Drainage Design Summary
Lee's Summit Medical Center – Medical Office Building
Lee's Summit, MO
S&ME Project No. 527116043

PREPARED FOR:

Lee's Summit Medical Center
2100 SE Blue Parkway
Lee's Summit, MO 64063

PREPARED BY:

S&ME, Inc.
1615 Edgewater Dr., Suite 200
Orlando, FL 32804

April 25, 2019

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Appendices

April 25, 2019
George B. Huddleston, III, P.E.
MO PE 35508

1.0 Overview

1.1 Site Description

The proposed project is a Medical Office Building (MOB) addition to the existing Lee's Summit Medical Center Campus. The site is located south of SE Shenandoah Drive and north of SE Blue Parkway between SE Cumberland Drive and SE Battery Drive in Lee's Summit, MO.

The existing portion of campus being modified presently contains a parking lot and an existing dry detention pond for the southwest portion of the campus. The proposed project impact area consists of 5.69± ac., of which 3.46± ac. is impervious development.

Surface runoff from the existing site is collected by a series of catch basins which appear to direct storm flows towards the southwest to a dry detention pond for treatment before discharging to an existing 60 inch CMP underneath Southeast Shenandoah Drive. The proposed site improvements will include a revised dry detention pond to provide stormwater attenuation by means of detention.

1.2 Existing Soils, Groundwater and Topography

The topography of the site is relatively flat with grades ranging from approximately 1016± down to 991± NAVD88. A review of the USDA Soil Conservation Service Soil Survey of Jackson County, Missouri indicates that the following soil types can be found on the site:

Soils Survey, Jackson County, Missouri		
Map Unit Symbol	Map Unit Name	Hydrologic Group
10082	Arisburg-Urban land complex, 1 to 5 percent slopes	D
10180	Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes	C

Source: http://w ebsoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

The primary hydrologic soils located within the limits of design/ construction are classified as Group 'C/D' (see **Appendix II**).

A geotechnical investigation was performed by Terracon, dated June 9, 2017 (provided under a separate cover). Groundwater elevations are located at approximately 9± below grade NAVD88.

2.0 Design Overview

This project is located east and south of the existing Lee's Summit Medical Center; therefore, the stormwater analyses detailed herein are focused on the existing and proposed conditions of this portion of the campus as a retrofit condition. The remainder of the Lee's Summit Medical Center will remain mostly unchanged.

Detention criteria will be determined as provided for in the American Public Works Associations (APWA), Division V, Section 5600, as approved on February 16, 2011 by the Kansas City Metropolitan Chapter of the APWA (KCAPWA) and as adopted and amended on September 16, 2004 by the City of Lee's Summit. Additionally, the release rate of stormwater under APWA 5600 §5608.4(c)1 shall be observed. Specifically, the peak flat rate of discharge for the 2-Year, 10-Year and 100-Year events shall not exceed 0.5 cfs/ac, 2.0 cfs/ac, and 3.0 cfs/ac, respectively, for the added impervious area. Required drawdown of 80% of the stormwater volume was also considered for each design storm. And finally, an emergency discharge weir was designed for the event the discharge control structure were to become clogged. Criteria such as soil types, ground cover and ground topography were used to calculate times of concentration (Tc) and runoff curve numbers (CN) per TR-55 methodology, and considered as part of this analysis.

3.0 Pre-Development Stormwater Conditions

The existing stormwater management system appears to have surface runoff captured by catch basins and routed to a dry detention pond located in the southwest corner of the property. Per the previous stormwater management plan for the Lee's Summit Medical Center, prepared by GBA on April 13, 2006, the existing detention pond, Pond A accounted for Watershed-A which included some of the future parking lot expansion.

Based on the previous stormwater management plan, we determined the additional basin areas that will be routed through the pond in post-development to determine the total outfall from the site for the disturbed portions of the campus. Per the previous stormwater report, the basin area discharging to Pond A is 7.11 acres. Watersheds A-1 and A-2 were added to the pre-development condition to account for the areas that will be disturbed in the post condition.

Per the calculations provided in the 2006 Lee's Summit Medical Center Stormwater Report, the maximum permitted discharge from the stormwater system in Watershed A is 12 cfs, 19 cfs, 27 cfs for the 2/24, 10/24, and 100/24 storm events, respectively. Additional maximum flows from Watershed A-1 and Watershed A-2 were added to the maximum discharge from Watershed A to get the total discharge rate for the pre-development condition. A summary of the modeled pre-development conditions results are provided here:

	Pre-Development Max. Flow (cfs)		
	02-Yr/ 24-Hr	10-Yr/ 24-Hr	100-Yr/ 24-Hr
Watershed A*	12.00	19.00	27.00
Watershed A-1	0.42	0.85	1.67
Watershed A-2	0.86	1.71	3.36
Pond A Discharge	13.28	21.56	32.03

* From 2006 Lee's Summit Medical Center Stormwater Report

The information detailing this information is provided in **Appendix VII**.

4.0 Proposed Stormwater Design

4.1 Wetland Considerations

There are no proposed wetland impacts.

4.2 Post-Development Stormwater Conditions

The proposed improvements to the project area largely consists of impervious surfaces being placed over existing impervious area with small exception. Impervious area presently used for parking is proposed to be replaced with impervious area consisting of roof area for the MOB (including future expansion zones). The existing pond and berm have been reconfigured due to the necessary parking; therefore, a retaining wall with an integral handrail is proposed to achieve the required pond volume. The proposed project area of 8.09 acres overlays with some of the existing impervious area. The proposed building (with expansion zone) and parking covers 3.64 ac. total, with 1.78 ac. of impervious area removed (a difference of 1.86 ac. of additional impervious area). Note that the 2006 Stormwater report by GBA included an unused impervious area of 0.82 Ac. for future development. This area is considered in the "new" impervious area proposed as part of this development phase.

	Impervious Area			
		Removed	Added (with Expansion Zone)	
	Building	--	33,415	
	Pavement	70,405	113,448	
	Sidewalk	2,179	7,357	
	Concrete	5,090	4,403	**Total**
	Ft^2:	77,674	158,623	80,949
	Ac	1.78	3.64	1.86
	Additional Remaining Impervious area from 2006 Report:			0.82 Ac
	Net Additional Impervious:			**1.04 Ac**

In the post-development configuration, the stormwater flows generated by the site are directed to catch basins that route flows to the modified dry detention pond. Per TR-55 methodology, a CN value of 98 was used to reflect the imperviousness of the proposed building and paved areas located over both Type 'C' and 'D' soils, while the pervious areas had CN values of 74 assigned for the corresponding Type 'C' soil groups, respectively (see **Appendix VIII**). There are three (3) sub-basins defined to exist based on topography and site conditions: Basin A, Basin A-1 and Basin A-2 which discharge to Pond A and its integrated bioretention basin.

4.3 Stormwater Modeling

Modeling software, adICPR, ver 4.03.02 with PercPack by Streamline Technologies (ICPR), was used to quantify the pre- and post-development conditions based on the model parameters discussed above. The post-development configuration was modeled based on the proposed conditions. Additionally, a parallel "dummy" system was

modeled to reflect the conditions necessary for the Flat Release Rate criteria for the proposed impervious area being added that exceeds the previous permitted area.

Please note that a side drain analysis was performed using recovery software PONDs 3.3 by Devo Seereeram, Ph.D., P.E. and Robert D. Casper, M.E. ©2012 (PONDs). This software was used to evaluate the infiltration recovery of the limited water volume in the pond below the outflow control structure such that no volume remains after three days (72 hours), the typical spawning and development time necessary for mosquito eggs and larvae to mature into the adult phase of the life cycle. PONDs considers aquifer elevation, water table, soil parameters and side drain geometry to evaluate recovery of the remnant volume in the pond. The PONDs side drain analysis is provided in **Appendix VII**. The proposed pond's stage/ area/ volume quantities are tabulated here for ease of reference:

Stage (Pond A)	**Area** (sf)	**Area** (ac.)	**Volume** (ac-ft)	**Cumulative Volume** (ac-ft)
992.00	2,643	0.0607		
992.30	7,539	0.1731	0.04	0.04
993.00	8,801	0.2020	0.13	0.17
994.00	11,064	0.2540	0.23	0.39
995.00	11,902	0.2732	0.26	0.66
996.00	12,473	0.2863	0.28	0.94
997.00	13,067	0.3000	0.29	1.23
998.00	13,685	0.3142	0.31	1.54
999.00	14,328	0.3289	0.32	1.86
1000.00	14,984	0.3440	0.34	2.20
1000.50	15,312	0.3515	0.17	2.37

Rainfall amounts were obtained for NOAA's Precipitation Atlas (see **Appendix VII**). The rainfall depths for each of the design storms is 3.71", 5.66" and 9.25" for the 2/24, 10/24, and 100/24 storm events, respectively. ICPR storm attenuation analysis is provided in **Appendix V**.

4.4 Water Quantity

Per APWA, Division V, Section 5600, the design storms for this project are the 2-year/ 24-hour, 10-year/ 24-hour and 100-year/ 24-hour storm events. The design storms were evaluated using modeling software detailed in Section 4.3 for the pre- versus post-development flow rates discharging from the site. Resulting Pond A discharge rates are provided below:

	Post-Development Max. Flow (cfs)		
	02-Yr/ 24-Hr	10-Yr/ 24-Hr	100-Yr/ 24-Hr
Pond A Discharge	7.10	13.90	31.89

As discussed in Section 2.0 of this report, additional consideration was given to the release rate of stormwater under APWA 5600 §5608.4(c)1. The peak rate of discharge for the 2-Year, 10-Year and 100-Year events shall not exceed 0.5 cfs/ac, 2.0 cfs/ac, and 3.0 cfs/ac, respectively. The results of the proposed condition are reflected below:

	Post-Development Flat Release Rate (cfs)		
	02-Yr/ 24-Hr	10-Yr/ 24-Hr	100-Yr/ 24-Hr
Discharge Allowed (cfs)	0.50	2.00	3.00
Discharged Rate (cfs)	0.40	1.24	2.98

Per APWA 5608, 80% of the volume must recover within 24 hours from the peak flow. Per ICPR modeling, evaluation of this criterion is based on:

	Recovery Performance		
Pond Bottom: 992	02-Yr/ 24-Hr	10-Yr/ 24-Hr	100-Yr/ 24-Hr
Stage (ft)	996.35	997.92	1,000.05
Time Peak/ +24 (hrs)	12.25/ 36.25	12.25/ 36.25	12.25/ 36.25
Difference from Bottom (ft)	4.35	5.92	8.05
Stage at +24 hrs (ft)	992.43	992.44	992.45
Resulting Percentage	90%	93%	94%

An emergency overflow structure has been designed such that in the event of a total clog within the two control structure orifices, Pond A can discharge the 100-year flow from the pond at full capacity and provides 0.7 feet of freeboard from the site's retaining wall in the system (Pond A max. stage at elevation 1000.8 feet and min. top of retaining wall at 1001.5 feet). As this is a retro-fit project, it was agreed during conversations with City Staff that a freeboard of less than 1.0 would be considered as acceptable performance design.

4.5 Water Quality

Per the Lee's Summit Design and Construction Manual, Section 5600, a water quality element to the proposed stormwater management system design is required to manage the 90% mean annual storm event via 40 hour extended detention for all areas of the proposed development improvements. After discussions with City staff, the APWA/ MARC BMP Manual, dated October 2012 ("APWA Manual") was referenced to establish acceptable water quality treatment methodologies.

In consideration of the project site's constraints due to existing development limits, the additional proposed development, soil types present, and the water quantity requirements, Biofiltration was considered to be the most effective means of providing water quality. "Biofiltration" is defined as a small engineered and landscaped basin designed to filter runoff before release. Per Chapter 4.20 of the APWA Manual, the proposed project incrementally modifies a previously developed site; therefore, the pre-development/ post-development procedures for the seven (7) steps specified in this section were followed in determining the bases of design of the biofiltration area. The calculations for the necessary treatment, recovery and performance of the biofiltration bed are provided in **Appendix VII**.

5.0 Floodplain Considerations

FEMA FIRM Panel 29095C0439G, dated January 20, 2017, included in **Appendix II**, was referenced to determine if portions of the property lie within the 100-year flood plain. The FIRM indicates no portion of the proposed project or its associated development lies within the established flood plain.

6.0 Storm Drain Hydraulics

The proposed storm conveyance system, proposed to be mainly constructed of yard drains, catch basins and trench drains was evaluated using the Bentley StormCAD V8i, Series 5 (StormCAD) modeling software. A series of catchment areas with given Tc's, C coefficients, and areas subdivide the site into small contributing areas to each proposed inlet for the given 10-year design storm's stage at peak inflow resulting from the primary stormwater design for Pond A. The peak inflow of 49.25 cfs occurs at hour 12 with a resulting stage of 995.86. The hydrograph data is provided by *NOAA Atlas 14 Precipitation Intensity*; https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mo, provided for reference in **Appendix VIII**). Each catchment area will then calculate the amount of runoff collected by each inlet, and conveyed through the pipe network to the proposed stormwater treatment and storage systems. Profiles of the resulting HGLs are provided in the StormCAD modeling results in **Appendix VI**.

7.0 Conclusion

The proposed project to add an MOB to the existing Lee's Summit Medical Center campus, and its accompanying stormwater management system, has been shown not to adversely impact either the surrounding properties, or the subject property itself. Per the American Public Works Association, Division V, Section 5600 design regulations and design code criteria, the following parameters had to be considered for the pre-development vs. post-development conditions:

- Stormwater discharge rate for the 2- ,10- , and 100-year, 24-hour storm events;
- Flat Release Rate for added impervious area per APWA 5600 §5608.4(c)1
- Water Quality treatment
- Floodplain compensating storage, if necessary

The onsite detention area provides the necessary stormwater attenuation for the proposed development and performs as required. The primary component of the analysis of attenuation success is the comparison of pre- versus post-development flow rates discharged from the site which can be found in the table below.

