac-ft
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under	5.6 in 0.246 ac-ft Hydrograph curve)
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours 483.432
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours 483.432 0.749
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours 483.432 0.749 1.670
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours 483.432 0.749 1.670 6.01 ft ³ /s
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours 483.432 0.749 1.670 6.01 ft ³ /s 0.067 hours 0.267 i i
Cumulative Runoff Cumulative Runoff Depth (Pervious) Runoff Volume (Pervious) Hydrograph Volume (Area under Volume SCS Unit Hydrograph Parameter Time of Concentration (Composite) Computational Time Increment Unit Hydrograph Shape Factor K Factor Receding/Rising, Tr/Tp Unit peak, qp Unit peak time, Tp Unit receding limb, Tr	5.6 in 0.246 ac-ft Hydrograph curve) 0.246 ac-ft rs 0.100 hours 0.013 hours 483.432 0.749 1.670 6.01 ft ³ /s 0.067 hours 0.267 hours 0.267 hours

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Bentley PondPack V8i [08.11.01.56] Page 29 of 79

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2)	Volume (ac-ft)
			(acres)	()
993.25	0.0	0.001	0.000	0.000
994.00	0.0	0.019	0.024	0.006
995.00	0.0	0.068	0.123	0.041
996.00	0.0	0.095	0.243	0.081
997.00	0.0	0.118	0.319	0.106
998.00	0.0	0.143	0.391	0.130
999.00	0.0	0.170	0.469	0.156
1,000.00	0.0	0.199	0.553	0.184
Volume (Total)				
(ac-ft)				
0.000				
0.006				
0.047				
0.128				

Subsection: Elevation-Area Volume Curve Label: PO-1

0.234 0.365 0.521 0.705

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Return Event: 1 years Storm Event: WQ

Subsection: Elevation-Area Volume Curve Label: PO-2

0.289 0.514

Return Event: 1 years Storm Event: WQ

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)
998.10	0.0	0.001	0.000	0.000
999.00	0.0	0.043	0.051	0.015
1,000.00	0.0	0.155	0.280	0.093
1,001.00	0.0	0.207	0.541	0.180
1,002.00	0.0	0.244	0.676	0.225
Volume (Total) (ac-ft)				
0.000				
0.015				
0.108				

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Requested Pond Water Surface Elevations		
Minimum (Headwater)	993.25 ft	
Increment (Headwater)	0.50 ft	
Maximum (Headwater)	1,000.00 ft	

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	Culvert - 1	993.25	1,000.00
Orifice-Circular	Orifice - 2	Forward	Culvert - 1	995.25	1,000.00
Rectangular Weir	Weir - 1	Forward	Culvert - 1	997.25	1,000.00
Culvert-Circular	Culvert - 1	Forward	TW	993.20	1,000.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

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Subsection: Outlet Input Data Label: Composite Outlet Structure - 1

Return Event: 1 years Storm Event: WQ

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	24.0 in
Length	20.00 ft
Length (Computed Barrel)	20.00 ft
Slope (Computed)	0.005 ft/ft
Outlet Control Data	
Manning's n	0.013
Ке	0.200
Кb	0.012
Kr	0.200
Convergence Tolerance	0.00 ft
Inlet Control Data	
Equation Form	Form 1
К	0.0045
М	2.0000
С	0.0317
Υ	0.6900
T1 ratio (HW/D)	0.000
T2 ratio (HW/D)	1.195
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.

Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

•			
T1 Elevation	993.20 ft	T1 Flow	15.55 ft ³ /s
T2 Elevation	995.59 ft	T2 Flow	17.77 ft³/s

Subsection: Outlet Input Data Label: Composite Outlet Structure - 1

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	993.25 ft
Orifice Diameter	1.5 in
Orifice Coefficient	0.600
Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	995.25 ft
Orifice Diameter	3.0 in
Orifice Coefficient	0.600
Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	997.25 ft
Weir Length	0.75 ft
Weir Coefficient	3.00 (ft^0.5)/s
Structure ID: TW Structure Type: TW Setup, DS Ch	nannel
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
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

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RATING TABLE FOR ONE OUTLET TYPE Structure ID = Culvert - 1 (Culvert-Circular) -----

Mannings open channel maximum capacity: 17.21 ft³/s Upstream ID = Orifice - 1, Orifice - 2, Weir - 1 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft ³ /s)	(into) Headwater Hydraulic Grade Line	Converge Downstream Hydraulic Grade Line	Next Downstream Hydraulic Grade Line	Downstream Hydraulic Grade Line Error	Convergence Error (ft ³ /s)	Downstream Channel Tailwater (ft)
		(π)	(π)	(π)	(π)		
993.25	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)
993.75	0.04	0.00	Free Outfall	Free Outfall	0.00	0.00	(N/A)
994.25	0.06	993.31	Free Outfall	Free Outfall	0.00	0.00	(N/A)
994.75	0.07	993.33	Free Outfall	Free Outfall	0.00	0.00	(N/A)
995.25	0.08	993.34	Free Outfall	Free Outfall	0.00	0.00	(N/A)
995.75	0.23	993.43	Free Outfall	Free Outfall	0.00	0.00	(N/A)
996.25	0.32	993.48	Free Outfall	Free Outfall	0.00	0.00	(N/A)
996.75	0.39	993.50	Free Outfall	Free Outfall	0.00	0.00	(N/A)
997.25	0.44	993.52	Free Outfall	Free Outfall	0.00	0.00	(N/A)
997.75	1.28	993.75	Free Outfall	Free Outfall	0.00	0.00	(N/A)
998.25	2.78	994.03	Free Outfall	Free Outfall	0.00	0.00	(N/A)
998.75	4.69	994.30	Free Outfall	Free Outfall	0.00	0.00	(N/A)
999.25	6.95	994.57	Free Outfall	Free Outfall	0.00	0.00	(N/A)
999.75	9.52	994.84	Free Outfall	Free Outfall	0.00	0.00	(N/A)
1,000.00	10.91	994.97	Free Outfall	Free Outfall	0.00	0.00	(N/A)
Tailwater	1	Message					

Messa
110330

Error (ft)

HCA LSMC ASC.ppc

2/15/2023

(10)	
0.00	WS below an invert; no flow.
0.00	BACKWATER CONTROL Vh= .017ft hwDi= .072ft Lbw= 20.0ft Hev= .00ft
0.00	BACKWATER CONTROL Vh= .022ft hwDi= .088ft Lbw= 20.0ft Hev= .00ft
0.00	BACKWATER CONTROL Vh= .027ft hwDi= .094ft Lbw= 20.0ft Hev= .00ft
0.00	BACKWATER CONTROL Vh= .026ft hwDi= .105ft Lbw= 20.0ft Hev= .00ft
0.00	BACKWATER CONTROL Vh= .050ft hwDi= .171ft Lbw= 20.0ft Hev= .00ft
0.00	CRIT.DEPTH CONTROL Vh= .066ft Dcr= .193ft H.JUMP IN PIPE Hev= .00ft
0.00	FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE

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Subsection: Individual Outlet Curves Label: Composite Outlet Structure - 1

RATING TABLE FOR ONE OUTLET TYPE Structure ID = Culvert - 1 (Culvert-Circular)

Mannings open channel maximum capacity: $17.21 \text{ ft}^3/\text{s}$ Upstream ID = Orifice - 1, Orifice - 2, Weir - 1 Downstream ID = Tailwater (Pond Outfall)

Tailwater Error (ft)	Message
0.00	CRIT.DEPTH CONTROL Vh= .077ft Dcr= .226ft H.JUMP IN PIPE Hev= .00ft
0.00	FLOW PRECEDENCE SET TO UPSTREAM CONTROLLING STRUCTURE
0.00	BACKWATER CONTROL Vh= .446ft hwDi= 1.103ft Lbw= 20.0ft Hev= .00ft
0.00	BACKWATER CONTROL Vh= .463ft hwDi= 1.216ft Lbw= 20.0ft Hev= .00ft
RATING TABLE FOR ONE OUTLET TYPE Structure ID = Orifice - 1 (Orifice-Circular) -----

Upstream ID = (Pond Water Surface) Downstream ID = Culvert - 1 (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft ³ /s)	(into) Headwater Hydraulic Grade Line	Converge Downstream Hydraulic Grade Line	Next Downstream Hydraulic Grade Line	Downstream Hydraulic Grade Line Error	Convergence Error (ft ³ /s)	Downstream Channel Tailwater (ft)
		(ft)	(ft)	(ft)	(ft)		
993.25	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
993.75	0.04	993.75	993.30	0.00	0.00	0.00	(N/A)
994.25	0.06	994.25	993.31	993.31	0.00	0.00	(N/A)
994.75	0.07	994.75	993.33	993.33	0.00	0.00	(N/A)
995.25	0.08	995.25	993.34	993.34	0.00	0.00	(N/A)
995.75	0.09	995.75	993.43	993.43	0.00	0.00	(N/A)
996.25	0.10	996.25	993.47	993.48	0.00	0.00	(N/A)
996.75	0.11	996.75	993.50	993.50	0.00	0.00	(N/A)
997.25	0.11	997.25	993.52	993.52	0.00	0.00	(N/A)
997.75	0.12	997.75	993.75	993.75	0.00	0.00	(N/A)
998.25	0.12	998.25	994.03	994.03	0.00	0.00	(N/A)
998.75	0.12	998.75	994.30	994.30	0.00	0.00	(N/A)
999.25	0.13	999.25	994.57	994.57	0.00	0.00	(N/A)
999.75	0.13	999.75	994.84	994.84	0.00	0.00	(N/A)
1,000.00	0.13	1,000.00	994.97	994.97	0.00	0.00	(N/A)
Tailwater	1	Message					

Tailwatar	N4.
Tallwalei	1*19

Error (ft)

(14)	
0.00	WS below an invert; no
	flow.
0.00	H =.44
0.00	H =.94
0.00	H =1.42
0.00	H =1.91
0.00	H =2.32
0.00	H =2.78
0.00	H =3.25
0.00	H =3.73
0.00	H =4.00
0.00	H =4.22
0.00	H =4.45
0.00	H =4.68
0.00	H =4.91
0.00	H =5.03