	Max. Flow (cfs)		
	02-Yr/ 24-Hr	10-Yr/ 24-Hr	100-Yr/ 24-Hr
Pre Outflow	13.28	21.56	32.03
Post Outflow	7.10	13.90	31.89
Delta	(6.18)	(7.66)	(0.14)

Additionally, the Flat Release Rate requirement of APWA 5600 §5608.4(c)1 was demonstrated to have been met:

	Post-Development Flat Release Rate (cfs)		
	02-Yr/ 24-Hr	10-Yr/ 24-Hr	100-Yr/ 24-Hr
Discharge Allowed (cfs)	0.50	2.00	3.00
Discharged Rate (cfs)	0.40	1.24	2.98
Delta	(0.10)	(0.76)	(0.02)

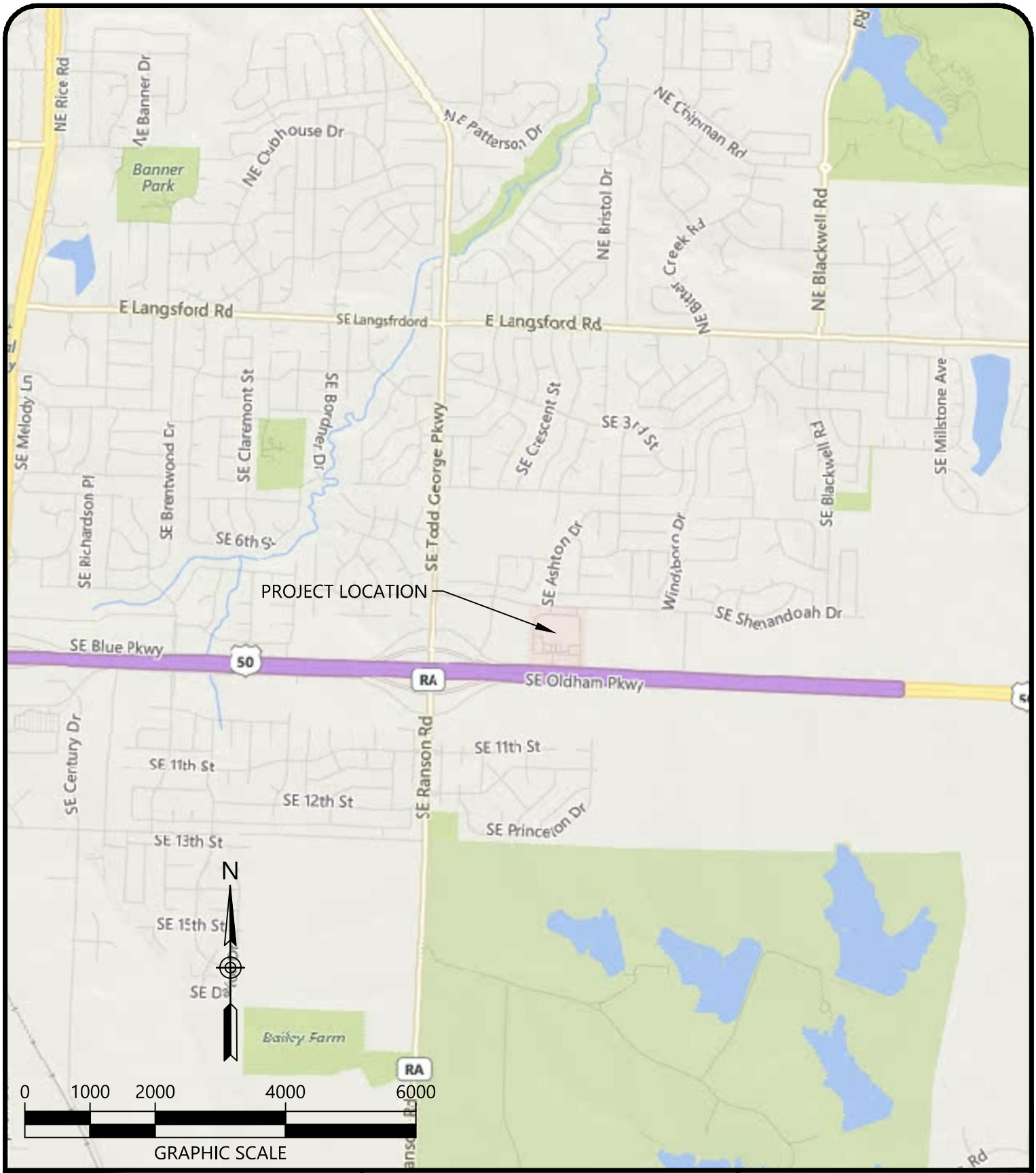
As for volume recovery, the following storm recoveries were observed per modeling:

	Recovery Performance		
Pond Bottom: 992	02-Yr/ 24-Hr	10-Yr/ 24-Hr	100-Yr/ 24-Hr
Stage (ft)	996.35	997.92	1,000.05
Time Peak/ +24 (hrs)	12.25/ 36.25	12.25/ 36.25	12.25/ 36.25
Difference from Bottom (ft)	4.35	5.92	8.05
Stage at +24 hrs (ft)	992.43	992.44	992.45
Resulting Percentage	90%	93%	94%

The proposed project, as described herein and in the plans provides levels of stormwater flow control, water quality improvements and site discharge controls that are not presently provided by the site's present stormwater system, even with the small increase in proposed impervious area. All things considered, the overall improvement to the site's stormwater management systems vastly extends beyond the almost trivial amount of additional impervious area.

Appendices

Appendix I – Vicinity & Aerial Maps



1615 EDGEWATER DRIVE,
SUITE 200.
ORLANDO, FLORIDA 32804
T 407.975.1273
F 407.975.1278
www.smeinc.com

PROJECT:
Lee's Summit MC
Medical Office Building
Lee's Summit, MO

TITLE:
Vicinity Map

PROJ # 527116043

DWG. NO.
EXH

DATE: 09/01/2017

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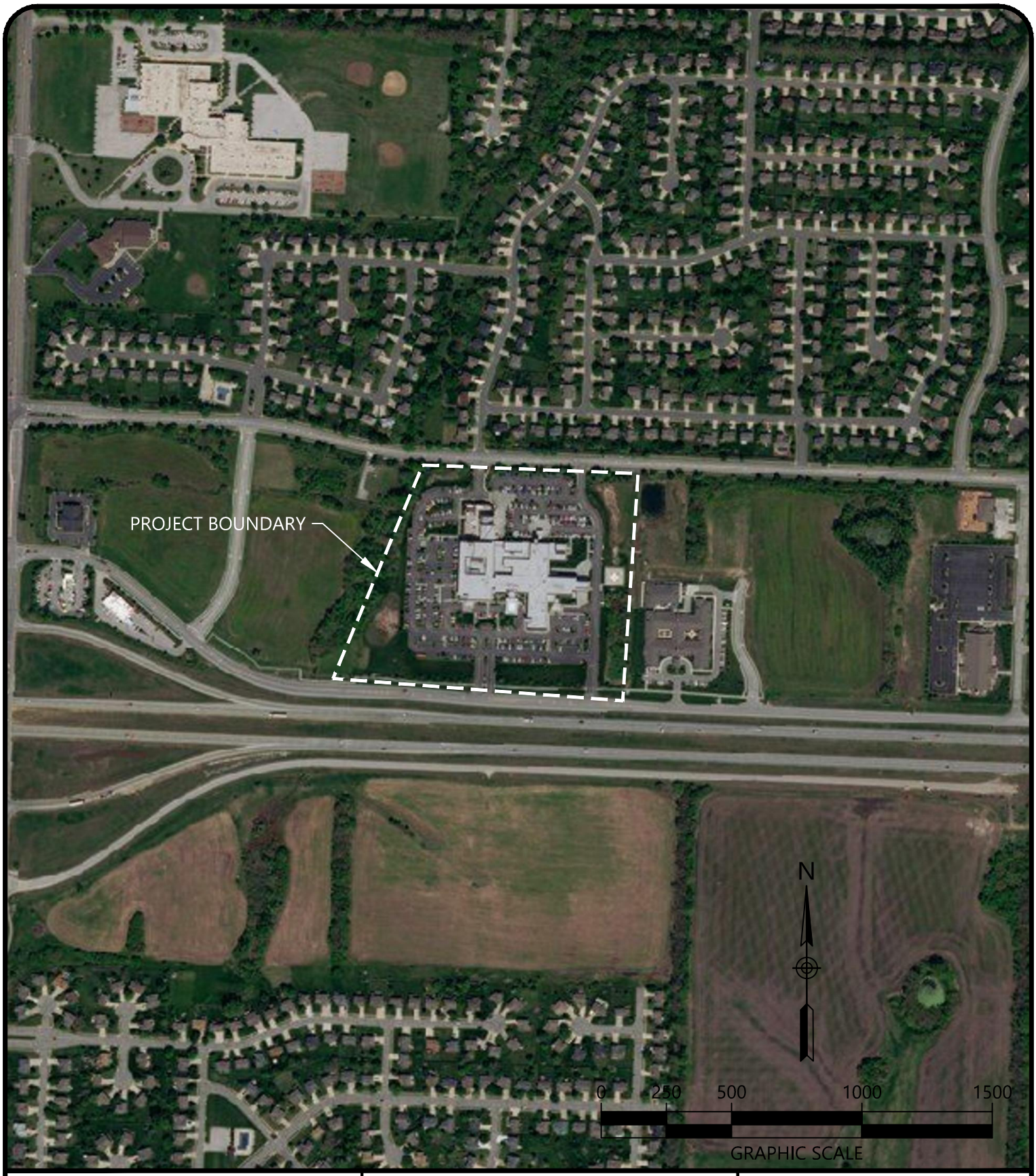

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TITLE:
Aerial Map

PROJ # 527116043

DWG. NO.
EXH

DATE: 09/01/2017

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Appendix II – Support Maps and Project Documents (FIRM Panel, Soils Maps, Property Appraiser's Card, etc.)

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

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

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Missouri State Plane West Zone (FIPS zone 2403). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from the U.S.D.A Farm Service National Agriculture ImageryProgram (NAIP) dated 2014. Produced at scale of 1:24,000.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

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

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

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

LEGEND

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

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

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A — Cross section line

23 — 23 — Transect line

Culvert

Bridge

45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

3100000 FT — 5000-foot ticks: Missouri State Plane West Zone (FIPS Zone 2403), Transverse Mercator projection

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 29, 2006

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
January 20, 2017 - to change Special Flood Hazard Areas.

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0439G

FIRM

FLOOD INSURANCE RATE MAP

JACKSON COUNTY, MISSOURI AND INCORPORATED AREAS

PANEL 439 OF 625
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JACKSON COUNTY, Unincorporated	290402	0439	G
LEE'S SUMMIT, CITY OF	290174	0439	G

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

MAP NUMBER
29095C0439G
MAP REVISED
JANUARY 20, 2017

Federal Emergency Management Agency

Map Scale: 1:2,540 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Jackson County, Missouri
Survey Area Data: Version 17, Sep 28, 2016

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

Date(s) aerial images were photographed: Oct 14, 2014—Oct 10, 2016

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Jackson County, Missouri (MO095)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10082	Arisburg-Urban land complex, 1 to 5 percent slopes	D	11.9	58.4%
10180	Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes	C	8.5	41.6%
Totals for Area of Interest			**20.4**	**100.0%**

Description

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

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

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

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

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

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

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

Jackson County, Missouri GIS

Property Summary for:
60-420-99-09-00-0-00-000

GIS Department • 415 E 12th St • Room G8 • Kansas City, MO 64106
Link to Report

Property Information

Parcel ID: 60-420-99-09-00-0-00-000

Addresses on this Parcel:

There are 3 addresses on this parcel.

(Primary)		
2100 SE SHENANDOAH DR LEE'S SUMMIT, MO 64063	1950 SE SHENANDOAH DR LEE'S SUMMIT, MO 64063	2000 SE SHENANDOAH DR LEE'S SUMMIT, MO 64063

Owner Information:
MIDWEST DIVISION LSH LLC
PO BOX 80610
INDIANAPOLIS, IN 46280

Mortgage Holder Information:
No Mortgage Holder Information.

Property Characteristics:
Year Built: NA
Living Area (Approx. sq. ft.): NA
Tax Neighborhood Code: 9978
Parcel Area (Approx.): 28.39 (acres), 1,239,168.70 (SqFt)

Property Class (PCA Code): Commercial Improved (code: 2010)

Land Use Type: Hospital (code: 2221)

Tax Code Area:
Code: 49
City: Lee's Summit
Fire: NA
Library: Mid Continent
School: Lees Summit R-7
Water: NA

Assessment Information:
Tax Year: 2017
Market Value: $40,856,600
Assessed Value: $13,072,753
Taxable Value: $1,384,935
Where are my tax dollars going?

Exemptions and Abatements Status (2014):
1) Description: D10 - D10 (N) TIF, D10 Placeholder for TIF not an Exemption

Community Improvement District (CID):
Property is not in a CID for which Jackson County collects a tax or assessment.

TIF Information:
TIF Plan: 50 Hwy Corridor TIF 10
TIF Project: 50 Hwy Corridor Project 1

Property Tax Account Summary

Direct Link to Jackson County Assessment Profile

Parcel Number	60-420-99-09-00-0-00-000	Property Address	2100 SE SHENANDOAH DR , LEES SUMMIT, MO 64063

General Information

Property Description	HCA MIDWEST, LOTS 1A & 1B---LOT 1A
Property Category	Land and Improvements
Status	Active, Host Other Property, Locally Assessed
Tax Code Area	049

Property Characteristics

Property Class	2010

Parties

Role	Percent	Name	Address
Taxpayer	100	MIDWEST DIVISION LSH LLC	C/O % DUCHARME, MCMILLEN & ASSOC, PO BOX 80610, INDIANAPOLIS, IN 46280
Owner	100	MIDWEST DIVISION LSH LLC	C/O % DUCHARME, MCMILLEN & ASSOC, PO BOX 80610, INDIANAPOLIS, IN 46280

Property Values

Value Type	Tax Year 2017	Tax Year 2016	Tax Year 2015	Tax Year 2014	Tax Year 2013
Market Value Total	40,856,600	38,500,324	38,500,324	38,500,000	38,500,000
Taxable Value Total	1,384,935	1,384,935	1,384,935	1,384,935	1,384,935
Assessed Value Total	13,072,753	12,318,745	12,318,745	12,318,706	12,318,706

Active Exemptions

D10 (N) TIF

Events

Effective Date	Entry Date-Time	Type	Remarks
12/10/2007	12/10/2007 12:17	Created by Seg/Merge	Created by Seg/Merge 017341, Effective: 01/01/2008 by shelpau

No Charges are currently due.

No Charge Amounts are currently due for this property. If you believe this is incorrect, please contact the Taxpayer Services Unit at (816) 881-3232.

NOTICE: Telephones are staffed during regular business hours (8am to 5pm, Monday through Friday, excluding holidays observed by Jackson County).

Distribution of Current Taxes

District	Amount
BOARD OF DISABLED SERVICES	1,022.080000
CITY - LEES SUMMIT	21,325.230000
JACKSON COUNTY	6,959.300000
LEES SUMMIT SCHOOL R-VII	83,036.550000
MENTAL HEALTH	1,663.300000
METRO JUNIOR COLLEGE	3,239.360000
MID-CONTINENT LIBRARY	4,366.700000
STATE BLIND PENSION	415.480000
CITY - LEES SUMMIT	960,108.790000
REPLACEMENT TAX	157,110.160000
STATE BLIND PENSION	3,280.140000
REPLACEMENT TAX	19,898.500000

Receipts

Date	Receipt No.	Amount Applied	Amount Due	Tendered	Change
01/04/2017 14:47	10121405	1,262,425.59	1,262,425.59	1,262,425.59	0.00
01/19/2016 11:11	9593769	1,259,296.63	1,259,296.63	1,259,296.63	0.00
12/22/2014 08:17	8893891	1,284,250.91	1,284,250.91	1,284,250.91	0.00
01/30/2014 11:27	8484908	1,277,069.10	1,277,069.10	1,277,069.10	0.00
12/21/2012 00:00	7786343	1,276,231.44	1,276,231.44	1,276,231.44	0.00
03/09/2012 08:45	7417464	55,687.99	199,741.04	199,741.04	0.00
01/04/2012 00:00	7350831	1,222,699.22	1,422,440.26	1,222,699.22	0.00

REMINDER: Occasionally, the parcel number for a real estate parcel changes, due to a parcel segregation or merge. In such a case, a search of the new parcel number may not reflect tax delinquency or a full tax history concerning that parcel. You may wish to contact us to obtain that information. Or, you may wish to search all relevant parcel numbers of parcels involved in such a segregation or merge. Click here to begin a search on this website to see if a parcel was involved in a segregation or merge occurring within the past five years and to see a list of parent parcel(s) and child parcel(s) involved. **NOTE**: Information concerning a segregation or merge occurring more than five years prior to the search is not available on this website.

ATTENTION: This website will close at 11:00 p.m. on December 31.
Taxes paid online after the website reopens in the New Year will accrue interest, penalties and fees.

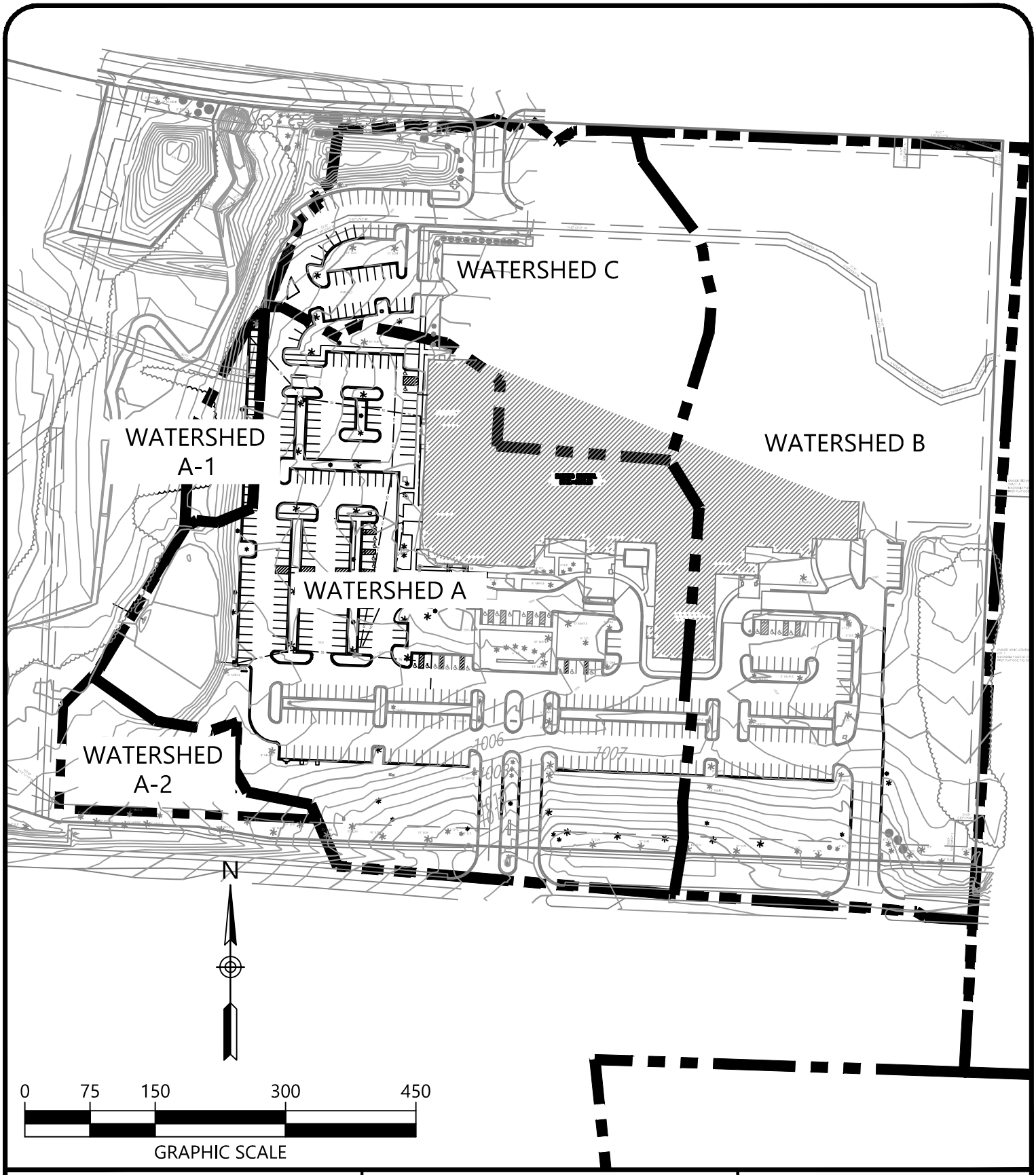
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix III - Pre-Development Drainage Basin Map



1615 EDGEWATER DRIVE,
SUITE 200.
ORLANDO, FLORIDA 32804
T 407.975.1273
F 407.975.1278
www.smeinc.com

PROJECT:
Lee's Summit MC
Medical Office Building
Lee's Summit, MO

TITLE:
Pre Basin Map

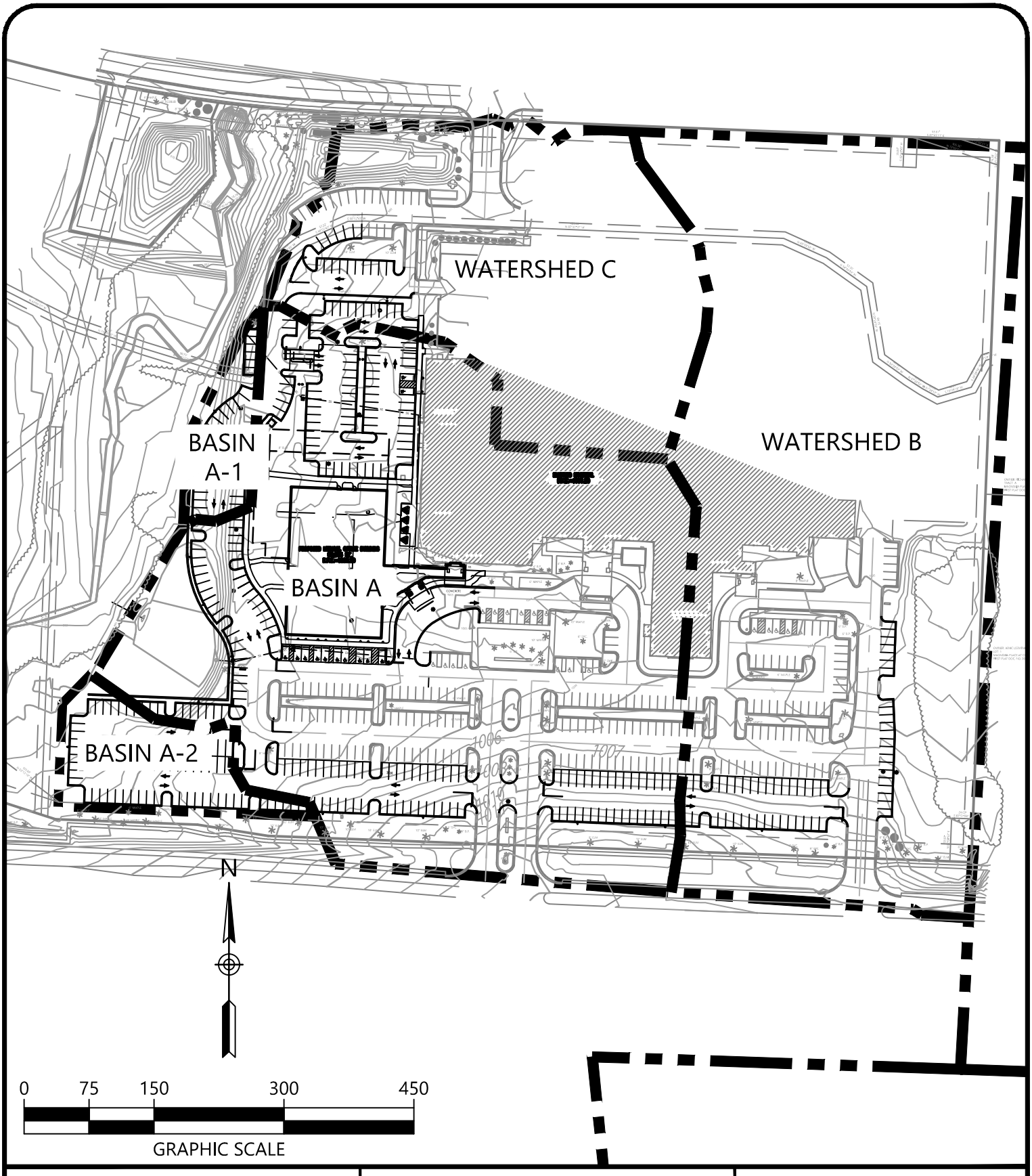
PROJ # 527116043

DWG. NO.
EXH

DATE: 09/01/2017

G:\Projects\2016\527116043\Engineering\dwg\527116043_Post Development Basin Map.dwg-PRE Feb 14, 2018 OBerryhill

Appendix IV - Post-Development Drainage Map



1615 EDGEWATER DRIVE,
SUITE 200.
ORLANDO, FLORIDA 32804
T 407.975.1273
F 407.975.1278
www.smeinc.com

PROJECT:
Lee's Summit MC
Medical Office Building
Lee's Summit, MO

TITLE:
Post Basin Map

PROJ # 527116043

DWG. NO.
EXH

DATE: 09/01/2017

G:\Projects\2016\527116043\Engineering\dwg\527116043_Post Development Basin Map.dwg-POST Feb 14, 2018 OBerryhill

Appendix V – ICPR Pre-Development Modeling

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
Boundary	BASE	002Yr024Hr-Pre	0.00	991.86	991.86	0.0000	0	12.25	1.27	0.00	0.00
Boundary	BASE	010Yr024Hr-Pre	0.00	991.86	991.86	0.0000	0	12.24	2.54	0.00	0.00
Boundary	BASE	100Yr024Hr-Pre	0.00	991.86	991.86	0.0000	0	12.24	5.00	0.00	0.00

```
            Basin Name: Watershed A-1
            Group Name: BASE
            Simulation: 002Yr024Hr-Pre
             Node Name: Boundary
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
   Spec Time Inc (min): 0.80
   Comp Time Inc (min): 0.80
         Rainfall File: Scsiii
  Rainfall Amount (in): 3.710
  Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 6.00
      Time Shift (hrs): 0.00
            Area (ac): 0.325
  Vol of Unit Hyd (in): 1.000
          Curve Number: 76.000
              DCIA (%): 0.000

        Time Max (hrs): 12.25
        Flow Max (cfs): 0.42
    Runoff Volume (in): 1.519
   Runoff Volume (ft3): 1792


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

            Basin Name: Watershed A-2
            Group Name: BASE
            Simulation: 002Yr024Hr-Pre
             Node Name: Boundary
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
   Spec Time Inc (min): 0.80
   Comp Time Inc (min): 0.80
         Rainfall File: Scsiii
  Rainfall Amount (in): 3.710
  Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 6.00
      Time Shift (hrs): 0.00
            Area (ac): 0.655
  Vol of Unit Hyd (in): 1.000
          Curve Number: 76.000
              DCIA (%): 0.000

        Time Max (hrs): 12.25
        Flow Max (cfs): 0.86
    Runoff Volume (in): 1.519
   Runoff Volume (ft3): 3612


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

            Basin Name: Watershed A-1
            Group Name: BASE
            Simulation: 010Yr024Hr-Pre
             Node Name: Boundary
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
```

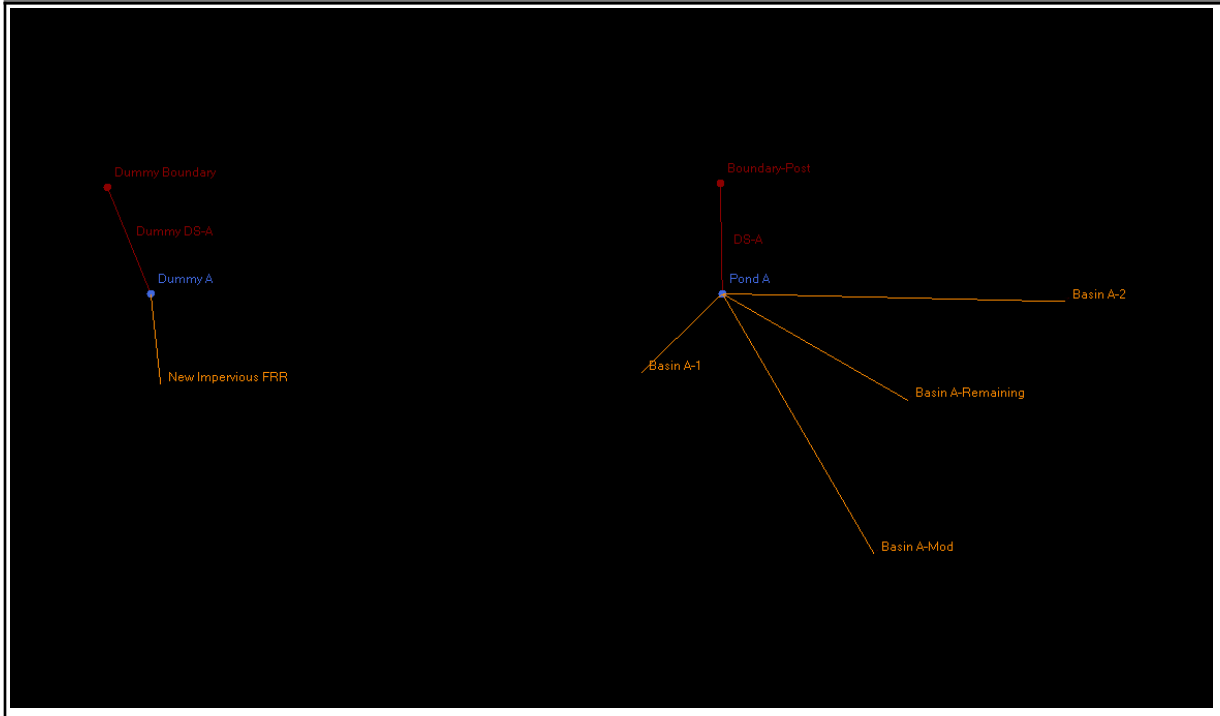
```
         Peaking Fator: 256.0
    Spec Time Inc (min): 0.80
    Comp Time Inc (min): 0.80
          Rainfall File: Scsiii
   Rainfall Amount (in): 5.660
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 6.00
       Time Shift (hrs): 0.00
              Area (ac): 0.325
   Vol of Unit Hyd (in): 1.000
          Curve Number: 76.000
              DCIA (%): 0.000

        Time Max (hrs): 12.25
        Flow Max (cfs): 0.85
     Runoff Volume (in): 3.088
    Runoff Volume (ft3): 3643


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

            Basin Name: Watershed A-2
            Group Name: BASE
            Simulation: 010Yr024Hr-Pre
             Node Name: Boundary
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 0.80
    Comp Time Inc (min): 0.80
          Rainfall File: Scsiii
   Rainfall Amount (in): 5.660
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 6.00
       Time Shift (hrs): 0.00
              Area (ac): 0.655
   Vol of Unit Hyd (in): 1.000
          Curve Number: 76.000
              DCIA (%): 0.000

        Time Max (hrs): 12.25
        Flow Max (cfs): 1.71
     Runoff Volume (in): 3.088
    Runoff Volume (ft3): 7341


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

            Basin Name: Watershed A-1
            Group Name: BASE
            Simulation: 100Yr024Hr-Pre
             Node Name: Boundary
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 0.80
    Comp Time Inc (min): 0.80
          Rainfall File: Scsiii
   Rainfall Amount (in): 9.250
   Storm Duration (hrs): 24.00
                 Status: Onsite
```

```
     Time of Conc (min): 6.00
       Time Shift (hrs): 0.00
             Area (ac): 0.325
   Vol of Unit Hyd (in): 1.000
          Curve Number: 76.000
              DCIA (%): 0.000

         Time Max (hrs): 12.24
         Flow Max (cfs): 1.67
     Runoff Volume (in): 6.305
    Runoff Volume (ft3): 7439


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

             Basin Name: Watershed A-2
             Group Name: BASE
             Simulation: 100Yr024Hr-Pre
              Node Name: Boundary
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 0.80
    Comp Time Inc (min): 0.80
         Rainfall File: Scsiii
   Rainfall Amount (in): 9.250
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 6.00
       Time Shift (hrs): 0.00
             Area (ac): 0.655
   Vol of Unit Hyd (in): 1.000
          Curve Number: 76.000
              DCIA (%): 0.000

         Time Max (hrs): 12.24
         Flow Max (cfs): 3.36
     Runoff Volume (in): 6.305
    Runoff Volume (ft3): 14992
```