RATING TABLE FOR ONE OUTLET TYPE Structure ID = Orifice - 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface) Downstream ID = Culvert - 1 (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft ³ /s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft ³ /s)	Downstream Channel Tailwater (ft)
993.25	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
993.75	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
994.25	0.00	0.00	0.00	993.31	0.00	0.00	(N/A)
994.75	0.00	0.00	0.00	993.33	0.00	0.00	(N/A)
995.25	0.00	0.00	0.00	993.34	0.00	0.00	(N/A)
995.75	0.14	995.75	Free Outfall	993.43	0.00	0.00	(N/A)
996.25	0.22	996.25	Free Outfall	993.48	0.00	0.00	(N/A)
996.75	0.28	996.75	Free Outfall	993.50	0.00	0.00	(N/A)
997.25	0.32	997.25	Free Outfall	993.52	0.00	0.00	(N/A)
997.75	0.36	997.75	Free Outfall	993.75	0.00	0.00	(N/A)
998.25	0.40	998.25	Free Outfall	994.03	0.00	0.00	(N/A)
998.75	0.43	998.75	Free Outfall	994.30	0.00	0.00	(N/A)
999.25	0.47	999.25	Free Outfall	994.57	0.00	0.00	(N/A)
999.75	0.49	999.75	Free Outfall	994.84	0.00	0.00	(N/A)
1,000.00	0.51	1,000.00	Free Outfall	994.97	0.00	0.00	(N/A)

Tailwater Message

Error (ft)

N N	
0.00	WS below an invert; no
	flow.
0.00	WS below an invert; no
	flow.
0.00	WS below an invert; no
	flow.
0.00	WS below an invert; no
	flow.
0.00	WS below an invert; no
	flow.
0.00	H =.38
0.00	H =.88
0.00	H =1.38
0.00	H =1.88
0.00	H =2.38
0.00	H =2.88
0.00	H =3.38
0.00	H =3.88
0.00	H =4.38
0.00	H =4.63

RATING TABLE FOR ONE OUTLET TYPE Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface) Downstream ID = Culvert - 1 (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft ³ /s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft ³ /s)	Downstream Channel Tailwater (ft)
993.25	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
993.75	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
994.25	0.00	0.00	0.00	993.31	0.00	0.00	(N/A)
994.75	0.00	0.00	0.00	993.33	0.00	0.00	(N/A)
995.25	0.00	0.00	0.00	993.34	0.00	0.00	(N/A)
995.75	0.00	0.00	0.00	993.43	0.00	0.00	(N/A)
996.25	0.00	0.00	0.00	993.48	0.00	0.00	(N/A)
996.75	0.00	0.00	0.00	993.50	0.00	0.00	(N/A)
997.25	0.00	0.00	0.00	993.52	0.00	0.00	(N/A)
997.75	0.80	997.75	Free Outfall	993.75	0.00	0.00	(N/A)
998.25	2.25	998.25	Free Outfall	994.03	0.00	0.00	(N/A)
998.75	4.13	998.75	Free Outfall	994.30	0.00	0.00	(N/A)
999.25	6.36	999.25	Free Outfall	994.57	0.00	0.00	(N/A)
999.75	8.89	999.75	Free Outfall	994.84	0.00	0.00	(N/A)
1,000.00	10.26	1,000.00	Free Outfall	994.97	0.00	0.00	(N/A)

Tailwater Message

Error (ft)

(10)	
0.00	WS below an invert; no flow.
0.00	WS below an invert; no flow.
0.00	WS below an invert; no flow.
0.00	WS below an invert; no flow.
0.00	WS below an invert; no flow.
0.00	WS below an invert; no flow.
0.00	WS below an invert; no
0.00	WS below an invert; no
0.00	WS below an invert; no
0.00	H=.50; Htw=.00;
0.00	H=1.00; Htw=.00;
0.00	H=1.50; Htw=.00; Qfree=4.13;

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Return Event: 1 years Storm Event: WQ

RATING TABLE FOR ONE OUTLET TYPE Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface) Downstream ID = Culvert - 1 (Culvert-Circular)

Tailwater Error (ft)	Message
0.00	H=2.00; Htw=.00; Qfree=6.36;
0.00	H=2.50; Htw=.00; Qfree=8.89;
0.00	H=2.75; Htw=.00; Qfree=10.26;

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Composite Outflow Summary

Water Surface	Flow	Tailwater Elevation	Convergence Error
Elevation (ft)	(ft³/s)	(#)	(#)
993.25	0.00	(N/Δ)	0.00
993.75	0.00	(Ν/Α)	0.00
994.25	0.06	(N/A)	0.00
994.75	0.07	(N/A)	0.00
995.25	0.08	(N/A)	0.00
995.25	0.00	(Ν/Α)	0.00
996.25	0.32	(N/A)	0.00
996.75	0.38	(N/A)	0.00
997.25	0.44	(N/A)	0.00
997.75	1.28	(N/A)	0.00
998.25	2.77	(N/A)	0.00
998.75	4.69	(N/A)	0.00
999.25	6.96	(N/A)	0.00
999.75	9.52	(N/A)	0.00
1,000,00	10.91	(N/A)	0.00
Contributing Structures		(-4-4)	
(no O: Orifice - 1.Orifice	1		
- 2,Weir - 1,Culvert - 1)			
Orifice - 1,Culvert - 1			
(no Q: Orifice - 2,Weir - 1)			
Orifice - 1,Culvert - 1			
(no Q: Orifice - 2,Weir -			
1)			
Orifice - 1,Culvert - 1			
(no Q: Orifice - 2,Weir -			
1)			
(no O: Orifice - 2 Weir -			
1)			
Orifice - 1.Orifice -			
2,Culvert - 1 (no Q: Weir			
- 1)			
Orifice - 1,Orifice -			
2,Culvert - 1 (no Q: Weir			
- 1)			
Orifice - 1,Orifice -			
- 1)			
Orifice - 1,Orifice -			
2,Culvert - 1 (no Q: Weir			
- I)			
- 1 Culvert - 1			
Orifice - 1,Orifice - 2,Weir			
- 1,Culvert - 1			
Orifice - 1,Orifice - 2,Weir - 1,Culvert - 1			
Orifice - 1,Orifice - 2,Weir			
- 1,Culvert - 1			

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Return Event: 1 years Storm Event: WQ

Composite Outflow Summary

Contributing Structures Orifice - 1,Orifice - 2,Weir - 1,Culvert - 1 Orifice - 1,Orifice - 2,Weir - 1,Culvert - 1

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Requested Pond Water Surface Elevations				
Minimum (Headwater)	998.25 ft			
Increment (Headwater)	0.50 ft			
Maximum (Headwater)	1,002.00 ft			

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	Culvert - 1	998.10	1,002.00
Orifice-Circular	Orifice - 2	Forward	Culvert - 1	999.40	1,002.00
Rectangular Weir	Weir - 1	Forward	Culvert - 1	1,000.50	1,002.00
Culvert-Circular	Culvert - 1	Forward	TW	998.08	1,002.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

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Subsection: Outlet Input Data Label: Composite Outlet Structure - 2

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	24.0 in
Length	12.00 ft
Length (Computed Barrel)	12.00 ft
Slope (Computed)	0.007 ft/ft
Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.012
Kr	0.200
Convergence Tolerance	0.00 ft
Inlet Control Data	
Equation Form	Form 1
К	0.0045
М	2.0000
С	0.0317
Υ	0.6900
T1 ratio (HW/D)	1.092
T2 ratio (HW/D)	1.194
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.

Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

T1 Elevation	1,000.26 ft	T1 Flow	15.55 ft³/s
T2 Elevation	1,000.47 ft	T2 Flow	17.77 ft³/s

Subsection: Outlet Input Data Label: Composite Outlet Structure - 2

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	998.10 ft
Orifice Diameter	1.3 in
Orifice Coefficient	0.600
Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	999.40 ft
Orifice Diameter	3.0 in
Orifice Coefficient	0.600
Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,000.50 ft
Weir Length	0.75 ft
Weir Coefficient	3.00 (ft^0.5)/s
Structure ID: TW Structure Type: TW Setup, DS Ch	nannel
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
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

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Mannings open channel maximum capacity: $19.87 \text{ ft}^3/\text{s}$ Upstream ID = Orifice - 1, Orifice - 2, Weir - 1 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft ³ /s)	Downstream Channel Tailwater (ft)
998.10	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)
998.60	0.03	998.16	Free Outfall	Free Outfall	0.00	0.00	(N/A)
999.10	0.04	998.17	Free Outfall	Free Outfall	0.00	0.00	(N/A)
999.40	0.05	998.18	Free Outfall	Free Outfall	0.00	0.00	(N/A)
999.60	0.10	998.23	Free Outfall	Free Outfall	0.00	0.00	(N/A)
1,000.10	0.23	998.31	Free Outfall	Free Outfall	0.00	0.00	(N/A)
1,000.50	0.29	998.34	Free Outfall	Free Outfall	0.00	0.00	(N/A)
1,000.60	0.38	998.38	Free Outfall	Free Outfall	0.00	0.00	(N/A)
1,001.10	1.41	998.66	Free Outfall	Free Outfall	0.00	0.00	(N/A)
1,001.60	3.00	998.95	Free Outfall	Free Outfall	0.00	0.00	(N/A)
1,002.00	4.58	999.17	Free Outfall	Free Outfall	0.00	0.00	(N/A)
Tailwater Error (ft)	I	Message			<u> </u>		
0.00	WS below	ı an invert; no	1				
	flow.						
0.00	BACKWAT Vh= .018 H.JUMP II Hev= .00	fer Control ft hwDi= .057 N PIPE ft	 7ft				
0.00	BACKWATER CONTROL Vh= .023ft hwDi= .067ft H.JUMP IN PIPE Hev= .00ft						
0.00	CRIT.DEPTH CONTROL Vh= .024ft Dcr= .072ft H.JUMP IN PIPE Hev= .00ft						
0.00	CRIT.DEP Vh= .037 CRIT.DEP	TH CONTROL ft Dcr= .109f TH Hev= .00f	t				
0.00	CRIT.DEP Vh= .056 CRIT.DEP	PTH CONTROL ft Dcr= .165f PTH Hev= .00f	t				
0.00	CRIT.DEP Vh= .063 CRIT.DEP	TH CONTROL ft Dcr= .184f TH Hev= .00f	t t				
0.00	CRIT.DEPTH CONTROL Vh= .072ft Dcr= .210ft CRIT.DEPTH Hev= .00ft						
0.00	CRIT.DEP Vh= .143 CRIT.DEP	PTH CONTROL ft Dcr= .410f PTH Hev= .00f	t t				