Appendix VI - ICPR Post-Development Modeling

Storm Routing

Background Image: NodalDiagram



Manual Basin: Basin A-1

Scenario: Primary Model
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
0.1900	Impervious	C	
0.1400	Open Space-Good Cond.	C	

Comment:

Manual Basin: Basin A-2

Scenario: Primary Model
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
0.6550	Impervious	C	

Comment:

Manual Basin: Basin A-Mod

Scenario: Primary Model
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: Uh484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
1.2050	Impervious	D	

Comment:

Manual Basin: Basin A-Remaining

Scenario: Primary Model
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
4.1000	Impervious	D	
0.9600	Impervious	D	
0.8400	Impervious	C	

Comment:

Manual Basin: New Impervious FRR

Scenario: Primary Model
Node: Dummy A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
1.0400	Impervious	C	

Comment: A false system to analyze a portion of the contributing basins to Proposed Pond A for Flat Release Rate evaluation

Curve Number: Icpr3 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Impervious	C	98.0
Impervious	D	98.0
Open Space-Good Cond.	C	74.0

Node: Boundary-Post

Scenario: Primary Model
Type: Time/Stage

Base Flow: 0.00 cfs
Initial Stage: 991.86 ft
Warning Stage: 991.86 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	991.86
0	0	0	999.0000	991.86

Comment:

Node: Dummy A

Scenario: Primary Model
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 992.00 ft
Warning Stage: 999.50 ft

Stage [ft]	Area [ac]	Area [ft2]
992.00	0.0607	2644
992.30	0.1731	7540
993.00	0.1946	8477
994.00	0.2540	11064
995.00	0.2732	11901
996.00	0.2863	12471
997.00	0.3000	13068
998.00	0.3142	13687
999.00	0.3289	14327
1000.00	0.3440	14985
1000.50	0.3515	15311

Comment: A false system to analyze a portion of the contributing basins to Proposed Pond A for Flat Release Rate evaluation

Node: Dummy Boundary

Scenario: Primary Model
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 991.86 ft
Warning Stage: 991.86 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	991.86
0	0	0	999.0000	991.86

Comment: A false system to analyze a portion of the contributing basins to Proposed Pond A for Flat Release Rate evaluation

Node: Pond A

Scenario: Primary Model
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 992.00 ft
Warning Stage: 999.50 ft

Stage [ft]	Area [ac]	Area [ft2]
992.00	0.0607	2644
992.30	0.1731	7540
993.00	0.1946	8477
994.00	0.2540	11064
995.00	0.2732	11901
996.00	0.2863	12471
997.00	0.3000	13068
998.00	0.3142	13687
999.00	0.3289	14327
1000.00	0.3440	14985
1000.50	0.3515	15311

Comment:

Drop Structure Link: DS-A

Scenario: Primary Model
From Node: Pond A
To Node: Boundary-Post
Link Count: 1
Flow Direction: Both
Solution: Combine
Increments: 10
Pipe Count: 1
Damping: 0.0000 ft
Length: 55.00 ft
FHWA Code: 1
Entr Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Bend Location: 0.00 ft
Energy Switch: Energy

Upstream Pipe

Invert: 992.00 ft
Manning's N: 0.0130

Geometry: Circular

Max Depth: 2.50 ft

Bottom Clip

Default: 0.00 ft
Op Table:
Ref Node:
Manning's N: 0.0000

Top Clip

Default: 0.00 ft
Op Table:
Ref Node:
Manning's N: 0.0000

Downstream Pipe

Invert: 991.86 ft
Manning's N: 0.0130

Geometry: Circular

Max Depth: 2.50 ft

Bottom Clip

Default: 0.00 ft
Op Table:
Ref Node:
Manning's N: 0.0000

Top Clip

Default: 0.00 ft
Op Table:
Ref Node:
Manning's N: 0.0000

Pipe Comment:

Weir Component

Weir: 1

Bottom Clip

Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Circular
Invert:	992.33 ft
Control Elevation:	992.33 ft
Max Depth:	0.33 ft

Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients

Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Weir Component

Weir:	2
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Circular
Invert:	993.00 ft
Control Elevation:	993.00 ft
Max Depth:	1.00 ft

Bottom Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients

Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Weir Component

Weir:	3
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Rectangular
Invert:	997.00 ft
Control Elevation:	997.00 ft
Max Depth:	1.58 ft
Max Width:	2.00 ft
Fillet:	0.00 ft

Bottom Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients

Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: Dummy DS-A		Upstream Pipe		Downstream Pipe	
Scenario:	Primary Model	Invert:	992.00 ft	Invert:	991.86 ft
From Node:	Dummy A	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Dummy Boundary	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.50 ft	Max Depth:	2.50 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	10	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	55.00 ft	Top Clip			
FHWA Code:	1	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.00	Op Table:		Op Table:	
Exit Loss Coef:	1.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 ft				
Energy Switch:	Energy				

Pipe Comment:

Weir Component		Bottom Clip	
Weir:	1	Default:	0.00 ft
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft	Top Clip	
Weir Type:	Sharp Crested Vertical	Default:	0.00 ft
Geometry Type:	Circular	Op Table:	
Invert:	992.33 ft	Ref Node:	
Control Elevation:	992.33 ft	Discharge Coefficients	
Max Depth:	0.33 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: A false system to analyze a portion of the contributing basins to Proposed Pond A for Flat Release Rate evaluation

Weir Component		Bottom Clip	
Weir:	2	Default:	0.00 ft
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft	Top Clip	
Weir Type:	Sharp Crested Vertical	Default:	0.00 ft
Geometry Type:	Circular	Op Table:	
Invert:	993.00 ft	Ref Node:	
Control Elevation:	993.00 ft	Discharge Coefficients	
Max Depth:	1.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: A false system to analyze a portion of the contributing basins to Proposed Pond A for Flat Release Rate evaluation

Weir Component		Bottom Clip	
Weir:	3	Default:	0.00 ft
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft	**Top Clip**	
Weir Type:	Sharp Crested Vertical	Default:	0.00 ft
Geometry Type:	Rectangular	Op Table:	
Invert:	997.00 ft	Ref Node:	
Control Elevation:	997.00 ft	**Discharge Coefficients**	
Max Depth:	1.25 ft	Weir Default:	3.200
Max Width:	2.00 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Weir Comment: A false system to analyze a portion of the contributing basins to Proposed Pond A for Flat Release Rate evaluation

Drop Structure Comment: A false system to analyze a portion of the contributing basins to Proposed Pond A for Flat Release Rate evaluation

Weir Link: EmOvflw		Bottom Clip	
Scenario:	Primary Model	Default:	0.00 ft
From Node:	Pond A	Op Table:	
To Node:	Boundary-Post	Ref Node:	
Link Count:	1	**Top Clip**	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Rectangular	**Discharge Coefficients**	
Invert:	1001.00 ft	Weir Default:	2.800
Control Elevation:	1001.00 ft	Weir Table:	
Max Depth:	9999.00 ft	Orifice Default:	0.600
Max Width:	218.00 ft	Orifice Table:	
Fillet:	0.00 ft		

Comment:

Simulation: 002Yr24Hr-Post	
Scenario:	Primary Model
Run Date/Time:	4/25/2019 3:27:35 PM
Program Version:	ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	60.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		60.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000
0	0	0	30.0000	20.0000
0	0	0	60.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000
0	0	0	30.0000	15.0000
0	0	0	60.0000	20.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: ICPR3

Unit Hydrograph Folder: ICPR3

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: ICPR3

Green-Ampt Set: ICPR3

Vertical Layers Set:

Impervious Set: ICPR3

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight Fact: 0.5 dec

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: Scsii-24

Edge Length Option: Automatic

Rainfall Amount: 3.71 in
Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 113 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010Yr24Hr-Post

Scenario: Primary Model
Run Date/Time: 4/25/2019 3:27:53 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	60.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		60.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000
0	0	0	30.0000	20.0000
0	0	0	60.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000
0	0	0	30.0000	15.0000
0	0	0	60.0000	20.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	ICPR3
Unit Hydrograph Folder:	ICPR3

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	ICPR3
Green-Ampt Set:	ICPR3
Vertical Layers Set:	
Impervious Set:	ICPR3

Tolerances & Options

Time Marching:	SAOR
Max Iterations:	6
Over-Relax Weight Fact:	0.5 dec
dZ Tolerance:	0.0010 ft
Max dZ:	1.0000 ft
Link Optimizer Tol:	0.0001 ft
Edge Length Option:	Automatic
IA Recovery Time:	24.0000 hr
Manual Basin Rain Opt:	Global
Rainfall Name:	Scsii-24
Rainfall Amount:	5.66 in
Storm Duration:	24.0000 hr
Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (1D):	113 ft2
Energy Switch (1D):	Energy

Comment:

Simulation: 100Yr24Hr-Post

Scenario:	Primary Model
Run Date/Time:	4/25/2019 3:28:12 PM
Program Version:	ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	60.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		60.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000
0	0	0	30.0000	20.0000
0	0	0	60.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000
0	0	0	30.0000	15.0000
0	0	0	60.0000	20.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: ICPR3

Unit Hydrograph Folder: ICPR3

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: ICPR3

Green-Ampt Set: ICPR3

Vertical Layers Set:

Impervious Set: ICPR3

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight Fact: 0.5 dec

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: Scsii-24

Rainfall Amount: 9.25 in

Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area (1D): 113 ft2

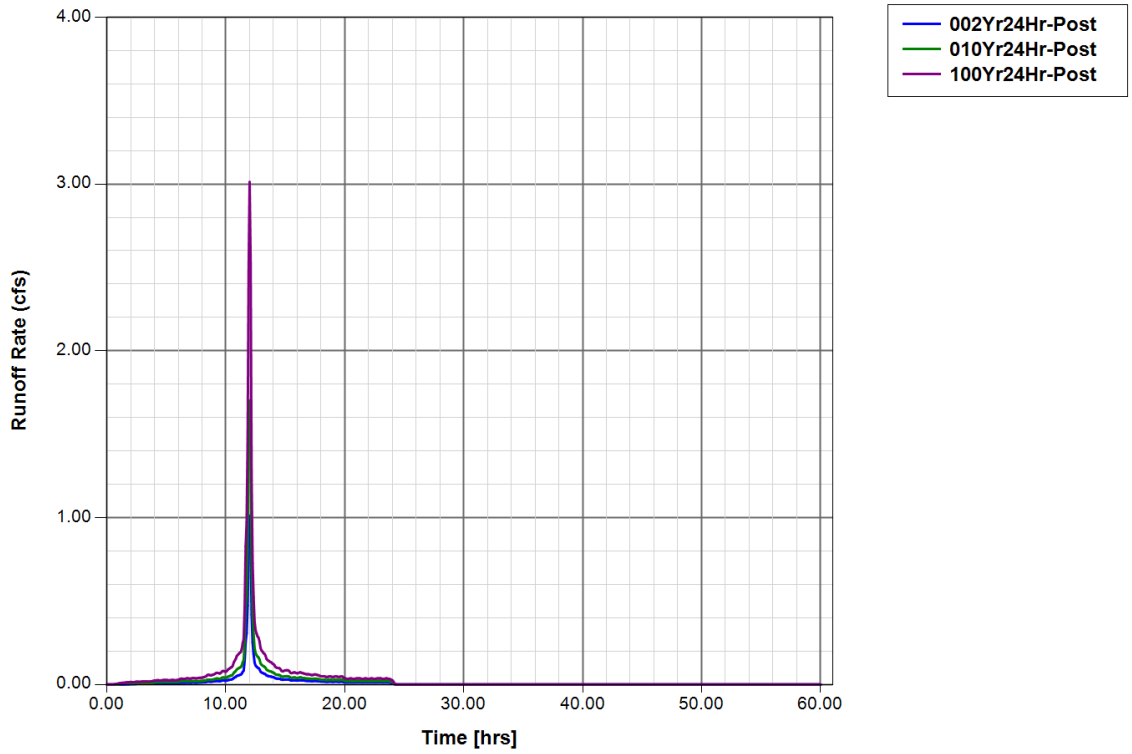
Energy Switch (1D): Energy

Comment:

Manual Basin Runoff Summary [Primary Model]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Basin A-1	002Yr24Hr-Post	1.03	12.0167	3.71	2.60	0.3300	89.4	0.00	0.00
Basin A-1	010Yr24Hr-Post	1.73	12.0167	5.66	4.36	0.3300	88.5	0.00	0.00
Basin A-1	100Yr24Hr-Post	3.05	12.0167	9.25	7.78	0.3300	87.7	0.00	0.00

Manual Basin Runoff Rate: Basin A-1 [Primary Model]

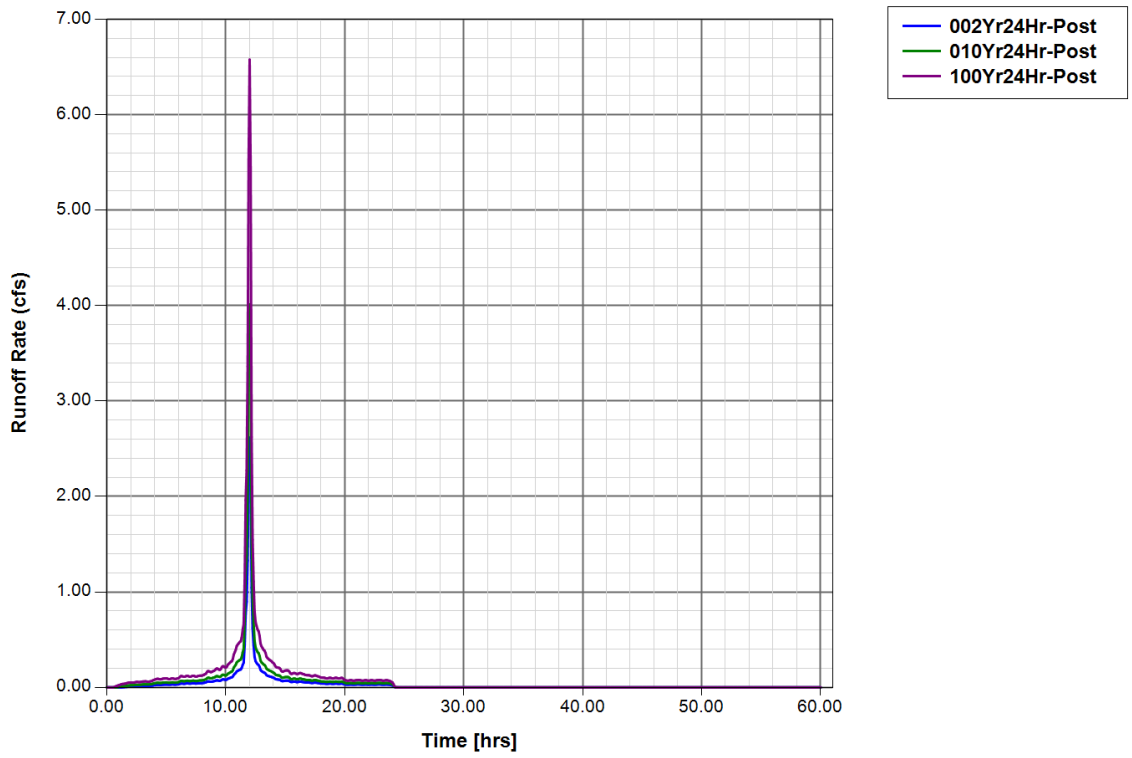


Manual Basin Runoff Summary [Primary Model]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Basin A-2	002Yr24Hr-Post	2.64	12.0167	3.71	3.48	0.6550	98.0	0.00	0.00

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Basin A-2	010Yr24Hr-Post	4.05	12.0167	5.66	5.44	0.6550	98.0	0.00	0.00
Basin A-2	100Yr24Hr-Post	6.63	12.0167	9.25	9.03	0.6550	98.0	0.00	0.00

Manual Basin Runoff Rate: Basin A-2 [Primary Model]

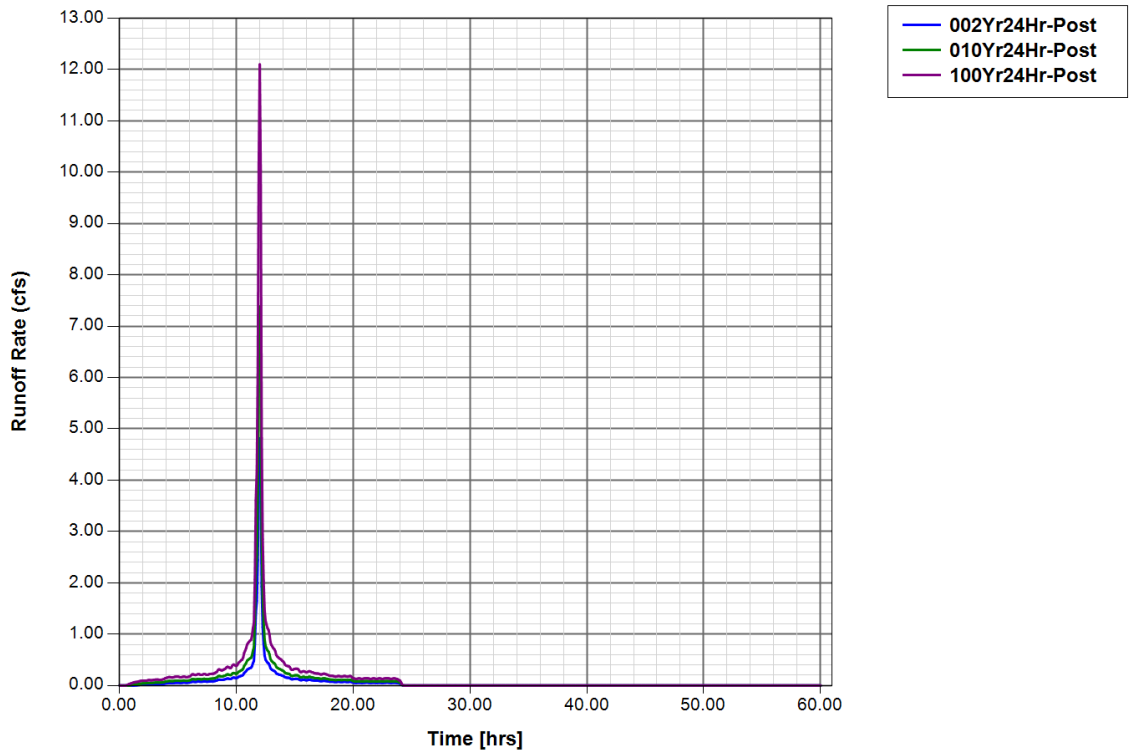


Manual Basin Runoff Summary [Primary Model]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Basin A-Mod	002Yr24Hr-Post	4.86	12.0167	3.71	3.48	1.2050	98.0	0.00	0.00
Basin A-Mod	010Yr24Hr-Post	7.45	12.0167	5.66	5.44	1.2050	98.0	0.00	0.00
Basin	100Yr24Hr	12.20	12.0167	9.25	9.03	1.2050	98.0	0.00	0.00

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
A-Mod	-Post								

Manual Basin Runoff Rate: Basin A-Mod [Primary Model]

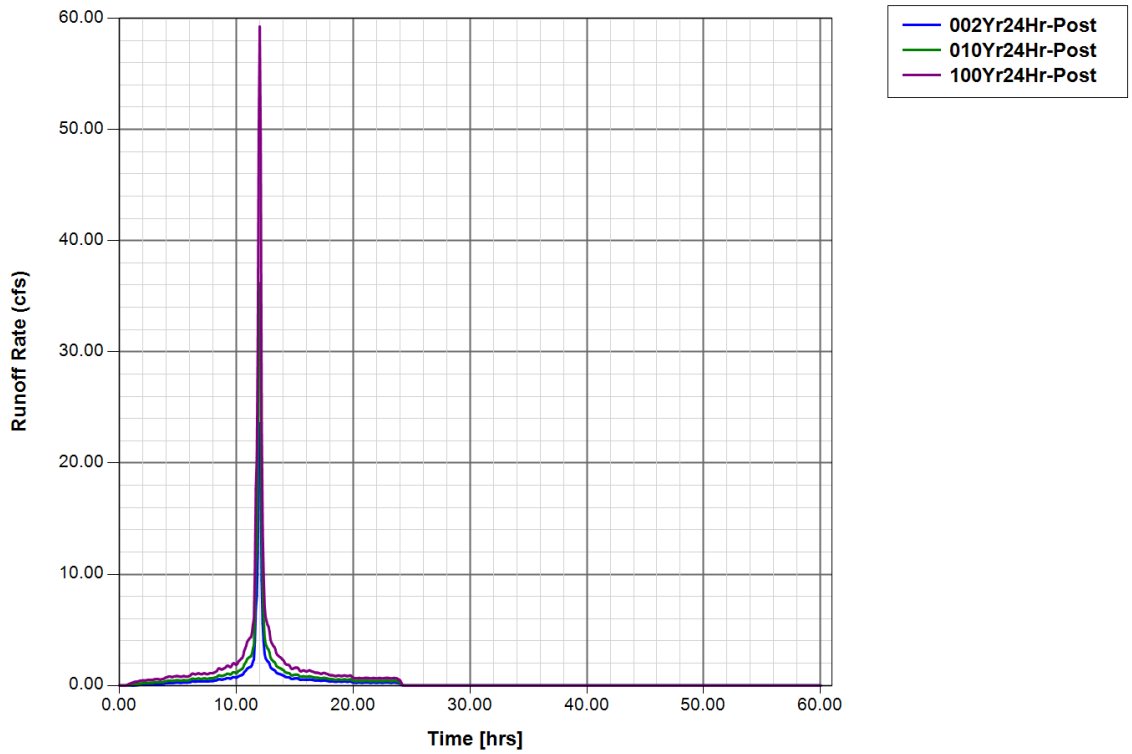


Manual Basin Runoff Summary [Primary Model]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Basin A-Remaining	002Yr24Hr-Post	23.78	12.0167	3.71	3.48	5.9000	98.0	0.00	0.00
Basin A-Remaining	010Yr24Hr-Post	36.47	12.0167	5.66	5.44	5.9000	98.0	0.00	0.00
Basin A-Remaini	100Yr24Hr-Post	59.76	12.0167	9.25	9.03	5.9000	98.0	0.00	0.00

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
ng									

Manual Basin Runoff Rate: Basin A-Remaining [Primary Model]

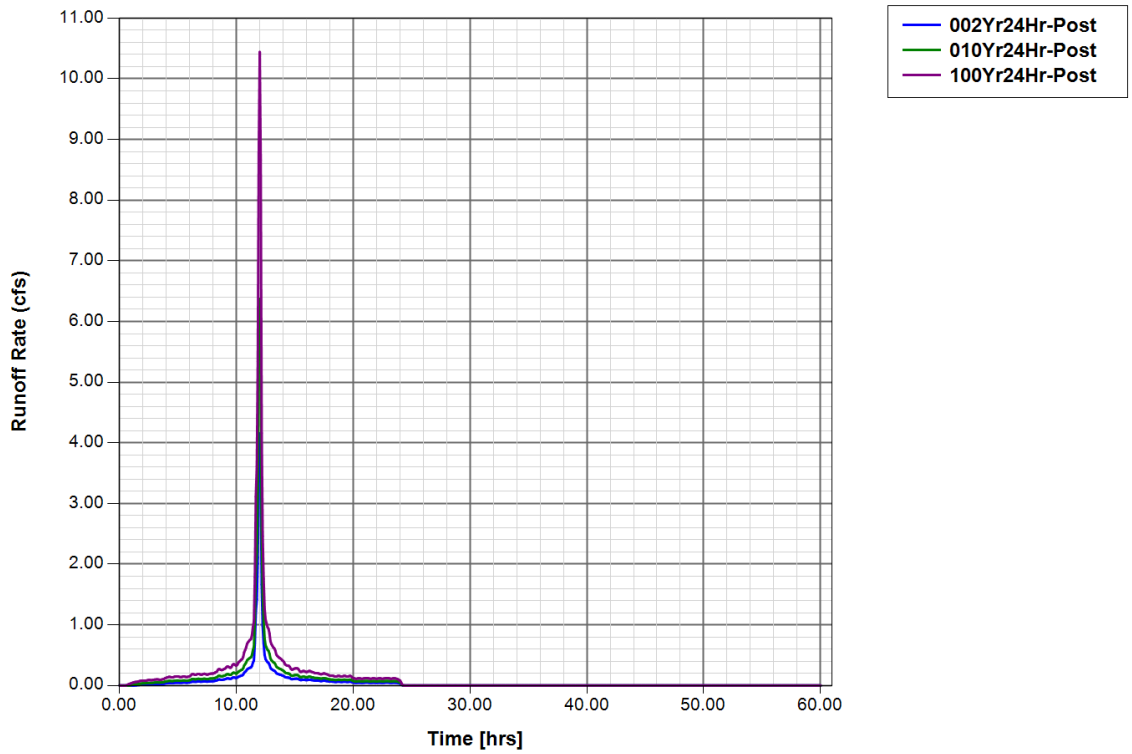


Manual Basin Runoff Summary [Primary Model]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
New Impervious FRR	002Yr24Hr-Post	4.19	12.0167	3.71	3.48	1.0400	98.0	0.00	0.00
New Impervious FRR	010Yr24Hr-Post	6.43	12.0167	5.66	5.44	1.0400	98.0	0.00	0.00
New Imperviou	100Yr24Hr-Post	10.53	12.0167	9.25	9.03	1.0400	98.0	0.00	0.00

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
s FRR									

Manual Basin Runoff Rate: New Impervious FRR [Primary Model]



Pond A Maximum Stage for the Storm Events

Sim	Node Name	Relative Time [hrs]	Warning Stage [ft]	Maximum Stage [ft]	Time to Maximum Stage [hrs]
002Yr24Hr-Post	Pond A	60.0140	999.50	996.35	12.2656
010Yr24Hr-Post	Pond A	60.0037	999.50	997.92	12.2157
100Yr24Hr-Post	Pond A	60.0047	999.50	1000.05	12.1685

Pond A Maximum Discharge Rates from Multi-Stage Control Structure

Sim	Link Name	From Node Name	To Node Name	Relative Time [hrs]	Maximum Flow Rate [cfs]	Time to Maximum Flow Rate [hrs
002Yr24Hr-Post	DS-A	~~D~DS-A~N	Boundary-Post	29.7640	7.10	12.2723
010Yr24Hr-Post	DS-A	~~D~DS-A~N	Boundary-Post	29.7537	13.90	12.2137
100Yr24Hr-Post	DS-A	~~D~DS-A~N	Boundary-Post	29.7627	31.89	12.1678

Sim	Link Name	From Node Name	To Node Name	Relative Time [hrs]	Maximum Flow Rate [cfs]	Time to Maximum Flow Rate [hrs
002Yr24Hr-Post	Dummy DS-A	~~D~Dummy DS-A~N	Dummy Boundary	29.7640	0.40	12.6700
010Yr24Hr-Post	Dummy DS-A	~~D~Dummy DS-A~N	Dummy Boundary	29.7537	1.24	12.2982
100Yr24Hr-Post	Dummy DS-A	~~D~Dummy DS-A~N	Dummy Boundary	29.7627	2.98	12.2204

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
002Yr24Hr-Post	Pond A	0.0000	992.00	0.00
002Yr24Hr-Post	Pond A	0.2511	992.00	0.00
002Yr24Hr-Post	Pond A	0.5050	992.00	0.00
002Yr24Hr-Post	Pond A	0.7556	992.00	0.00
002Yr24Hr-Post	Pond A	1.0021	992.00	0.00
002Yr24Hr-Post	Pond A	1.2546	992.00	0.02
002Yr24Hr-Post	Pond A	1.5071	992.01	0.05
002Yr24Hr-Post	Pond A	1.7589	992.03	0.08
002Yr24Hr-Post	Pond A	2.0069	992.06	0.11
002Yr24Hr-Post	Pond A	2.2514	992.08	0.12
002Yr24Hr-Post	Pond A	2.5018	992.11	0.15
002Yr24Hr-Post	Pond A	2.7555	992.14	0.15
002Yr24Hr-Post	Pond A	3.0044	992.17	0.18
002Yr24Hr-Post	Pond A	3.2509	992.20	0.20
002Yr24Hr-Post	Pond A	3.5043	992.23	0.19
002Yr24Hr-Post	Pond A	3.7521	992.26	0.22
002Yr24Hr-Post	Pond A	4.0057	992.29	0.28
002Yr24Hr-Post	Pond A	4.2504	992.33	0.32
002Yr24Hr-Post	Pond A	4.5010	992.36	0.31
002Yr24Hr-Post	Pond A	4.7560	992.40	0.35
002Yr24Hr-Post	Pond A	5.0026	992.44	0.36
002Yr24Hr-Post	Pond A	5.2521	992.48	0.34
002Yr24Hr-Post	Pond A	5.5065	992.51	0.38
002Yr24Hr-Post	Pond A	5.7533	992.55	0.36
002Yr24Hr-Post	Pond A	6.0003	992.58	0.39
002Yr24Hr-Post	Pond A	6.2515	992.62	0.49
002Yr24Hr-Post	Pond A	6.5008	992.66	0.47
002Yr24Hr-Post	Pond A	6.7502	992.69	0.52
002Yr24Hr-Post	Pond A	7.0000	992.73	0.48
002Yr24Hr-Post	Pond A	7.2516	992.76	0.53
002Yr24Hr-Post	Pond A	7.5052	992.79	0.49
002Yr24Hr-Post	Pond A	7.7508	992.82	0.54
002Yr24Hr-Post	Pond A	8.0009	992.86	0.55
002Yr24Hr-Post	Pond A	8.2522	992.89	0.60
002Yr24Hr-Post	Pond A	8.5020	992.94	0.77
002Yr24Hr-Post	Pond A	8.7511	992.99	0.72
002Yr24Hr-Post	Pond A	9.0006	993.04	0.79
002Yr24Hr-Post	Pond A	9.2530	993.09	0.90
002Yr24Hr-Post	Pond A	9.5006	993.14	0.84
002Yr24Hr-Post	Pond A	9.7541	993.19	1.02
002Yr24Hr-Post	Pond A	10.0048	993.24	0.96
002Yr24Hr-Post	Pond A	10.2505	993.28	1.15