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Return Event: 1 years Storm Event: WQ

RATING TABLE FOR ONE OUTLET TYPE Structure ID = Culvert - 1 (Culvert-Circular)

Mannings open channel maximum capacity: $19.87 \text{ ft}^3/\text{s}$ Upstream ID = Orifice - 1, Orifice - 2, Weir - 1 Downstream ID = Tailwater (Pond Outfall)

Tailwater Error (ft)	Message
0.00	CRIT.DEPTH CONTROL Vh= .218ft Dcr= .605ft CRIT.DEPTH Hev= .00ft
0.00	CRIT.DEPTH CONTROL Vh= .279ft Dcr= .752ft CRIT.DEPTH Hev= .00ft

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RATING TABLE FOR ONE OUTLET TYPE Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface) Downstream ID = Culvert - 1 (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft ³ /s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft ³ /s)	Downstream Channel Tailwater (ft)
998.10	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
998.60	0.03	998.60	998.16	998.16	0.00	0.00	(N/A)
999.10	0.04	999.10	998.17	998.17	0.00	0.00	(N/A)
999.40	0.05	999.40	998.18	998.18	0.00	0.00	(N/A)
999.60	0.05	999.60	998.23	998.23	0.00	0.00	(N/A)
1,000.10	0.05	1,000.10	998.31	998.31	0.00	0.00	(N/A)
1,000.50	0.06	1,000.50	998.34	998.34	0.00	0.00	(N/A)
1,000.60	0.06	1,000.60	998.38	998.38	0.00	0.00	(N/A)
1,001.10	0.06	1,001.10	998.66	998.66	0.00	0.00	(N/A)
1,001.60	0.07	1,001.60	998.95	998.95	0.00	0.00	(N/A)
1,002.00	0.07	1,002.00	999.17	999.17	0.00	0.00	(N/A)
Tailwater Error (ft)	1	Message					

(10)	
0.00	WS below an invert; no
	flow.
0.00	H =.44
0.00	H =.93
0.00	H =1.22
0.00	H =1.37
0.00	H =1.79
0.00	H =2.16
0.00	H =2.22
0.00	H =2.44
0.00	H =2.65
0.00	H =2.83

RATING TABLE FOR ONE OUTLET TYPE Structure ID = Orifice - 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface) Downstream ID = Culvert - 1 (Culvert-Circular)

Water	Device	(into)	Converge	Next	Downstream	Convergence	Downstream
Surface	Flow	Headwater	Downstream	Downstream	Hydraulic	Error	Channel
Elevation	(ft³/s)	Hydraulic	Hydraulic	Hydraulic	Grade Line	(ft³/s)	Tailwater
(ft)		Grade Line	Grade Line	Grade Line	Error		(ft)
		(π)	(π)	(π)	(π)		
998.10	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
998.60	0.00	0.00	0.00	998.16	0.00	0.00	(N/A)
999.10	0.00	0.00	0.00	998.17	0.00	0.00	(N/A)
999.40	0.00	0.00	0.00	998.18	0.00	0.00	(N/A)
999.60	0.06	999.60	Free Outfall	998.23	0.00	0.00	(N/A)
1,000.10	0.18	1,000.10	Free Outfall	998.31	0.00	0.00	(N/A)
1,000.50	0.23	1,000.50	Free Outfall	998.34	0.00	0.00	(N/A)
1,000.60	0.24	1,000.60	Free Outfall	998.38	0.00	0.00	(N/A)
1,001.10	0.30	1,001.10	Free Outfall	998.66	0.00	0.00	(N/A)
1,001.60	0.34	1,001.60	Free Outfall	998.95	0.00	0.00	(N/A)
1,002.00	0.37	1,002.00	Free Outfall	999.17	0.00	0.00	(N/A)
Tailwater		Message					
Error		-					
(ft)							
0.00	WS below	an invert; no					
	flow.						
0.00	WS below	an invert; no					
	flow.						
0.00	WS below	an invert; no					
	flow.						
0.00	WS below	an invert; no					
	flow.						
0.00	CRIT.DEP	TH CONTROL					
	Vh= .059	It $Dcr = .141ft$	t +				
0.00		111 nev= .001	L				
0.00	л =.58						
0.00	н =.98						

0.00 H =1.08 0.00 H =1.58 0.00 H =2.08 0.00 H =2.48

RATING TABLE FOR ONE OUTLET TYPE Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface) Downstream ID = Culvert - 1 (Culvert-Circular)

	Water Surface	Device Flow	(into) Headwater	Converge Downstream	Next Downstream	Downstream Hydraulic	Convergence Error	Downstream Channel
	Elevation	(ft³/s)	Hydraulic	Hydraulic	Hydraulic	Grade Line	(ft³/s)	Tailwater
	(ft)		Grade Line	Grade Line	Grade Line	Error		(ft)
ī	000.40	0.00	(it)	(11)	(11)	(11)	0.00	(1) (1)
	998.10	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)
	998.60	0.00	0.00	0.00	998.16	0.00	0.00	(N/A)
	999.10	0.00	0.00	0.00	998.17	0.00	0.00	(N/A)
	999.40	0.00	0.00	0.00	998.18	0.00	0.00	(N/A)
	999.60	0.00	0.00	0.00	998.23	0.00	0.00	(N/A)
	1,000.10	0.00	0.00	0.00	998.31	0.00	0.00	(N/A)
	1,000.50	0.00	0.00	0.00	998.34	0.00	0.00	(N/A)
	1,000.60	0.07	1,000.60	Free Outfall	998.38	0.00	0.00	(N/A)
	1,001.10	1.05	1,001.10	Free Outfall	998.66	0.00	0.00	(N/A)
	1,001.60	2.60	1,001.60	Free Outfall	998.95	0.00	0.00	(N/A)
l	1,002.00	4.13	1,002.00	Free Outrall	999.17	0.00	0.00	(N/A)
	Tailwater	ſ	Message					
	Error (ft)							
ī		WS below	, an invert: no					
	0.00	flow.	an invert, no					
	0.00	WS below	an invert: no					
	0100	flow.						
l	0.00	WS below	an invert; no					
		flow.						
I	0.00	WS below	an invert; no					
		flow.						
	0.00	WS below	ı an invert; no					
		flow.						
	0.00	WS below	an invert; no					
	0.00	tiow.						
	0.00	WS below	an invert; no					
	0.00	TIOW.	L. 00.					
	0.00	H=.10; HiOfree=.07	tw=.00; 7:					
	0.00	H=.60: H	tw=.00:					
	0.00	Qfree=1.0)5;					
	0.00	H=1.10; H	-tw=.00;					
		Qfree=2.6	50;					
ĺ	0.00	H=1.50; H	-tw=.00;					

Qfree=4.13;

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
998.10	0.00	(N/A)	0.00
998.60	0.03	(N/A)	0.00
999.10	0.04	(N/A)	0.00
999.40	0.05	(N/A)	0.00
999.60	0.10	(N/A)	0.00
1,000.10	0.23	(N/A)	0.00
1,000.50	0.29	(N/A)	0.00
1,000.60	0.38	(N/A)	0.00
1,001.10	1.41	(N/A)	0.00
1,001.60	3.00	(N/A)	0.00
1,002.00	4.58	(N/A)	0.00
Contributing Structures			
(no Q: Orifice - 1.Orifice	I		
- 2,Weir - 1,Culvert - 1)			
Orifice - 1,Culvert - 1			
(no Q: Orifice - 2,Weir -			
1)			
Orifice - 1,Culvert - 1			
(no Q: Orifice - 2,Weir - 1)			
Orifice - 1,Culvert - 1			
(no Q: Orifice - 2,Weir - 1)			
Orifice - 1,Orifice -			
2,Culvert - 1 (no Q: Weir - 1)			
Orifice - 1,Orifice -			
2,Culvert - 1 (no Q: Weir			
- 1)			
Orifice - 1,Orifice -			
2,Culvert - 1 (no Q: Weir			
- 1)			
Orifice - 1,Orifice - 2,Weir			
- 1,Cuivert - 1			
Unifice - 1, Unifice - 2, Weir			
Drifico 1 Orifico 2 Mair			
- 1,Culvert - 1			
Orifice - 1,Orifice - 2.Weir			
- 1,Culvert - 1			

Subsection: Elevation-Volume-Flow Table (Pond) Label: PO-1

Infiltration	
Infiltration Method (Computed)	No Infiltration
Initial Conditions	
Elevation (Water Surface, Initial)	993.25 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft ³ /s
Flow (Initial Infiltration)	0.00 ft ³ /s
Flow (Initial, Total)	0.00 ft ³ /s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft ³ /s)	2S/t + O (ft³/s)
993.25	0.00	0.000	0.001	0.00	0.00	0.00
993.75	0.04	0.002	0.010	0.00	0.04	1.23
994.25	0.06	0.012	0.028	0.00	0.06	5.85
994.75	0.07	0.032	0.053	0.00	0.07	15.56
995.25	0.08	0.065	0.074	0.00	0.08	31.47
995.75	0.23	0.105	0.088	0.00	0.23	51.22
996.25	0.32	0.153	0.101	0.00	0.32	74.19
996.75	0.38	0.206	0.112	0.00	0.38	99.96
997.25	0.44	0.265	0.124	0.00	0.44	128.57
997.75	1.28	0.330	0.137	0.00	1.28	160.93
998.25	2.77	0.401	0.150	0.00	2.77	197.03
998.75	4.69	0.479	0.163	0.00	4.69	236.75
999.25	6.96	0.564	0.177	0.00	6.96	280.16
999.75	9.52	0.657	0.192	0.00	9.52	327.31
1,000.00	10.91	0.705	0.199	0.00	10.91	352.32