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
002Yr24Hr-Post	Pond A	10.5022	993.34	1.28
002Yr24Hr-Post	Pond A	10.7514	993.40	1.73
002Yr24Hr-Post	Pond A	11.0002	993.48	2.12
002Yr24Hr-Post	Pond A	11.2509	993.57	2.28
002Yr24Hr-Post	Pond A	11.5005	993.67	3.17
002Yr24Hr-Post	Pond A	11.7504	994.08	10.94
002Yr24Hr-Post	Pond A	12.0001	995.40	32.01
002Yr24Hr-Post	Pond A	12.2510	996.35	7.55
002Yr24Hr-Post	Pond A	12.5009	996.20	3.36
002Yr24Hr-Post	Pond A	12.7502	995.94	2.89
002Yr24Hr-Post	Pond A	13.0003	995.65	2.10
002Yr24Hr-Post	Pond A	13.2502	995.36	1.89
002Yr24Hr-Post	Pond A	13.5006	995.07	1.51
002Yr24Hr-Post	Pond A	13.7508	994.79	1.39
002Yr24Hr-Post	Pond A	14.0005	994.54	1.26
002Yr24Hr-Post	Pond A	14.2502	994.30	1.04
002Yr24Hr-Post	Pond A	14.5004	994.10	1.00
002Yr24Hr-Post	Pond A	14.7503	993.93	0.81
002Yr24Hr-Post	Pond A	15.0006	993.80	0.87
002Yr24Hr-Post	Pond A	15.2515	993.70	0.87
002Yr24Hr-Post	Pond A	15.5026	993.61	0.70
002Yr24Hr-Post	Pond A	15.7503	993.55	0.74
002Yr24Hr-Post	Pond A	16.0004	993.49	0.69
002Yr24Hr-Post	Pond A	16.2556	993.45	0.74
002Yr24Hr-Post	Pond A	16.5042	993.42	0.69
002Yr24Hr-Post	Pond A	16.7514	993.40	0.63
002Yr24Hr-Post	Pond A	17.0021	993.37	0.62
002Yr24Hr-Post	Pond A	17.2600	993.35	0.57
002Yr24Hr-Post	Pond A	17.5077	993.33	0.62
002Yr24Hr-Post	Pond A	17.7557	993.32	0.57
002Yr24Hr-Post	Pond A	18.0065	993.30	0.51
002Yr24Hr-Post	Pond A	18.2603	993.29	0.50
002Yr24Hr-Post	Pond A	18.5027	993.27	0.46
002Yr24Hr-Post	Pond A	18.7624	993.26	0.50
002Yr24Hr-Post	Pond A	19.0115	993.25	0.46
002Yr24Hr-Post	Pond A	19.2615	993.24	0.50
002Yr24Hr-Post	Pond A	19.5115	993.23	0.46
002Yr24Hr-Post	Pond A	19.7615	993.23	0.50
002Yr24Hr-Post	Pond A	20.0115	993.22	0.38
002Yr24Hr-Post	Pond A	20.2548	993.20	0.34
002Yr24Hr-Post	Pond A	20.5115	993.19	0.37
002Yr24Hr-Post	Pond A	20.7615	993.18	0.34

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
002Yr24Hr-Post	Pond A	21.0115	993.17	0.37
002Yr24Hr-Post	Pond A	21.2615	993.17	0.37
002Yr24Hr-Post	Pond A	21.5115	993.16	0.34
002Yr24Hr-Post	Pond A	21.7615	993.15	0.37
002Yr24Hr-Post	Pond A	22.0115	993.15	0.34
002Yr24Hr-Post	Pond A	22.2615	993.14	0.37
002Yr24Hr-Post	Pond A	22.5115	993.14	0.34
002Yr24Hr-Post	Pond A	22.7615	993.13	0.37
002Yr24Hr-Post	Pond A	23.0115	993.13	0.37
002Yr24Hr-Post	Pond A	23.2615	993.13	0.34
002Yr24Hr-Post	Pond A	23.5115	993.13	0.37
002Yr24Hr-Post	Pond A	23.7615	993.12	0.34
002Yr24Hr-Post	Pond A	24.0115	993.12	0.26
002Yr24Hr-Post	Pond A	24.2533	993.09	0.02
002Yr24Hr-Post	Pond A	24.5042	993.06	0.00
002Yr24Hr-Post	Pond A	24.7547	993.03	0.00
002Yr24Hr-Post	Pond A	25.0014	992.99	0.00
002Yr24Hr-Post	Pond A	25.2536	992.96	0.00
002Yr24Hr-Post	Pond A	25.5062	992.93	0.00
002Yr24Hr-Post	Pond A	25.7519	992.91	0.00
002Yr24Hr-Post	Pond A	26.0068	992.88	0.00
002Yr24Hr-Post	Pond A	26.2516	992.85	0.00
002Yr24Hr-Post	Pond A	26.5087	992.82	0.00
002Yr24Hr-Post	Pond A	26.7531	992.80	0.00
002Yr24Hr-Post	Pond A	27.0078	992.77	0.00
002Yr24Hr-Post	Pond A	27.2562	992.75	0.00
002Yr24Hr-Post	Pond A	27.5045	992.73	0.00
002Yr24Hr-Post	Pond A	27.7587	992.71	0.00
002Yr24Hr-Post	Pond A	28.0041	992.69	0.00
002Yr24Hr-Post	Pond A	28.2604	992.67	0.00
002Yr24Hr-Post	Pond A	28.5099	992.65	0.00
002Yr24Hr-Post	Pond A	28.7621	992.64	0.00
002Yr24Hr-Post	Pond A	29.0008	992.62	0.00
002Yr24Hr-Post	Pond A	29.2640	992.61	0.00
002Yr24Hr-Post	Pond A	29.5140	992.59	0.00
002Yr24Hr-Post	Pond A	29.7640	992.58	0.00
002Yr24Hr-Post	Pond A	30.0140	992.57	0.00
002Yr24Hr-Post	Pond A	30.2640	992.56	0.00
002Yr24Hr-Post	Pond A	30.5140	992.55	0.00
002Yr24Hr-Post	Pond A	30.7640	992.54	0.00
002Yr24Hr-Post	Pond A	31.0140	992.53	0.00
002Yr24Hr-Post	Pond A	31.2640	992.52	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
002Yr24Hr-Post	Pond A	31.5140	992.52	0.00
002Yr24Hr-Post	Pond A	31.7640	992.51	0.00
002Yr24Hr-Post	Pond A	32.0140	992.50	0.00
002Yr24Hr-Post	Pond A	32.2640	992.50	0.00
002Yr24Hr-Post	Pond A	32.5140	992.49	0.00
002Yr24Hr-Post	Pond A	32.7640	992.48	0.00
002Yr24Hr-Post	Pond A	33.0140	992.48	0.00
002Yr24Hr-Post	Pond A	33.2640	992.47	0.00
002Yr24Hr-Post	Pond A	33.5140	992.47	0.00
002Yr24Hr-Post	Pond A	33.7640	992.47	0.00
002Yr24Hr-Post	Pond A	34.0140	992.46	0.00
002Yr24Hr-Post	Pond A	34.2640	992.46	0.00
002Yr24Hr-Post	Pond A	34.5140	992.45	0.00
002Yr24Hr-Post	Pond A	34.7640	992.45	0.00
002Yr24Hr-Post	Pond A	35.0140	992.45	0.00
002Yr24Hr-Post	Pond A	35.2640	992.45	0.00
002Yr24Hr-Post	Pond A	35.5140	992.44	0.00
002Yr24Hr-Post	Pond A	35.7640	992.44	0.00
002Yr24Hr-Post	Pond A	36.0140	992.44	0.00
002Yr24Hr-Post	Pond A	36.2640	992.43	0.00
002Yr24Hr-Post	Pond A	36.5140	992.43	0.00
002Yr24Hr-Post	Pond A	36.7640	992.43	0.00
010Yr24Hr-Post	Pond A	0.0000	992.00	0.00
010Yr24Hr-Post	Pond A	0.2511	992.00	0.00
010Yr24Hr-Post	Pond A	0.5050	992.00	0.00
010Yr24Hr-Post	Pond A	0.7556	992.00	0.00
010Yr24Hr-Post	Pond A	1.0021	992.01	0.00
010Yr24Hr-Post	Pond A	1.2535	992.04	0.00
010Yr24Hr-Post	Pond A	1.5041	992.08	0.00
010Yr24Hr-Post	Pond A	1.7519	992.12	0.00
010Yr24Hr-Post	Pond A	2.0022	992.17	0.00
010Yr24Hr-Post	Pond A	2.2517	992.21	0.00
010Yr24Hr-Post	Pond A	2.5037	992.25	0.00
010Yr24Hr-Post	Pond A	2.7549	992.29	0.00
010Yr24Hr-Post	Pond A	3.0019	992.34	0.00
010Yr24Hr-Post	Pond A	3.2524	992.38	0.00
010Yr24Hr-Post	Pond A	3.5002	992.42	0.00
010Yr24Hr-Post	Pond A	3.7514	992.47	0.00
010Yr24Hr-Post	Pond A	4.0010	992.52	0.00
010Yr24Hr-Post	Pond A	4.2524	992.57	0.00
010Yr24Hr-Post	Pond A	4.5040	992.62	0.00
010Yr24Hr-Post	Pond A	4.7504	992.67	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
010Yr24Hr-Post	Pond A	5.0038	992.73	0.00
010Yr24Hr-Post	Pond A	5.2546	992.77	0.00
010Yr24Hr-Post	Pond A	5.5003	992.81	0.00
010Yr24Hr-Post	Pond A	5.7546	992.86	0.00
010Yr24Hr-Post	Pond A	6.0015	992.90	0.00
010Yr24Hr-Post	Pond A	6.2522	992.95	0.00
010Yr24Hr-Post	Pond A	6.5041	993.01	0.00
010Yr24Hr-Post	Pond A	6.7530	993.06	0.00
010Yr24Hr-Post	Pond A	7.0019	993.11	0.00
010Yr24Hr-Post	Pond A	7.2549	993.15	0.00
010Yr24Hr-Post	Pond A	7.5057	993.19	0.00
010Yr24Hr-Post	Pond A	7.7522	993.23	0.00
010Yr24Hr-Post	Pond A	8.0047	993.26	0.00
010Yr24Hr-Post	Pond A	8.2549	993.29	0.00
010Yr24Hr-Post	Pond A	8.5033	993.33	0.00
010Yr24Hr-Post	Pond A	8.7557	993.37	0.00
010Yr24Hr-Post	Pond A	9.0054	993.40	0.00
010Yr24Hr-Post	Pond A	9.2549	993.44	0.00
010Yr24Hr-Post	Pond A	9.5052	993.47	0.00
010Yr24Hr-Post	Pond A	9.7550	993.50	0.00
010Yr24Hr-Post	Pond A	10.0053	993.53	0.00
010Yr24Hr-Post	Pond A	10.2526	993.56	0.00
010Yr24Hr-Post	Pond A	10.5017	993.60	0.00
010Yr24Hr-Post	Pond A	10.7507	993.66	0.00
010Yr24Hr-Post	Pond A	11.0001	993.76	0.00
010Yr24Hr-Post	Pond A	11.2512	993.86	0.00
010Yr24Hr-Post	Pond A	11.5004	993.99	0.00
010Yr24Hr-Post	Pond A	11.7502	994.60	0.00
010Yr24Hr-Post	Pond A	12.0000	996.61	0.00
010Yr24Hr-Post	Pond A	12.2502	997.91	0.00
010Yr24Hr-Post	Pond A	12.5003	997.57	0.00
010Yr24Hr-Post	Pond A	12.7501	997.23	0.00
010Yr24Hr-Post	Pond A	13.0004	996.93	0.00
010Yr24Hr-Post	Pond A	13.2504	996.61	0.00
010Yr24Hr-Post	Pond A	13.5001	996.29	0.00
010Yr24Hr-Post	Pond A	13.7501	995.96	0.00
010Yr24Hr-Post	Pond A	14.0007	995.64	0.00
010Yr24Hr-Post	Pond A	14.2501	995.33	0.00
010Yr24Hr-Post	Pond A	14.5001	995.04	0.00
010Yr24Hr-Post	Pond A	14.7507	994.76	0.00
010Yr24Hr-Post	Pond A	15.0005	994.51	0.00
010Yr24Hr-Post	Pond A	15.2504	994.29	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
010Yr24Hr-Post	Pond A	15.5010	994.10	0.00
010Yr24Hr-Post	Pond A	15.7503	993.95	0.00
010Yr24Hr-Post	Pond A	16.0013	993.83	0.00
010Yr24Hr-Post	Pond A	16.2510	993.74	0.00
010Yr24Hr-Post	Pond A	16.5015	993.67	0.00
010Yr24Hr-Post	Pond A	16.7521	993.61	0.00
010Yr24Hr-Post	Pond A	17.0002	993.56	0.00
010Yr24Hr-Post	Pond A	17.2500	993.52	0.00
010Yr24Hr-Post	Pond A	17.5034	993.49	0.00
010Yr24Hr-Post	Pond A	17.7588	993.47	0.00
010Yr24Hr-Post	Pond A	18.0002	993.45	0.00
010Yr24Hr-Post	Pond A	18.2507	993.42	0.00
010Yr24Hr-Post	Pond A	18.5085	993.40	0.00
010Yr24Hr-Post	Pond A	18.7548	993.38	0.00
010Yr24Hr-Post	Pond A	19.0005	993.37	0.00
010Yr24Hr-Post	Pond A	19.2570	993.36	0.00
010Yr24Hr-Post	Pond A	19.5118	993.35	0.00
010Yr24Hr-Post	Pond A	19.7651	993.35	0.00
010Yr24Hr-Post	Pond A	20.0104	993.34	0.00
010Yr24Hr-Post	Pond A	20.2507	993.32	0.00
010Yr24Hr-Post	Pond A	20.5154	993.30	0.00
010Yr24Hr-Post	Pond A	20.7551	993.29	0.00
010Yr24Hr-Post	Pond A	21.0051	993.28	0.00
010Yr24Hr-Post	Pond A	21.2551	993.28	0.00
010Yr24Hr-Post	Pond A	21.5051	993.27	0.00
010Yr24Hr-Post	Pond A	21.7551	993.26	0.00
010Yr24Hr-Post	Pond A	22.0051	993.26	0.00
010Yr24Hr-Post	Pond A	22.2551	993.25	0.00
010Yr24Hr-Post	Pond A	22.5051	993.25	0.00
010Yr24Hr-Post	Pond A	22.7551	993.25	0.00
010Yr24Hr-Post	Pond A	23.0051	993.25	0.00
010Yr24Hr-Post	Pond A	23.2551	993.25	0.00
010Yr24Hr-Post	Pond A	23.5051	993.25	0.00
010Yr24Hr-Post	Pond A	23.7551	993.24	0.00
010Yr24Hr-Post	Pond A	24.0051	993.23	0.00
010Yr24Hr-Post	Pond A	24.2521	993.20	0.00
010Yr24Hr-Post	Pond A	24.5033	993.16	0.00
010Yr24Hr-Post	Pond A	24.7541	993.12	0.00
010Yr24Hr-Post	Pond A	25.0059	993.08	0.00
010Yr24Hr-Post	Pond A	25.2510	993.05	0.00
010Yr24Hr-Post	Pond A	25.5027	993.01	0.00
010Yr24Hr-Post	Pond A	25.7527	992.98	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
010Yr24Hr-Post	Pond A	26.0035	992.95	0.00
010Yr24Hr-Post	Pond A	26.2573	992.92	0.00
010Yr24Hr-Post	Pond A	26.5041	992.89	0.00
010Yr24Hr-Post	Pond A	26.7575	992.87	0.00
010Yr24Hr-Post	Pond A	27.0070	992.84	0.00
010Yr24Hr-Post	Pond A	27.2531	992.81	0.00
010Yr24Hr-Post	Pond A	27.5018	992.79	0.00
010Yr24Hr-Post	Pond A	27.7525	992.77	0.00
010Yr24Hr-Post	Pond A	28.0048	992.74	0.00
010Yr24Hr-Post	Pond A	28.2501	992.72	0.00
010Yr24Hr-Post	Pond A	28.5044	992.70	0.00
010Yr24Hr-Post	Pond A	28.7623	992.68	0.00
010Yr24Hr-Post	Pond A	29.0111	992.66	0.00
010Yr24Hr-Post	Pond A	29.2533	992.65	0.00
010Yr24Hr-Post	Pond A	29.5079	992.63	0.00
010Yr24Hr-Post	Pond A	29.7537	992.62	0.00
010Yr24Hr-Post	Pond A	30.0037	992.60	0.00
010Yr24Hr-Post	Pond A	30.2537	992.59	0.00
010Yr24Hr-Post	Pond A	30.5037	992.58	0.00
010Yr24Hr-Post	Pond A	30.7537	992.57	0.00
010Yr24Hr-Post	Pond A	31.0037	992.55	0.00
010Yr24Hr-Post	Pond A	31.2537	992.55	0.00
010Yr24Hr-Post	Pond A	31.5037	992.54	0.00
010Yr24Hr-Post	Pond A	31.7537	992.53	0.00
010Yr24Hr-Post	Pond A	32.0037	992.52	0.00
010Yr24Hr-Post	Pond A	32.2537	992.51	0.00
010Yr24Hr-Post	Pond A	32.5037	992.51	0.00
010Yr24Hr-Post	Pond A	32.7537	992.50	0.00
010Yr24Hr-Post	Pond A	33.0037	992.49	0.00
010Yr24Hr-Post	Pond A	33.2537	992.49	0.00
010Yr24Hr-Post	Pond A	33.5037	992.48	0.00
010Yr24Hr-Post	Pond A	33.7537	992.48	0.00
010Yr24Hr-Post	Pond A	34.0037	992.47	0.00
010Yr24Hr-Post	Pond A	34.2537	992.47	0.00
010Yr24Hr-Post	Pond A	34.5037	992.46	0.00
010Yr24Hr-Post	Pond A	34.7537	992.46	0.00
010Yr24Hr-Post	Pond A	35.0037	992.46	0.00
010Yr24Hr-Post	Pond A	35.2537	992.45	0.00
010Yr24Hr-Post	Pond A	35.5037	992.45	0.00
010Yr24Hr-Post	Pond A	35.7537	992.45	0.00
010Yr24Hr-Post	Pond A	36.0037	992.44	0.00
010Yr24Hr-Post	Pond A	36.2537	992.44	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
010Yr24Hr-Post	Pond A	36.5037	992.44	0.00
010Yr24Hr-Post	Pond A	36.7537	992.44	0.00
100Yr24Hr-Post	Pond A	0.0000	992.00	0.00
100Yr24Hr-Post	Pond A	0.2511	992.00	0.00
100Yr24Hr-Post	Pond A	0.5050	992.00	0.00
100Yr24Hr-Post	Pond A	0.7507	992.02	0.00
100Yr24Hr-Post	Pond A	1.0008	992.08	0.00
100Yr24Hr-Post	Pond A	1.2509	992.15	0.00
100Yr24Hr-Post	Pond A	1.5025	992.22	0.00
100Yr24Hr-Post	Pond A	1.7534	992.29	0.00
100Yr24Hr-Post	Pond A	2.0009	992.36	0.00
100Yr24Hr-Post	Pond A	2.2521	992.43	0.00
100Yr24Hr-Post	Pond A	2.5000	992.50	0.00
100Yr24Hr-Post	Pond A	2.7529	992.57	0.00
100Yr24Hr-Post	Pond A	3.0023	992.64	0.00
100Yr24Hr-Post	Pond A	3.2514	992.71	0.00
100Yr24Hr-Post	Pond A	3.5015	992.77	0.00
100Yr24Hr-Post	Pond A	3.7521	992.83	0.00
100Yr24Hr-Post	Pond A	4.0006	992.90	0.00
100Yr24Hr-Post	Pond A	4.2504	992.98	0.00
100Yr24Hr-Post	Pond A	4.5025	993.06	0.00
100Yr24Hr-Post	Pond A	4.7529	993.13	0.00
100Yr24Hr-Post	Pond A	5.0021	993.20	0.00
100Yr24Hr-Post	Pond A	5.2528	993.26	0.00
100Yr24Hr-Post	Pond A	5.5024	993.30	0.00
100Yr24Hr-Post	Pond A	5.7529	993.34	0.00
100Yr24Hr-Post	Pond A	6.0000	993.37	0.00
100Yr24Hr-Post	Pond A	6.2527	993.41	0.00
100Yr24Hr-Post	Pond A	6.5054	993.45	0.00
100Yr24Hr-Post	Pond A	6.7540	993.48	0.00
100Yr24Hr-Post	Pond A	7.0048	993.50	0.00
100Yr24Hr-Post	Pond A	7.2578	993.52	0.00
100Yr24Hr-Post	Pond A	7.5017	993.53	0.00
100Yr24Hr-Post	Pond A	7.7618	993.54	0.00
100Yr24Hr-Post	Pond A	8.0120	993.55	0.00
100Yr24Hr-Post	Pond A	8.2596	993.57	0.00
100Yr24Hr-Post	Pond A	8.5021	993.60	0.00
100Yr24Hr-Post	Pond A	8.7514	993.64	0.00
100Yr24Hr-Post	Pond A	9.0015	993.67	0.00
100Yr24Hr-Post	Pond A	9.2543	993.71	0.00
100Yr24Hr-Post	Pond A	9.5042	993.74	0.00
100Yr24Hr-Post	Pond A	9.7529	993.77	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
100Yr24Hr-Post	Pond A	10.0031	993.81	0.00
100Yr24Hr-Post	Pond A	10.2535	993.85	0.00
100Yr24Hr-Post	Pond A	10.5003	993.91	0.00
100Yr24Hr-Post	Pond A	10.7515	994.01	0.00
100Yr24Hr-Post	Pond A	11.0013	994.16	0.00
100Yr24Hr-Post	Pond A	11.2505	994.32	0.00
100Yr24Hr-Post	Pond A	11.5005	994.54	0.00
100Yr24Hr-Post	Pond A	11.7501	995.57	0.00
100Yr24Hr-Post	Pond A	12.0001	998.64	0.00
100Yr24Hr-Post	Pond A	12.2503	999.91	0.00
100Yr24Hr-Post	Pond A	12.5000	998.93	0.00
100Yr24Hr-Post	Pond A	12.7500	998.14	0.00
100Yr24Hr-Post	Pond A	13.0002	997.65	0.00
100Yr24Hr-Post	Pond A	13.2503	997.30	0.00
100Yr24Hr-Post	Pond A	13.5007	997.01	0.00
100Yr24Hr-Post	Pond A	13.7507	996.73	0.00
100Yr24Hr-Post	Pond A	14.0006	996.44	0.00
100Yr24Hr-Post	Pond A	14.2504	996.15	0.00
100Yr24Hr-Post	Pond A	14.5008	995.85	0.00
100Yr24Hr-Post	Pond A	14.7501	995.56	0.00
100Yr24Hr-Post	Pond A	15.0001	995.28	0.00
100Yr24Hr-Post	Pond A	15.2504	995.04	0.00
100Yr24Hr-Post	Pond A	15.5007	994.80	0.00
100Yr24Hr-Post	Pond A	15.7512	994.58	0.00
100Yr24Hr-Post	Pond A	16.0012	994.39	0.00
100Yr24Hr-Post	Pond A	16.2504	994.23	0.00
100Yr24Hr-Post	Pond A	16.5011	994.09	0.00
100Yr24Hr-Post	Pond A	16.7510	993.98	0.00
100Yr24Hr-Post	Pond A	17.0021	993.89	0.00
100Yr24Hr-Post	Pond A	17.2512	993.81	0.00
100Yr24Hr-Post	Pond A	17.5005	993.76	0.00
100Yr24Hr-Post	Pond A	17.7534	993.71	0.00
100Yr24Hr-Post	Pond A	18.0015	993.67	0.00
100Yr24Hr-Post	Pond A	18.2544	993.63	0.00
100Yr24Hr-Post	Pond A	18.5053	993.59	0.00
100Yr24Hr-Post	Pond A	18.7591	993.57	0.00
100Yr24Hr-Post	Pond A	19.0080	993.55	0.00
100Yr24Hr-Post	Pond A	19.2612	993.54	0.00
100Yr24Hr-Post	Pond A	19.5021	993.53	0.00
100Yr24Hr-Post	Pond A	19.7521	993.52	0.00
100Yr24Hr-Post	Pond A	20.0021	993.50	0.00
100Yr24Hr-Post	Pond A	20.2560	993.48	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
100Yr24Hr-Post	Pond A	20.5098	993.46	0.00
100Yr24Hr-Post	Pond A	20.7549	993.44	0.00
100Yr24Hr-Post	Pond A	21.0054	993.43	0.00
100Yr24Hr-Post	Pond A	21.2527	993.42	0.00
100Yr24Hr-Post	Pond A	21.5027	993.42	0.00
100Yr24Hr-Post	Pond A	21.7527	993.41	0.00
100Yr24Hr-Post	Pond A	22.0027	993.41	0.00
100Yr24Hr-Post	Pond A	22.2527	993.40	0.00
100Yr24Hr-Post	Pond A	22.5027	993.40	0.00
100Yr24Hr-Post	Pond A	22.7527	993.40	0.00
100Yr24Hr-Post	Pond A	23.0027	993.40	0.00
100Yr24Hr-Post	Pond A	23.2527	993.40	0.00
100Yr24Hr-Post	Pond A	23.5027	993.40	0.00
100Yr24Hr-Post	Pond A	23.7527	993.39	0.00
100Yr24Hr-Post	Pond A	24.0007	993.38	0.00
100Yr24Hr-Post	Pond A	24.2522	993.33	0.00
100Yr24Hr-Post	Pond A	24.5014	993.27	0.00
100Yr24Hr-Post	Pond A	24.7512	993.21	0.00
100Yr24Hr-Post	Pond A	25.0050	993.17	0.00
100Yr24Hr-Post	Pond A	25.2556	993.12	0.00
100Yr24Hr-Post	Pond A	25.5035	993.09	0.00
100Yr24Hr-Post	Pond A	25.7516	993.05	0.00
100Yr24Hr-Post	Pond A	26.0050	993.02	0.00
100Yr24Hr-Post	Pond A	26.2560	992.99	0.00
100Yr24Hr-Post	Pond A	26.5021	992.96	0.00
100Yr24Hr-Post	Pond A	26.7580	992.93	0.00
100Yr24Hr-Post	Pond A	27.0022	992.90	0.00
100Yr24Hr-Post	Pond A	27.2548	992.87	0.00
100Yr24Hr-Post	Pond A	27.5068	992.85	0.00
100Yr24Hr-Post	Pond A	27.7533	992.82	0.00
100Yr24Hr-Post	Pond A	28.0068	992.79	0.00
100Yr24Hr-Post	Pond A	28.2543	992.77	0.00
100Yr24Hr-Post	Pond A	28.5078	992.75	0.00
100Yr24Hr-Post	Pond A	28.7508	992.72	0.00
100Yr24Hr-Post	Pond A	29.0082	992.70	0.00
100Yr24Hr-Post	Pond A	29.2501	992.68	0.00
100Yr24Hr-Post	Pond A	29.5118	992.67	0.00
100Yr24Hr-Post	Pond A	29.7627	992.65	0.00
100Yr24Hr-Post	Pond A	30.0023	992.63	0.00
100Yr24Hr-Post	Pond A	30.2547	992.62	0.00
100Yr24Hr-Post	Pond A	30.5047	992.60	0.00
100Yr24Hr-Post	Pond A	30.7547	992.59	0.00