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Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	993.25 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	2.05 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	0.08 ft ³ /s	Time to Peak (Flow, Outlet)	14.000 hours
Elevation (Water Surface		—	
Peak)	995.21 ft		
Volume (Peak)	0.062 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	0.114 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	0.082 ac-ft		
Values (Datained)			
volume (Retained)	0.031 ac-ft		
Volume (Retained) Volume (Unrouted)	0.031 ac-ft 0.000 ac-ft		

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	993.25 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	7.56 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	0.42 ft ³ /s	Time to Peak (Flow, Outlet)	13.000 hours
Elevation (Water Surface, Peak)	997.12 ft		
Elevation (Water Surface, Peak) Volume (Peak)	997.12 ft 0.249 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft)	997.12 ft 0.249 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial)	997.12 ft 0.249 ac-ft 0.000 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow)	997.12 ft 0.249 ac-ft 0.000 ac-ft 0.440 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Infiltration)	997.12 ft 0.249 ac-ft 0.000 ac-ft 0.440 ac-ft 0.000 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow)	997.12 ft 0.249 ac-ft 0.000 ac-ft 0.440 ac-ft 0.000 ac-ft 0.353 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow) Volume (Retained)	997.12 ft 0.249 ac-ft 0.000 ac-ft 0.440 ac-ft 0.000 ac-ft 0.353 ac-ft 0.086 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow) Volume (Retained) Volume (Unrouted)	997.12 ft 0.249 ac-ft 0.000 ac-ft 0.440 ac-ft 0.000 ac-ft 0.353 ac-ft 0.086 ac-ft -0.002 ac-ft		

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Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	993.25 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	11.84 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	2.09 ft ³ /s	Time to Peak (Flow, Outlet)	12.200 hours
Elevation (Water Surface, Peak)	998.02 ft		
Volume (Peak)	0.368 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	0.711 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	0.589 ac-ft		
Volume (Retained)	0.120 ac-ft		
Volume (Unrouted)	-0.002 ac-ft		
Error (Mass Balance)	0.3 %		

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	993.25 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft³/s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	18.52 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	6.34 ft³/s	Time to Peak (Flow, Outlet)	12.100 hours
Elevation (Water Surface, Peak)	999.11 ft		
Volume (Peak)	0.541 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	1.145 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	0.981 ac-ft		
Volume (Retained)	0.162 ac-ft		
Volume (Unrouted)	-0.002 ac-ft		
Error (Mass Balance)	0.2 %		

Return Event: 1 years Storm Event: WQ

Peak Discharge	0.08 ft ³ /s
Time to Peak	14.000 hours
Hydrograph Volume	0.082 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
8.900	0.00	0.00	0.00	0.00	0.00
9.150	0.00	0.00	0.00	0.00	0.00
9.400	0.00	0.00	0.00	0.00	0.00
9.650	0.00	0.01	0.01	0.01	0.01
9.900	0.01	0.01	0.01	0.01	0.01
10.150	0.01	0.01	0.01	0.01	0.01
10.400	0.01	0.01	0.01	0.01	0.02
10.650	0.02	0.02	0.02	0.02	0.02
10.900	0.02	0.02	0.03	0.03	0.03
11.150	0.03	0.03	0.03	0.04	0.04
11.400	0.04	0.04	0.04	0.04	0.04
11.650	0.04	0.05	0.05	0.06	0.06
11.900	0.06	0.07	0.07	0.07	0.08
12.150	0.08	0.08	0.08	0.08	0.08
12.400	0.08	0.08	0.08	0.08	0.08
12.650	0.08	0.08	0.08	0.08	0.08
12.900	0.08	0.08	0.08	0.08	0.08
13.150	0.08	0.08	0.08	0.08	0.08
13.400	0.08	0.08	0.08	0.08	0.08
13.650	0.08	0.08	0.08	0.08	0.08
13.900	0.08	0.08	0.08	0.08	0.08
14.150	0.08	0.08	0.08	0.08	0.08
14.400	0.08	0.08	0.08	0.08	0.08
14.650	0.08	0.08	0.08	0.08	0.08
14.900	0.08	0.08	0.08	0.08	0.08
15.150	0.08	0.08	0.08	0.08	0.08
15.400	0.08	0.08	0.08	0.08	0.08
15.650	0.08	0.08	0.08	0.08	0.08
15.900	0.08	0.08	0.08	0.08	0.08
16.150	0.08	0.08	0.08	0.08	0.08
16.400	0.08	0.08	0.08	0.08	0.08
16.650	0.08	0.08	0.08	0.08	0.08
16.900	0.08	0.08	0.08	0.08	0.08
17.150	0.08	0.08	0.08	0.08	0.08
17.400	0.08	0.08	0.08	0.08	0.08
17.650	0.08	0.08	0.08	0.08	0.08
17.900	0.08	0.08	0.08	0.08	0.08
18.150	0.08	0.08	0.08	0.08	0.08
18.400	0.08	0.08	0.08	0.08	0.08
18.650	0.08	0.08	0.08	0.08	0.08
18.900	0.08	0.08	0.08	0.08	0.08
19.150	0.08	0.08	0.08	0.08	0.08
19.400	0.08	0.08	0.08	0.08	0.08

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Return Event: 1 years Storm Event: WQ

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
19.650	0.08	0.08	0.08	0.08	0.08
19.900	0.08	0.08	0.08	0.08	0.08
20.150	0.08	0.08	0.08	0.08	0.08
20.400	0.08	0.08	0.08	0.07	0.07
20.650	0.07	0.07	0.07	0.07	0.07
20.900	0.07	0.07	0.07	0.07	0.07
21.150	0.07	0.07	0.07	0.07	0.07
21.400	0.07	0.07	0.07	0.07	0.07
21.650	0.07	0.07	0.07	0.07	0.07
21.900	0.07	0.07	0.07	0.07	0.07
22.150	0.07	0.07	0.07	0.07	0.07
22.400	0.07	0.07	0.07	0.07	0.07
22.650	0.07	0.07	0.07	0.07	0.07
22.900	0.07	0.07	0.07	0.07	0.07
23.150	0.07	0.07	0.07	0.07	0.07
23.400	0.07	0.07	0.07	0.07	0.07
23.650	0.07	0.07	0.07	0.07	0.07
23.900	0.07	0.07	0.07	(N/A)	(N/A)

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Return Event: 2 years Storm Event: 2-yr

Peak Discharge	0.42 ft ³ /s
Time to Peak	13.000 hours
Hydrograph Volume	0.353 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
4.550	0.00	0.00	0.00	0.00	0.00
4.800	0.00	0.00	0.00	0.00	0.00
5.050	0.00	0.00	0.01	0.01	0.01
5.300	0.01	0.01	0.01	0.01	0.01
5.550	0.01	0.01	0.01	0.01	0.01
5.800	0.01	0.01	0.01	0.01	0.02
6.050	0.02	0.02	0.02	0.02	0.02
6.300	0.02	0.02	0.02	0.02	0.02
6.550	0.02	0.02	0.02	0.03	0.03
6.800	0.03	0.03	0.03	0.03	0.03
7.050	0.03	0.03	0.03	0.03	0.03
7.300	0.03	0.04	0.04	0.04	0.04
7.550	0.04	0.04	0.04	0.04	0.04
7.800	0.04	0.04	0.04	0.04	0.04
8.050	0.04	0.04	0.04	0.04	0.04
8.300	0.04	0.04	0.04	0.04	0.04
8.550	0.04	0.04	0.04	0.04	0.04
8.800	0.04	0.04	0.05	0.05	0.05
9.050	0.05	0.05	0.05	0.05	0.05
9.300	0.05	0.05	0.05	0.05	0.05
9.550	0.05	0.05	0.05	0.05	0.05
9.800	0.06	0.06	0.06	0.06	0.06
10.050	0.06	0.06	0.06	0.06	0.06
10.300	0.06	0.06	0.06	0.06	0.06
10.550	0.06	0.06	0.06	0.06	0.06
10.800	0.06	0.06	0.07	0.07	0.07
11.050	0.07	0.07	0.07	0.07	0.07
11.300	0.07	0.07	0.07	0.07	0.07
11.550	0.07	0.08	0.08	0.08	0.10
11.800	0.16	0.23	0.28	0.32	0.36
12.050	0.39	0.40	0.40	0.41	0.41
12.300	0.41	0.41	0.42	0.42	0.42
12.550	0.42	0.42	0.42	0.42	0.42
12.800	0.42	0.42	0.42	0.42	0.42
13.050	0.42	0.42	0.42	0.42	0.42
13.300	0.42	0.42	0.42	0.42	0.42
13.550	0.42	0.42	0.42	0.42	0.42
13.800	0.42	0.42	0.42	0.42	0.42
14.050	0.42	0.42	0.41	0.41	0.41
14.300	0.41	0.41	0.41	0.41	0.41
14.550	0.41	0.41	0.41	0.41	0.41
14.800	0.41	0.40	0.40	0.40	0.40
15.050	0.40	0.40	0.40	0.40	0.40

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Return Event: 2 years Storm Event: 2-yr

Time on left represents time for first value in each row. Flow Flow Flow Flow Flow Time (ft³/s) (ft³/s) (ft³/s) (ft³/s) (ft³/s) (hours) 15.300 0.40 0.40 0.40 0.40 0.40 15.550 0.39 0.39 0.39 0.39 0.39 15.800 0.39 0.39 0.39 0.39 0.39 16.050 0.39 0.39 0.38 0.38 0.38 16.300 0.38 0.38 0.38 0.38 0.38 16.550 0.38 0.37 0.37 0.37 0.37 16.800 0.37 0.37 0.37 0.37 0.36 17.050 0.36 0.36 0.36 0.36 0.36 17.300 0.36 0.36 0.36 0.35 0.35 17.550 0.35 0.35 0.35 0.35 0.35 17.800 0.35 0.35 0.34 0.34 0.34 18.050 0.34 0.34 0.34 0.34 0.34 18.300 0.34 0.33 0.33 0.33 0.33 18.550 0.33 0.33 0.33 0.33 0.33 18.800 0.32 0.32 0.32 0.32 0.32 19.050 0.32 0.32 0.32 0.31 0.31 19.300 0.31 0.31 0.31 0.31 0.31 19.550 0.30 0.30 0.30 0.30 0.30 19.800 0.30 0.30 0.29 0.29 0.29 20.050 0.29 0.29 0.29 0.28 0.28 20.300 0.28 0.28 0.28 0.28 0.28 20.550 0.27 0.27 0.27 0.27 0.27 20.800 0.27 0.27 0.27 0.26 0.26 21.050 0.26 0.26 0.26 0.26 0.26 21.300 0.25 0.25 0.25 0.25 0.25 21.550 0.25 0.25 0.25 0.25 0.24 21.800 0.24 0.24 0.24 0.24 0.24 0.24 22.050 0.24 0.23 0.23 0.23 22.300 0.23 0.23 0.22 0.22 0.22 22.550 0.22 0.21 0.21 0.21 0.21 0.20 22.800 0.21 0.20 0.20 0.20 23.050 0.20 0.19 0.19 0.19 0.19 23.300 0.19 0.19 0.18 0.18 0.18 23.550 0.18 0.18 0.18 0.17 0.17 23.800 0.17 0.17 0.17 0.17 0.17

HYDROGRAPH ORDINATES (ft³/s) **Output Time Increment = 0.050 hours**

HCA LSMC ASC.ppc 2/15/2023

Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley PondPack V8i [08.11.01.56] Page 60 of 79

Return Event: 10 years Storm Event: 10-yr

Peak Discharge	2.09 ft ³ /s
Time to Peak	12.200 hours
Hydrograph Volume	0.589 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft ³ /s)
3.250	0.00	0.00	0.00	0.00	0.00
3.500	0.00	0.00	0.00	0.00	0.01
3.750	0.01	0.01	0.01	0.01	0.01
4.000	0.01	0.01	0.01	0.01	0.01
4.250	0.01	0.01	0.02	0.02	0.02
4.500	0.02	0.02	0.02	0.02	0.02
4.750	0.02	0.02	0.03	0.03	0.03
5.000	0.03	0.03	0.03	0.03	0.03
5.250	0.03	0.03	0.04	0.04	0.04
5.500	0.04	0.04	0.04	0.04	0.04
5.750	0.04	0.04	0.04	0.04	0.04
6.000	0.04	0.04	0.04	0.04	0.04
6.250	0.04	0.04	0.04	0.04	0.04
6.500	0.04	0.04	0.04	0.04	0.05
6.750	0.05	0.05	0.05	0.05	0.05
7.000	0.05	0.05	0.05	0.05	0.05
7.250	0.05	0.05	0.05	0.05	0.05
7.500	0.05	0.05	0.05	0.05	0.05
7.750	0.06	0.06	0.06	0.06	0.06
8.000	0.06	0.06	0.06	0.06	0.06
8.250	0.06	0.06	0.06	0.06	0.06
8.500	0.06	0.06	0.06	0.06	0.06
8.750	0.06	0.06	0.06	0.06	0.06
9.000	0.06	0.06	0.06	0.06	0.06
9.250	0.07	0.07	0.07	0.07	0.07
9.500	0.07	0.07	0.07	0.07	0.07
9.750	0.07	0.07	0.07	0.07	0.07
10.000	0.07	0.07	0.07	0.07	0.07
10.250	0.07	0.07	0.07	0.07	0.07
10.500	0.08	0.08	0.08	0.08	0.08
10.750	0.08	0.08	0.08	0.08	0.08
11.000	0.08	0.08	0.09	0.10	0.11
11.250	0.12	0.13	0.14	0.15	0.16
11.500	0.1/	0.19	0.21	0.24	0.26
11./50	0.29	0.32	0.36	0.40	0.55
12.000	1.10	1.65	1.99	2.08	2.09
12.250	2.06	2.02	1.98	1.92	1.8/
12.500	1.80	1.74	1.6/	1.60	1.54
12.750	1.48	1.42	1.30	1.31	1.2/
13.000	1.24	1.21	1.1/	1.15	1.12
13.250	1.09	1.06	1.03	1.01	0.98
13.500	0.90	0.93	0.91	0.89	0.80
13./50	0.84	0.82	0.80	0.78	0.76

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Return Event: 10 years Storm Event: 10-yr

Time on left represents time for first value in each row. Flow Flow Flow Flow Flow Time (ft³/s) (ft³/s) (ft³/s) (hours) (ft³/s) (ft³/s) 0.74 14.000 0.72 0.71 0.69 0.67 14.250 0.66 0.64 0.63 0.61 0.60 14.500 0.58 0.57 0.56 0.55 0.54 14.750 0.53 0.52 0.49 0.51 0.50 15.000 0.48 0.47 0.46 0.45 0.44 15.250 0.44 0.44 0.44 0.44 0.43 15.500 0.43 0.43 0.43 0.43 0.43 15.750 0.43 0.43 0.43 0.43 0.43 16.000 0.43 0.43 0.43 0.43 0.42 16.250 0.42 0.42 0.42 0.42 0.42 16.500 0.42 0.42 0.42 0.42 0.42 16.750 0.42 0.41 0.42 0.41 0.41 17.000 0.41 0.41 0.41 0.41 0.41 17.250 0.41 0.41 0.41 0.41 0.41 17.500 0.41 0.40 0.40 0.40 0.40 17.750 0.40 0.40 0.40 0.40 0.40 18.000 0.40 0.40 0.40 0.39 0.39 18.250 0.39 0.39 0.39 0.39 0.39 18.500 0.39 0.39 0.39 0.39 0.39 18.750 0.39 0.38 0.38 0.38 0.38 19.000 0.38 0.38 0.38 0.38 0.38 19.250 0.37 0.37 0.37 0.37 0.37 19.500 0.37 0.37 0.37 0.37 0.36 19.750 0.36 0.36 0.36 0.36 0.36 20.000 0.36 0.36 0.36 0.35 0.35 20.250 0.35 0.35 0.35 0.35 0.35 20.500 0.35 0.35 0.34 0.34 0.34 0.34 20.750 0.34 0.34 0.34 0.34 21.000 0.34 0.34 0.33 0.33 0.33 21.250 0.33 0.33 0.33 0.33 0.33 21.500 0.33 0.32 0.32 0.32 0.32 21.750 0.32 0.32 0.32 0.32 0.32 22.000 0.31 0.31 0.31 0.31 0.31 22.250 0.31 0.31 0.30 0.30 0.30 22.500 0.30 0.30 0.30 0.30 0.30 22.750 0.29 0.29 0.29 0.29 0.29 23.000 0.29 0.29 0.29 0.28 0.28 23.250 0.28 0.28 0.28 0.28 0.28 23.500 0.28 0.27 0.27 0.27 0.27 23.750 0.27 0.27 0.27 0.27 0.27 24.000 0.26 (N/A) (N/A) (N/A) (N/A)

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours on left represents time for first value in each row

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Return Event: 100 years Storm Event: 100-yr

Peak Discharge	6.34 ft ³ /s
Time to Peak	12.100 hours
Hydrograph Volume	0.981 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
2.250	0.00	0.00	0.00	0.00	0.00
2.500	0.00	0.00	0.01	0.01	0.01
2.750	0.01	0.01	0.01	0.01	0.01
3.000	0.02	0.02	0.02	0.02	0.02
3.250	0.02	0.02	0.03	0.03	0.03
3.500	0.03	0.03	0.03	0.04	0.04
3.750	0.04	0.04	0.04	0.04	0.04
4.000	0.04	0.04	0.04	0.04	0.04
4.250	0.04	0.04	0.04	0.04	0.04
4.500	0.04	0.04	0.04	0.04	0.04
4.750	0.05	0.05	0.05	0.05	0.05
5.000	0.05	0.05	0.05	0.05	0.05
5.250	0.05	0.05	0.05	0.05	0.05
5.500	0.05	0.06	0.06	0.06	0.06
5.750	0.06	0.06	0.06	0.06	0.06
6.000	0.06	0.06	0.06	0.06	0.06
6.250	0.06	0.06	0.06	0.06	0.06
6.500	0.06	0.06	0.06	0.06	0.06
6.750	0.06	0.06	0.06	0.06	0.07
7.000	0.07	0.07	0.07	0.07	0.07
7.250	0.07	0.07	0.07	0.07	0.07
7.500	0.07	0.07	0.07	0.07	0.07
7.750	0.07	0.07	0.07	0.07	0.07
8.000	0.07	0.07	0.07	0.07	0.07
8.250	0.07	0.07	0.07	0.07	0.07
8.500	0.08	0.08	0.08	0.08	0.08
8.750	0.08	0.08	0.08	0.08	0.08
9.000	0.08	0.08	0.08	0.08	0.08
9.250	0.08	0.08	0.08	0.09	0.09
9.500	0.10	0.10	0.11	0.11	0.12
9.750	0.12	0.13	0.13	0.14	0.14
10.000	0.15	0.16	0.16	0.17	0.17
10.250	0.18	0.19	0.19	0.20	0.21
10.500	0.21	0.22	0.23	0.24	0.24
10.750	0.24	0.25	0.25	0.26	0.26
11.000	0.27	0.27	0.28	0.28	0.29
11.250	0.30	0.30	0.31	0.32	0.32
11.500	0.33	0.34	0.35	0.37	0.39
11./50	0.41	0.56	1.15	2.29	3.//
12.000	5.11	6.04	6.34	6.19	5.89
12.250	5.56	5.24	4.92	4.63	4.3/
12.500	4.11	3.86	3.63	3.41	3.20
12.750	3.01	2.83	2.69	2.56	2.43

HCA LSMC ASC.ppc 2/15/2023

Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley PondPack V8i [08.11.01.56] Page 63 of 79