Sim	Node Name	Relative Time [hrs]	Stage [ft]	Total Inflow Rate [cfs]
100Yr24Hr-Post	Pond A	31.0047	992.58	0.00
100Yr24Hr-Post	Pond A	31.2547	992.57	0.00
100Yr24Hr-Post	Pond A	31.5047	992.56	0.00
100Yr24Hr-Post	Pond A	31.7547	992.55	0.00
100Yr24Hr-Post	Pond A	32.0047	992.54	0.00
100Yr24Hr-Post	Pond A	32.2547	992.53	0.00
100Yr24Hr-Post	Pond A	32.5047	992.52	0.00
100Yr24Hr-Post	Pond A	32.7547	992.51	0.00
100Yr24Hr-Post	Pond A	33.0047	992.51	0.00
100Yr24Hr-Post	Pond A	33.2547	992.50	0.00
100Yr24Hr-Post	Pond A	33.5047	992.49	0.00
100Yr24Hr-Post	Pond A	33.7547	992.49	0.00
100Yr24Hr-Post	Pond A	34.0047	992.48	0.00
100Yr24Hr-Post	Pond A	34.2547	992.48	0.00
100Yr24Hr-Post	Pond A	34.5047	992.47	0.00
100Yr24Hr-Post	Pond A	34.7547	992.47	0.00
100Yr24Hr-Post	Pond A	35.0047	992.47	0.00
100Yr24Hr-Post	Pond A	35.2547	992.46	0.00
100Yr24Hr-Post	Pond A	35.5047	992.46	0.00
100Yr24Hr-Post	Pond A	35.7547	992.45	0.00
100Yr24Hr-Post	Pond A	36.0047	992.45	0.00
100Yr24Hr-Post	Pond A	36.2547	992.45	0.00
100Yr24Hr-Post	Pond A	36.5047	992.44	0.00
100Yr24Hr-Post	Pond A	36.7547	992.44	0.00

Overflow Weir Design Modeling

Manual Basin: Basin A-1

Scenario: Emergency Overflow
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
0.1900	Impervious	C	
0.1400	Open Space-Good Cond.	C	

Comment:

Manual Basin: Basin A-2

Scenario: Emergency Overflow
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
0.6550	Impervious	C	

Comment:

Manual Basin: Basin A-Mod

Scenario: Emergency Overflow
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: Uh484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
1.2050	Impervious	D	

Comment:

Manual Basin: Basin A-Remaining

Scenario: Emergency Overflow
Node: Pond A
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
4.1000	Impervious	D	
0.9600	Impervious	D	
0.8400	Impervious	C	

Comment:

Curve Number: Icpr3 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Impervious	C	98.0
Impervious	D	98.0
Open Space-Good Cond.	C	74.0

Node: Boundary-Post

Scenario: Emergency Overflow
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 991.86 ft
Warning Stage: 991.86 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	991.86
0	0	0	999.0000	991.86

Comment:

Node: Pond A

Scenario: Emergency Overflow
Type: Stage/Area
Base Flow: 0.00 cfs

Initial Stage: 992.00 ft
Warning Stage: 1002.10 ft

Stage [ft]	Area [ac]	Area [ft2]
992.00	0.0607	2644
992.30	0.1731	7540
993.00	0.1946	8477
994.00	0.2540	11064
995.00	0.2732	11901
996.00	0.2863	12471
997.00	0.3000	13068
998.00	0.3142	13687
999.00	0.3289	14327
1000.00	0.3440	14985
1000.50	0.3515	15311

Comment:

Weir Link: EmOvflw

Scenario: Emergency Overflow
From Node: Pond A
To Node: Boundary-Post
Link Count: 1
Flow Direction: Both
Damping: 0.0000 ft
Weir Type: Broad Crested Vertical
Geometry Type: Rectangular
Invert: 1000.50 ft
Control Elevation: 1000.50 ft
Max Depth: 9999.00 ft
Max Width: 218.00 ft
Fillet: 0.00 ft

Bottom Clip

Default: 0.00 ft
Op Table:
Ref Node:

Top Clip

Default: 0.00 ft
Op Table:
Ref Node:

Discharge Coefficients

Weir Default: 2.800
Weir Table:
Orifice Default: 0.600
Orifice Table:

Comment:

Simulation: 100Yr24Hr-Post

Scenario: Emergency Overflow
Run Date/Time: 4/25/2019 11:16:58 AM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		60.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: ICPR3

Unit Hydrograph Folder: ICPR3

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: ICPR3

Green-Ampt Set: ICPR3

Vertical Layers Set:

Impervious Set: ICPR3

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight Fact: 0.5 dec

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: Scsii-24

Rainfall Amount: 9.25 in

Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area (1D): 113 ft2

Energy Switch (1D): Energy

Comment:

Node Max Conditions w/ Times [Emergency Overflow]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
Pond A	100Yr24Hr-Post	1002.10	1000.76	0.0010	81.62	81.39	15311	12.0237	9.6664	12.0161	12.0252

Appendix VII – Support Material

PONDS
Side/Bottom Drain Analysis For Filtration System
Version 3.3.0033

Devo Seereeram, Ph.D., P.E.