Return Event: 100 years Storm Event: 100-yr

Time on left represents time for first value in each row. Flow Flow Flow Flow Flow Time (ft³/s) (ft³/s) (ft³/s) (hours) (ft³/s) (ft³/s) 1.92 13.000 2.32 2.21 2.10 2.01 13.250 1.83 1.75 1.67 1.60 1.54 13.500 1.47 1.41 1.36 1.31 1.26 13.750 1.18 1.23 1.20 1.15 1.12 14.000 1.09 1.07 1.04 1.02 0.99 14.250 0.97 0.95 0.93 0.91 0.89 14.500 0.87 0.85 0.84 0.82 0.80 14.750 0.79 0.77 0.76 0.74 0.73 15.000 0.72 0.70 0.69 0.68 0.67 15.250 0.66 0.65 0.64 0.63 0.62 15.500 0.59 0.61 0.60 0.58 0.57 15.750 0.56 0.55 0.54 0.53 0.52 16.000 0.50 0.52 0.51 0.49 0.49 16.250 0.47 0.47 0.48 0.46 0.45 16.500 0.45 0.44 0.44 0.44 0.44 16.750 0.44 0.44 0.43 0.43 0.43 17.000 0.43 0.43 0.43 0.43 0.43 17.250 0.43 0.43 0.43 0.43 0.43 17.500 0.43 0.43 0.43 0.43 0.43 17.750 0.43 0.43 0.43 0.43 0.42 18.000 0.42 0.42 0.42 0.42 0.42 0.42 18.250 0.42 0.42 0.42 0.42 18.500 0.42 0.42 0.42 0.42 0.42 0.41 18.750 0.42 0.42 0.41 0.41 19.000 0.41 0.41 0.41 0.41 0.41 19.250 0.41 0.41 0.41 0.41 0.41 19.500 0.41 0.41 0.40 0.40 0.40 19.750 0.40 0.40 0.40 0.40 0.40 20.000 0.40 0.40 0.40 0.40 0.40 0.40 0.39 0.39 20.250 0.39 0.39 0.39 20.500 0.39 0.39 0.39 0.39 20.750 0.39 0.39 0.39 0.39 0.39 0.38 0.38 21.000 0.38 0.38 0.38 21.250 0.38 0.38 0.38 0.38 0.38 21.500 0.38 0.38 0.37 0.37 0.37 21.750 0.37 0.37 0.37 0.37 0.37 22.000 0.37 0.37 0.37 0.36 0.36 22.250 0.36 0.36 0.36 0.36 0.36 22.500 0.36 0.36 0.36 0.36 0.35 0.35 22.750 0.35 0.35 0.35 0.35 23.000 0.35 0.35 0.35 0.35 0.35 23.250 0.35 0.34 0.34 0.34 0.34 23.500 0.34 0.34 0.34 0.34 0.34 23.750 0.34 0.34 0.34 0.33 0.33 24.000 0.33 (N/A) (N/A) (N/A) (N/A)

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours on left represents time for first value in each row

HCA LSMC ASC.ppc 2/15/2023 Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley PondPack V8i [08.11.01.56] Page 64 of 79 Subsection: Elevation-Volume-Flow Table (Pond) Label: PO-2

Infiltration	
Infiltration Method (Computed)	No Infiltration
Initial Conditions	
Elevation (Water Surface, Initial)	998.10 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft ³ /s
Flow (Initial Infiltration)	0.00 ft ³ /s
Flow (Initial, Total)	0.00 ft ³ /s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft ³ /s)	2S/t + O (ft³/s)
998.10	0.00	0.000	0.001	0.00	0.00	0.00
998.60	0.03	0.004	0.017	0.00	0.03	1.78
999.10	0.04	0.020	0.051	0.00	0.04	9.65
999.40	0.05	0.039	0.079	0.00	0.05	19.06
999.60	0.10	0.057	0.102	0.00	0.10	27.87
1,000.10	0.23	0.124	0.160	0.00	0.23	60.31
1,000.50	0.29	0.192	0.180	0.00	0.29	93.25
1,000.60	0.38	0.210	0.185	0.00	0.38	102.18
1,001.10	1.41	0.310	0.211	0.00	1.41	151.27
1,001.60	3.00	0.419	0.229	0.00	3.00	206.02
1,002.00	4.58	0.514	0.244	0.00	4.58	253.35

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Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	998.10 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	1.28 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	0.05 ft ³ /s	Time to Peak (Flow, Outlet)	14.650 hours
Elevation (Water Surface, Peak)	999.41 ft		
Volume (Peak)	0.040 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)			
	0.000 ac-ft		
Volume (Total Inflow)	0.000 ac-ft 0.071 ac-ft		
Volume (Total Inflow) Volume (Total Infiltration)	0.000 ac-ft 0.071 ac-ft 0.000 ac-ft		
Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow)	0.000 ac-ft 0.071 ac-ft 0.000 ac-ft 0.046 ac-ft		
Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow) Volume (Retained)	0.000 ac-ft 0.071 ac-ft 0.000 ac-ft 0.046 ac-ft 0.025 ac-ft		
Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow) Volume (Retained) Volume (Unrouted)	0.000 ac-ft 0.071 ac-ft 0.000 ac-ft 0.046 ac-ft 0.025 ac-ft -0.001 ac-ft		

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	998.10 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	5.45 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	0.28 ft ³ /s	Time to Peak (Flow, Outlet)	13.200 hours
Elevation (Water Surface, Peak)	1,000.42 ft		
Volume (Peak)	0.178 ac-ft		
Mass Balance (ac-ft)		_	
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	0.311 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet			
Outflow)	0.237 ac-ft		
Outflow) Volume (Retained)	0.237 ac-ft 0.070 ac-ft		
Outflow) Volume (Retained) Volume (Unrouted)	0.237 ac-ft 0.070 ac-ft -0.003 ac-ft		

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Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	998.10 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	8.78 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	1.07 ft ³ /s	Time to Peak (Flow, Outlet)	12.350 hours
Elevation (Water Surface, Peak)	1,000.94 ft		
Volume (Peak)	0.276 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	0.515 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	0.409 ac-ft		
Volume (Retained)	0.103 ac-ft		
Volume (Unrouted)	-0.004 ac-ft		
Error (Mass Balance)	0.8 %		

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	998.10 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft³/s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph S	ummary		
Flow (Peak In)	13.99 ft ³ /s	Time to Peak (Flow, In)	11.950 hours
Flow (Peak Outlet)	3.15 ft ³ /s	Time to Peak (Flow, Outlet)	12.150 hours
Elevation (Water Surface, Peak)	1,001.64 ft		
Elevation (Water Surface, Peak) Volume (Peak)	1,001.64 ft 0.428 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft)	1,001.64 ft 0.428 ac-ft	_	
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial)	1,001.64 ft 0.428 ac-ft 0.000 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow)	1,001.64 ft 0.428 ac-ft 0.000 ac-ft 0.848 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Inflow)	1,001.64 ft 0.428 ac-ft 0.000 ac-ft 0.848 ac-ft 0.000 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow)	1,001.64 ft 0.428 ac-ft 0.000 ac-ft 0.848 ac-ft 0.000 ac-ft 0.707 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow) Volume (Retained)	1,001.64 ft 0.428 ac-ft 0.000 ac-ft 0.848 ac-ft 0.000 ac-ft 0.707 ac-ft 0.139 ac-ft		
Elevation (Water Surface, Peak) Volume (Peak) Mass Balance (ac-ft) Volume (Initial) Volume (Total Inflow) Volume (Total Infiltration) Volume (Total Outlet Outflow) Volume (Retained) Volume (Unrouted)	1,001.64 ft 0.428 ac-ft 0.000 ac-ft 0.848 ac-ft 0.000 ac-ft 0.707 ac-ft 0.139 ac-ft -0.002 ac-ft		

Return Event: 1 years Storm Event: WQ

Peak Discharge	0.05 ft ³ /s
Time to Peak	14.650 hours
Hydrograph Volume	0.046 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.450	0.00	0.00	0.00	0.00	0.00
10.700	0.00	0.00	0.00	0.00	0.00
10.950	0.00	0.00	0.00	0.01	0.01
11.200	0.01	0.01	0.01	0.01	0.01
11.450	0.01	0.01	0.01	0.02	0.02
11.700	0.02	0.03	0.03	0.03	0.03
11.950	0.04	0.04	0.04	0.04	0.04
12.200	0.04	0.04	0.04	0.04	0.04
12.450	0.04	0.04	0.04	0.04	0.04
12.700	0.04	0.05	0.05	0.05	0.05
12.950	0.05	0.05	0.05	0.05	0.05
13.200	0.05	0.05	0.05	0.05	0.05
13.450	0.05	0.05	0.05	0.05	0.05
13.700	0.05	0.05	0.05	0.05	0.05
13.950	0.05	0.05	0.05	0.05	0.05
14.200	0.05	0.05	0.05	0.05	0.05
14.450	0.05	0.05	0.05	0.05	0.05
14.700	0.05	0.05	0.05	0.05	0.05
14.950	0.05	0.05	0.05	0.05	0.05
15.200	0.05	0.05	0.05	0.05	0.05
15.450	0.05	0.05	0.05	0.05	0.05
15.700	0.05	0.05	0.05	0.05	0.05
15.950	0.05	0.05	0.05	0.05	0.05
16.200	0.05	0.05	0.05	0.05	0.05
16.450	0.05	0.05	0.05	0.05	0.05
16./00	0.05	0.05	0.05	0.05	0.05
16.950	0.05	0.05	0.05	0.05	0.05
17.200	0.05	0.05	0.05	0.05	0.05
17.450	0.05	0.05	0.05	0.05	0.05
17.700	0.05	0.05	0.05	0.05	0.05
17.950	0.05	0.05	0.05	0.05	0.04
18.200	0.04	0.04	0.04	0.04	0.04
10.450	0.04	0.04	0.04	0.04	0.04
10.700	0.04	0.04	0.04	0.04	0.04
10.950	0.04	0.04	0.04	0.04	0.04
19.200	0.04	0.04	0.04	0.04	0.04
19.450	0.04	0.04	0.04	0.04	0.04
19.700	0.04	0.04	0.04	0.04	0.04
20 200	0.04	0.04	0.04	0.04	0.04
20.200	0.04	0.04	0.04	0.04	0.04
20.730	0.04	0.04	0.04	0.04	0.04
20.950	0.04	0.04	0.04	0.04	0.04
20.550	1 0.04	0.04	0.04	0.04	0.01

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Return Event: 1 years Storm Event: WQ

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.200	0.04	0.04	0.04	0.04	0.04
21.450	0.04	0.04	0.04	0.04	0.04
21.700	0.04	0.04	0.04	0.04	0.04
21.950	0.04	0.04	0.04	0.04	0.04
22.200	0.04	0.04	0.04	0.04	0.04
22.450	0.04	0.04	0.04	0.04	0.04
22.700	0.04	0.04	0.04	0.04	0.04
22.950	0.04	0.04	0.04	0.04	0.04
23.200	0.04	0.04	0.04	0.04	0.04
23.450	0.04	0.04	0.04	0.04	0.04
23.700	0.04	0.04	0.04	0.04	0.04
23.950	0.04	0.04	(N/A)	(N/A)	(N/A)

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Return Event: 2 years Storm Event: 2-yr

Peak Discharge	0.28 ft ³ /s
Time to Peak	13.200 hours
Hydrograph Volume	0.237 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
5.850	0.00	0.00	0.00	0.00	0.00
6.100	0.00	0.00	0.00	0.00	0.00
6.350	0.00	0.00	0.00	0.00	0.00
6.600	0.00	0.00	0.00	0.01	0.01
6.850	0.01	0.01	0.01	0.01	0.01
7.100	0.01	0.01	0.01	0.01	0.01
7.350	0.01	0.01	0.01	0.01	0.01
7.600	0.01	0.01	0.01	0.01	0.01
7.850	0.01	0.01	0.01	0.02	0.02
8.100	0.02	0.02	0.02	0.02	0.02
8.350	0.02	0.02	0.02	0.02	0.02
8.600	0.02	0.02	0.02	0.02	0.03
8.850	0.03	0.03	0.03	0.03	0.03
9.100	0.03	0.03	0.03	0.03	0.03
9.350	0.03	0.03	0.03	0.03	0.03
9.600	0.03	0.03	0.03	0.03	0.03
9.850	0.03	0.03	0.03	0.03	0.03
10.100	0.03	0.03	0.03	0.03	0.03
10.350	0.03	0.03	0.03	0.03	0.03
10.600	0.03	0.03	0.03	0.03	0.03
10.850	0.03	0.04	0.04	0.04	0.04
11.100	0.04	0.04	0.04	0.04	0.04
11.350	0.04	0.04	0.04	0.04	0.04
11.600	0.04	0.04	0.05	0.07	0.10
11.850	0.13	0.16	0.20	0.24	0.25
12.100	0.26	0.27	0.27	0.27	0.27
12.350	0.27	0.28	0.28	0.28	0.28
12.600	0.28	0.28	0.28	0.28	0.28
12.850	0.28	0.28	0.28	0.28	0.28
13.100	0.28	0.28	0.28	0.28	0.28
13.350	0.28	0.28	0.28	0.28	0.28
13.000	0.28	0.28	0.28	0.28	0.28
13.050	0.20	0.20	0.20	0.20	0.20
14.100	0.20	0.20	0.20	0.20	0.20
14.550	0.20	0.20	0.28	0.20	0.27
14.000	0.27	0.27	0.27	0.27	0.27
15 100	0.27	0.27	0.27	0.27	0.27
15,100	0.27	0.27	0.27	0.27	0.27
15 600	0.27	0.27	0.27	0.27	0.27
15,000	0.27	0.20	0.20	0.20	0.20
16 100	0.20	0.20	0.20	0.20	0.20
16.350	0.26	0.26	0.26	0.26	0.26
1 10.000	0.20	0.20	0.20	0.20	0.20

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Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley PondPack V8i [08.11.01.56] Page 72 of 79
Return Event: 2 years Storm Event: 2-yr

	Output Time Increment = 0.050 hours Time on left represents time for first value in each row.							
	Time	Flow	Flow	Flow	Flow	Flow		
	(hours)	(ft ³ /s)						
I	16.600	0.26	0.25	0.25	0.25	0.25		
	16.850	0.25	0.25	0.25	0.25	0.25		
	17.100	0.25	0.25	0.25	0.25	0.25		
	17.350	0.25	0.25	0.25	0.25	0.24		
	17.600	0.24	0.24	0.24	0.24	0.24		
	17.850	0.24	0.24	0.24	0.24	0.24		
	18.100	0.24	0.24	0.24	0.24	0.24		
	18.350	0.24	0.24	0.24	0.23	0.23		
	18.600	0.23	0.23	0.23	0.23	0.23		
	18.850	0.23	0.23	0.23	0.22	0.22		
	19.100	0.22	0.22	0.22	0.22	0.22		
	19.350	0.22	0.22	0.21	0.21	0.21		
	19.600	0.21	0.21	0.21	0.21	0.21		
	19.850	0.21	0.20	0.20	0.20	0.20		
	20.100	0.20	0.20	0.20	0.20	0.20		
	20.350	0.19	0.19	0.19	0.19	0.19		
	20.600	0.19	0.19	0.19	0.19	0.19		
	20.850	0.18	0.18	0.18	0.18	0.18		
	21.100	0.18	0.18	0.18	0.18	0.18		
	21.350	0.18	0.17	0.17	0.17	0.17		
	21.600	0.17	0.17	0.17	0.17	0.17		
	21.850	0.17	0.17	0.16	0.16	0.16		
	22.100	0.16	0.16	0.16	0.16	0.16		
	22.350	0.16	0.16	0.16	0.16	0.16		
	22.600	0.15	0.15	0.15	0.15	0.15		
	22.850	0.15	0.15	0.15	0.15	0.15		
	23.100	0.15	0.15	0.15	0.15	0.14		
	23.350	0.14	0.14	0.14	0.14	0.14		
	23.600	0.14	0.14	0.14	0.14	0.14		
	23.850	0.14	0.14	0.14	0.14	(N/A)		

HYDROGRAPH ORDINATES (ft³/s)

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Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

Bentley PondPack V8i [08.11.01.56] Page 73 of 79

Return Event: 10 years Storm Event: 10-yr

Peak Discharge	1.07 ft ³ /s
Time to Peak	12.350 hours
Hydrograph Volume	0.409 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
4.300	0.00	0.00	0.00	0.00	0.00
4.550	0.00	0.00	0.00	0.00	0.00
4.800	0.00	0.00	0.00	0.00	0.01
5.050	0.01	0.01	0.01	0.01	0.01
5.300	0.01	0.01	0.01	0.01	0.01
5.550	0.01	0.01	0.01	0.01	0.01
5.800	0.01	0.01	0.01	0.01	0.02
6.050	0.02	0.02	0.02	0.02	0.02
6.300	0.02	0.02	0.02	0.02	0.02
6.550	0.02	0.02	0.02	0.03	0.03
6.800	0.03	0.03	0.03	0.03	0.03
7.050	0.03	0.03	0.03	0.03	0.03
7.300	0.03	0.03	0.03	0.03	0.03
7.550	0.03	0.03	0.03	0.03	0.03
7.800	0.03	0.03	0.03	0.03	0.03
8.050	0.03	0.03	0.03	0.03	0.03
8.300	0.03	0.03	0.03	0.03	0.03
8.550	0.03	0.03	0.03	0.03	0.03
8.800	0.03	0.03	0.03	0.03	0.03
9.050	0.03	0.03	0.03	0.03	0.04
9.300	0.04	0.04	0.04	0.04	0.04
9.550	0.04	0.04	0.04	0.04	0.04
9.800	0.04	0.04	0.04	0.04	0.04
10.050	0.04	0.04	0.04	0.04	0.04
10.300	0.04	0.04	0.04	0.04	0.04
10.550	0.04	0.04	0.04	0.04	0.04
10.800	0.05	0.05	0.05	0.05	0.05
11.050	0.06	0.06	0.07	0.07	0.08
11.300	0.09	0.09	0.10	0.10	0.11
11.550	0.11	0.12	0.13	0.15	0.17
11.800	0.21	0.24	0.27	0.31	0.56
12.050	0.82	0.97	1.03	1.05	1.06
12.300	1.07	1.07	1.07	1.06	1.05
12.550	1.04	1.02	1.01	0.99	0.98
12.000	0.90	0.94	0.95	0.91	0.69
13.050	0.00	0.00	0.04	0.03	0.01
13.300	0.79	0.78	0.70	0.75	0.73
13,000	0.72	0.70	0.09	0.07	0.00
14 050	0.04	0.03	0.02	0.00	0.59
14 300	0.50	0.57	0.55	0.34	0.55
14 550	0.32	0.51	0.50	0.45	0.44
14.800	0.43	0.42	0.41	0.41	0.40

HCA LSMC ASC.ppc 2/15/2023

Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley PondPack V8i [08.11.01.56] Page 74 of 79

Return Event: 10 years Storm Event: 10-yr

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
15.050	0.39	0.39	0.38	0.38	0.37
15.300	0.37	0.37	0.36	0.36	0.36
15.550	0.35	0.35	0.35	0.35	0.34
15.800	0.34	0.34	0.33	0.33	0.33
16.050	0.33	0.32	0.32	0.32	0.32
16.300	0.31	0.31	0.31	0.30	0.30
16.550	0.30	0.30	0.29	0.29	0.29
16.800	0.29	0.29	0.29	0.29	0.29
17.050	0.29	0.29	0.29	0.29	0.29
17.300	0.29	0.29	0.29	0.29	0.29
17.550	0.28	0.28	0.28	0.28	0.28
17.800	0.28	0.28	0.28	0.28	0.28
18.050	0.28	0.28	0.28	0.28	0.28
18.300	0.28	0.28	0.28	0.28	0.27
18.550	0.27	0.27	0.27	0.27	0.27
18.800	0.27	0.27	0.27	0.27	0.27
19.050	0.27	0.27	0.27	0.27	0.27
19.300	0.27	0.27	0.27	0.26	0.26
19.550	0.26	0.26	0.26	0.26	0.26
19.800	0.26	0.26	0.26	0.26	0.26
20.050	0.26	0.26	0.26	0.26	0.26
20.300	0.26	0.25	0.25	0.25	0.25
20.550	0.25	0.25	0.25	0.25	0.25
20.800	0.25	0.25	0.25	0.25	0.25
21.050	0.25	0.25	0.25	0.25	0.24
21.300	0.24	0.24	0.24	0.24	0.24
21.550	0.24	0.24	0.24	0.24	0.24
21.800	0.24	0.24	0.24	0.24	0.24
22.050	0.24	0.24	0.24	0.23	0.23
22.300	0.23	0.23	0.23	0.23	0.23
22.550	0.23	0.23	0.23	0.23	0.22
22.800	0.22	0.22	0.22	0.22	0.22
23.050	0.22	0.22	0.22	0.21	0.21
23.300	0.21	0.21	0.21	0.21	0.21
23.550	0.21	0.21	0.21	0.21	0.20
23.800	0.20	0.20	0.20	0.20	0.20

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Return Event: 100 years Storm Event: 100-yr

Peak Discharge	3.15 ft ³ /s
Time to Peak	12.150 hours
Hydrograph Volume	0.707 ac-ft

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft ³ /s)
3.000	0.00	0.00	0.00	0.00	0.00
3.250	0.00	0.00	0.00	0.00	0.00
3.500	0.00	0.01	0.01	0.01	0.01
3.750	0.01	0.01	0.01	0.01	0.01
4.000	0.01	0.01	0.01	0.01	0.01
4.250	0.01	0.02	0.02	0.02	0.02
4.500	0.02	0.02	0.02	0.02	0.02
4.750	0.02	0.02	0.03	0.03	0.03
5.000	0.03	0.03	0.03	0.03	0.03
5.250	0.03	0.03	0.03	0.03	0.03
5.500	0.03	0.03	0.03	0.03	0.03
5.750	0.03	0.03	0.03	0.03	0.03
6.000	0.03	0.03	0.03	0.03	0.03
6.250	0.03	0.03	0.03	0.03	0.03
6.500	0.03	0.03	0.03	0.03	0.03
6.750	0.03	0.03	0.03	0.03	0.03
7.000	0.03	0.04	0.04	0.04	0.04
7.250	0.04	0.04	0.04	0.04	0.04
7.500	0.04	0.04	0.04	0.04	0.04
7.750	0.04	0.04	0.04	0.04	0.04
8.000	0.04	0.04	0.04	0.04	0.04
8.250	0.04	0.04	0.04	0.04	0.04
8.500	0.04	0.04	0.04	0.04	0.04
8.750	0.04	0.04	0.04	0.04	0.04
9.000	0.05	0.05	0.05	0.05	0.05
9.250	0.05	0.06	0.06	0.06	0.07
9.500	0.07	0.07	0.07	0.08	0.08
9.750	0.08	0.09	0.09	0.09	0.10
10.000	0.10	0.10	0.11	0.11	0.11
10.250	0.11	0.11	0.12	0.12	0.12
10.500	0.13	0.13	0.13	0.13	0.14
10.750	0.14	0.14	0.15	0.15	0.16
11.000	0.16	0.16	0.17	0.17	0.18
11.250	0.18	0.19	0.20	0.20	0.21
11.500	0.22	0.23	0.24	0.25	0.26
11./50	0.28	0.33	0.63	1.10	1./3
12.000	2.39	2.87	3.11	3.15	3.11
12.250	3.04	2.97	2.90	2.82	2.74
12.500	2.65	2.5/	2.48	2.40	2.31
12./50	2.23	2.16	2.08	2.01	1.94
13.000	1.8/	1.81	1./5	1.69	1.63
13.250	1.5/	1.52	1.4/	1.42	1.38
13.500	1.35	1.32	1.28	1.25	1.22

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Return Event: 100 years Storm Event: 100-yr

Time on left represents time for first value in each row.						
Time	Flow	Flow	Flow	Flow	Flow	
(hours)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	
13.750	1.19	1.16	1.14	1.11	1.08	
14.000	1.06	1.03	1.01	0.98	0.96	
14.250	0.94	0.92	0.90	0.88	0.86	
14.500	0.84	0.82	0.80	0.78	0.77	
14.750	0.75	0.74	0.72	0.71	0.69	
15.000	0.68	0.67	0.65	0.64	0.63	
15.250	0.62	0.60	0.59	0.58	0.57	
15.500	0.56	0.55	0.54	0.53	0.52	
15.750	0.51	0.50	0.50	0.49	0.48	
16.000	0.47	0.46	0.45	0.45	0.44	
16.250	0.43	0.43	0.42	0.41	0.41	
16.500	0.40	0.39	0.39	0.38	0.38	
16.750	0.38	0.37	0.37	0.37	0.37	
17.000	0.36	0.36	0.36	0.36	0.35	
17.250	0.35	0.35	0.35	0.35	0.34	
17.500	0.34	0.34	0.34	0.34	0.33	
17.750	0.33	0.33	0.33	0.33	0.32	
18.000	0.32	0.32	0.32	0.32	0.31	
18.250	0.31	0.31	0.31	0.31	0.30	
18.500	0.30	0.30	0.30	0.30	0.29	
18.750	0.29	0.29	0.29	0.29	0.29	
19.000	0.29	0.29	0.29	0.29	0.29	
19.250	0.29	0.29	0.29	0.29	0.29	
19.500	0.29	0.29	0.29	0.29	0.29	
19.750	0.28	0.28	0.28	0.28	0.28	
20.000	0.28	0.28	0.28	0.28	0.28	
20.250	0.28	0.28	0.28	0.28	0.28	
20.500	0.28	0.28	0.28	0.28	0.28	
20.750	0.28	0.28	0.27	0.27	0.27	
21.000	0.27	0.27	0.27	0.27	0.27	
21.250	0.27	0.27	0.27	0.27	0.27	
21.500	0.27	0.27	0.27	0.27	0.27	
21./50	0.2/	0.27	0.27	0.27	0.27	
22.000	0.26	0.26	0.26	0.26	0.26	
22.250	0.26	0.26	0.26	0.26	0.26	
22.500	0.26	0.26	0.26	0.26	0.26	
22./50	0.26	0.26	0.26	0.26	0.26	
23.000	0.26	0.26	0.26	0.25	0.25	
23.250	0.25	0.25	0.25	0.25	0.25	
23.500	0.25	0.25	0.25	0.25	0.25	
23./50	0.25	0.25	0.25	0.25	0.25	
24.000	0.25	(N/A)	(N/A)	(N/A)	(N/A)	

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours on left represents time for first value in each row

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Index

С

CM-1 (Runoff CN-Area, 1 years)...13

- CM-1 (Time of Concentration Calculations, 1 years)...11, 12
- CM-1 (Unit Hydrograph Summary, 1 years)...14, 15
- CM-1 (Unit Hydrograph Summary, 10 years)...18, 19
- CM-1 (Unit Hydrograph Summary, 100 years)...20, 21
- CM-1 (Unit Hydrograph Summary, 2 years)...16, 17
- CM-2 (Unit Hydrograph Summary, 1 years)...22
- CM-2 (Unit Hydrograph Summary, 10 years)...24
- CM-2 (Unit Hydrograph Summary, 100 years)...25
- CM-2 (Unit Hydrograph Summary, 2 years)...23
- CM-3 (Unit Hydrograph Summary, 1 years)...26
- CM-3 (Unit Hydrograph Summary, 10 years)...28
- CM-3 (Unit Hydrograph Summary, 100 years)...29
- CM-3 (Unit Hydrograph Summary, 2 years)...27
- Composite Outlet Structure 1 (Composite Rating Curve, 1 years)...41, 42
- Composite Outlet Structure 1 (Individual Outlet Curves, 1 years)...35, 36, 37, 38, 39, 40
- Composite Outlet Structure 1 (Outlet Input Data, 1 years)...32, 33, 34
- Composite Outlet Structure 2 (Composite Rating Curve, 1 years)...51
- Composite Outlet Structure 2 (Individual Outlet Curves, 1 years)...46, 47, 48, 49, 50
- Composite Outlet Structure 2 (Outlet Input Data, 1 years)...43, 44, 45
- Μ

Master Network Summary...1, 2

Ρ

- PO-1 (Elevation-Area Volume Curve, 1 years)...30
- PO-1 (Elevation-Volume-Flow Table (Pond), 1 years)...52
- PO-1 (IN) (Level Pool Pond Routing Summary, 1 years)...53
- PO-1 (IN) (Level Pool Pond Routing Summary, 10 years)...55
- PO-1 (IN) (Level Pool Pond Routing Summary, 100 years)...56
- PO-1 (IN) (Level Pool Pond Routing Summary, 2 years)...54
- PO-1 (OUT) (Pond Routed Hydrograph (total out), 1 years)...57, 58
- PO-1 (OUT) (Pond Routed Hydrograph (total out), 10 years)...61, 62
- PO-1 (OUT) (Pond Routed Hydrograph (total out), 100 years)...63, 64
- PO-1 (OUT) (Pond Routed Hydrograph (total out), 2 years)...59, 60

HCA LSMC ASC.ppc 2/15/2023 Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley PondPack V8i [08.11.01.56] Page 78 of 79

- PO-2 (Elevation-Area Volume Curve, 1 years)...31
- PO-2 (Elevation-Volume-Flow Table (Pond), 1 years)...65
- PO-2 (IN) (Level Pool Pond Routing Summary, 1 years)...66
- PO-2 (IN) (Level Pool Pond Routing Summary, 10 years)...68
- PO-2 (IN) (Level Pool Pond Routing Summary, 100 years)...69
- PO-2 (IN) (Level Pool Pond Routing Summary, 2 years)...67
- PO-2 (OUT) (Pond Routed Hydrograph (total out), 1 years)...70, 71
- PO-2 (OUT) (Pond Routed Hydrograph (total out), 10 years)...74, 75
- PO-2 (OUT) (Pond Routed Hydrograph (total out), 100 years)...76, 77
- PO-2 (OUT) (Pond Routed Hydrograph (total out), 2 years)...72, 73
- Т
- Time-Depth 1 (Time-Depth Curve, 1 years)...9, 10
- Time-Depth 1 (Time-Depth Curve, 10 years)...5, 6
- Time-Depth 1 (Time-Depth Curve, 100 years)...3, 4
- Time-Depth 1 (Time-Depth Curve, 2 years)...7, 8

HCA LSMC ASC.ppc 2/15/2023

Bentley Systems, Inc. Haestad Methods Solution Center 27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666 Bentley PondPack V8i [08.11.01.56] Page 79 of 79