Job Information

Job Name: LEES SUMMIT EXPANSION
Engineer: CSG
Date: 04-09-2019

Input Data

Surface area at high water stage, [Atop]:	9273	ft²
Surface area at low water stage, [Abot]:	8505	ft²
Permeability of filter sand, [k]:	7.5	ft/day
Driving head at high water stage, [Htop]:	.33	ft
Driving head at low water stage, [Hbot]:	.165	ft
Drawdown time, [t]:	3	days
Average flow path length, [Xo]:	1.835	ft
Exposed underdrain width, [Lo]:	6	ft
Slope of underdrain face, [S]:	999	?H : 1V
Factor of safety for analysis, [FS]:	1.5	
Percent drawdown for analysis, [P]:	95	%
Background seepage rate, [Q]:	0	gpm

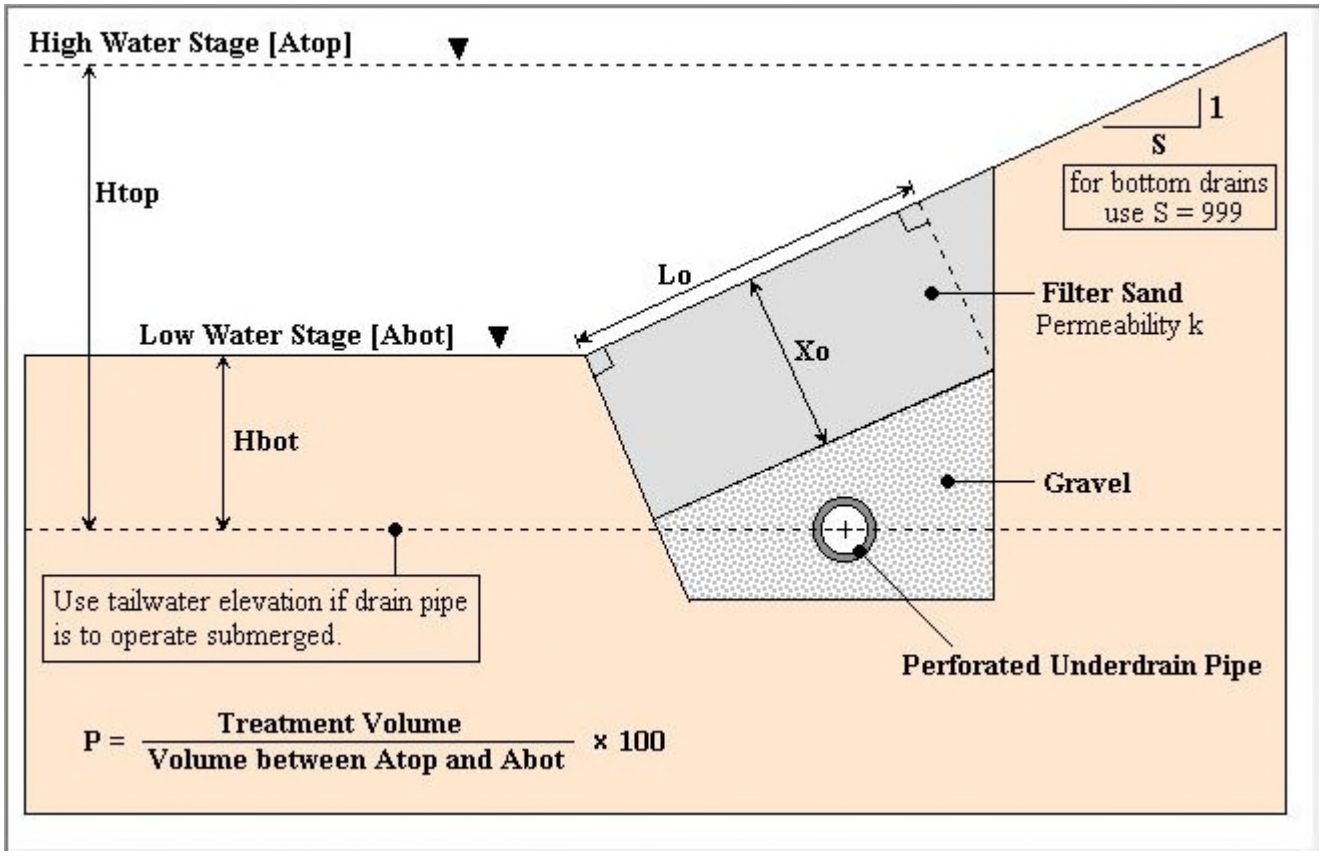
Results

Total length of side/bottom drain filter required:	116.1685	ft
Total length of side/bottom drain filter required to recover treatment volume only:	116.1685	ft
Total length of side/bottom drain filter required to accomodate background seepage:	0	ft
Maximum flow rate through filter:	4.204128E-02	gpm / lin ft
Average flow rate through filter:	2.102064E-02	gpm / lin ft
Volume of water between Atop and Abot:	10972.27	gallons
Recovery (or treatment) volume:	10423.66	gallons
Recovery (or treatment) volume:	3.198693E-02	acre-ft

Note

Drain pipe diameter should be checked to insure that peak flow can be accomodated.

PONDs Side Drain Model Reference Diagram



Biofiltration Bed Calculations

Basin	Acres	Pre Impervious (acres)	Post Impervious (acres)	
Watershed A	7.11	5.12	6.27	**Disturbed Area (ac)**
Watershed A-1	0.33	0	0.19	**6.16**
Watershed A-2	0.66	0	0.45	**Added Impervious (ac)**
Total	8.10	5.12	6.91	**1.79**

Required Treatment Area (ac): 1.04
Proposed % Impervious (I): 1.72% ==> ==> Resulting LS (per Table 4.3): 3.2
VR: **3.33**

$$WQ_v = P \times R_V$$

P (in): 1.37
Weighted R_v = 0.42
WQ_v (in): 0.570

Procedure from APWA/ MARC BMP Manual, 8-30

Planting bed soil depth, d_f (ft) =	3.0	
Coefficient of permeability, K_{sat} (ft/day) =	0.03	(Clayey soil sub-base)
Max. ponding Depth, h_{max} (ft) =	7.4	
Avg Height of water above bed, h_{avg} (ft) =	3.7	
Time WQv to filter thru bed, t_s (days) =	1.7	

$$A_f = \frac{(WQ_V \times d_f)}{[k \times t_f \times (h_{avg} + d_f)]}$$

Required Filter Bed Surface Area, A_f (ft^2) =	**1.698**	(Required)
Ponding Area, A_{bed} (ft^2) =	1,250	(Required)
Ponding Area, A_{bed} (ft^2) =	2,467	(Provided)

NOAA Atlas 14, Volume 8, Version 2
Location name: Lees Summit, Missouri, USA*
Latitude: 38.9025°, Longitude: -94.3332°
Elevation: 1014.77 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.415** (0.324-0.529)	**0.484** (0.378-0.618)	**0.599** (0.466-0.767)	**0.696** (0.539-0.894)	**0.832** (0.625-1.10)	**0.938** (0.691-1.25)	**1.05** (0.748-1.43)	**1.16** (0.798-1.62)	**1.31** (0.871-1.87)	**1.42** (0.926-2.07)
10-min	**0.607** (0.474-0.775)	**0.709** (0.553-0.905)	**0.877** (0.682-1.12)	**1.02** (0.789-1.31)	**1.22** (0.916-1.61)	**1.37** (1.01-1.84)	**1.53** (1.10-2.09)	**1.70** (1.17-2.37)	**1.92** (1.27-2.75)	**2.08** (1.36-3.03)
15-min	**0.740** (0.578-0.945)	**0.864** (0.674-1.10)	**1.07** (0.832-1.37)	**1.24** (0.962-1.60)	**1.49** (1.12-1.96)	**1.68** (1.23-2.24)	**1.87** (1.34-2.55)	**2.07** (1.43-2.89)	**2.34** (1.56-3.35)	**2.54** (1.65-3.69)
30-min	**1.02** (0.800-1.31)	**1.20** (0.939-1.54)	**1.50** (1.17-1.92)	**1.75** (1.35-2.24)	**2.09** (1.57-2.76)	**2.36** (1.74-3.15)	**2.63** (1.88-3.59)	**2.91** (2.00-4.07)	**3.28** (2.18-4.70)	**3.57** (2.32-5.18)
60-min	**1.34** (1.05-1.71)	**1.57** (1.23-2.01)	**1.97** (1.53-2.52)	**2.30** (1.78-2.95)	**2.76** (2.08-3.66)	**3.13** (2.31-4.20)	**3.51** (2.51-4.80)	**3.90** (2.69-5.46)	**4.43** (2.95-6.35)	**4.83** (3.14-7.02)
2-hr	**1.66** (1.30-2.10)	**1.95** (1.53-2.47)	**2.43** (1.91-3.09)	**2.85** (2.22-3.63)	**3.44** (2.61-4.53)	**3.91** (2.90-5.20)	**4.39** (3.16-5.97)	**4.89** (3.40-6.81)	**5.57** (3.74-7.94)	**6.10** (4.00-8.80)
3-hr	**1.87** (1.48-2.36)	**2.20** (1.74-2.78)	**2.76** (2.17-3.49)	**3.24** (2.54-4.11)	**3.93** (3.00-5.16)	**4.48** (3.35-5.95)	**5.06** (3.67-6.86)	**5.66** (3.95-7.85)	**6.48** (4.38-9.22)	**7.13** (4.70-10.3)
6-hr	**2.26** (1.80-2.82)	**2.66** (2.12-3.34)	**3.37** (2.67-4.22)	**3.98** (3.14-5.01)	**4.88** (3.76-6.37)	**5.60** (4.22-7.39)	**6.36** (4.65-8.57)	**7.16** (5.05-9.89)	**8.27** (5.63-11.7)	**9.15** (6.07-13.1)
12-hr	**2.66** (2.13-3.30)	**3.16** (2.54-3.93)	**4.04** (3.23-5.03)	**4.81** (3.83-6.02)	**5.94** (4.62-7.72)	**6.86** (5.21-9.00)	**7.83** (5.77-10.5)	**8.86** (6.30-12.2)	**10.3** (7.06-14.5)	**11.4** (7.64-16.2)
24-hr	**3.11** (2.51-3.82)	**3.71** (2.99-4.57)	**4.74** (3.82-5.86)	**5.66** (4.54-7.02)	**7.00** (5.48-9.03)	**8.10** (6.20-10.5)	**9.25** (6.88-12.3)	**10.5** (7.51-14.3)	**12.2** (8.44-17.0)	**13.5** (9.14-19.1)
2-day	**3.66** (2.98-4.47)	**4.31** (3.50-5.26)	**5.43** (4.41-6.66)	**6.43** (5.19-7.91)	**7.90** (6.24-10.1)	**9.10** (7.03-11.8)	**10.4** (7.77-13.7)	**11.7** (8.47-15.9)	**13.6** (9.50-18.9)	**15.1** (10.3-21.2)
3-day	**4.06** (3.33-4.94)	**4.71** (3.85-5.73)	**5.84** (4.76-7.12)	**6.85** (5.55-8.38)	**8.33** (6.61-10.6)	**9.55** (7.41-12.3)	**10.8** (8.16-14.3)	**12.2** (8.87-16.5)	**14.1** (9.92-19.5)	**15.7** (10.7-21.9)
4-day	**4.40** (3.61-5.33)	**5.05** (4.14-6.12)	**6.17** (5.05-7.50)	**7.18** (5.84-8.76)	**8.65** (6.89-11.0)	**9.87** (7.68-12.7)	**11.1** (8.42-14.6)	**12.5** (9.12-16.8)	**14.4** (10.2-19.9)	**16.0** (10.9-22.2)
7-day	**5.21** (4.30-6.27)	**5.89** (4.86-7.10)	**7.07** (5.82-8.53)	**8.09** (6.62-9.80)	**9.56** (7.64-12.0)	**10.8** (8.41-13.7)	**12.0** (9.11-15.6)	**13.3** (9.74-17.7)	**15.1** (10.7-20.6)	**16.5** (11.4-22.9)
10-day	**5.90** (4.89-7.07)	**6.66** (5.52-7.99)	**7.93** (6.55-9.53)	**9.00** (7.40-10.9)	**10.5** (8.43-13.1)	**11.7** (9.20-14.8)	**13.0** (9.87-16.7)	**14.2** (10.5-18.9)	**16.0** (11.3-21.7)	**17.3** (12.0-23.9)
20-day	**7.87** (6.58-9.35)	**8.89** (7.43-10.6)	**10.5** (8.78-12.6)	**11.9** (9.85-14.2)	**13.7** (11.0-16.8)	**15.1** (11.9-18.7)	**16.4** (12.5-20.9)	**17.7** (13.1-23.2)	**19.4** (13.9-26.1)	**20.7** (14.5-28.3)
30-day	**9.51** (7.99-11.3)	**10.8** (9.03-12.7)	**12.7** (10.7-15.1)	**14.3** (11.9-17.1)	**16.4** (13.2-19.9)	**17.9** (14.1-22.1)	**19.3** (14.9-24.5)	**20.8** (15.4-27.0)	**22.5** (16.1-30.1)	**23.7** (16.7-32.4)
45-day	**11.6** (9.80-13.7)	**13.1** (11.1-15.5)	**15.5** (13.0-18.3)	**17.3** (14.5-20.6)	**19.7** (15.9-23.8)	**21.4** (17.0-26.3)	**23.0** (17.7-28.9)	**24.5** (18.2-31.6)	**26.3** (18.9-34.9)	**27.5** (19.4-37.3)
60-day	**13.4** (11.4-15.7)	**15.1** (12.8-17.8)	**17.8** (15.0-21.0)	**19.9** (16.7-23.5)	**22.5** (18.2-27.0)	**24.3** (19.3-29.7)	**26.0** (20.1-32.5)	**27.5** (20.5-35.4)	**29.3** (21.1-38.7)	**30.5** (21.6-41.3)

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

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

Please refer to NOAA Atlas 14 document for more information.

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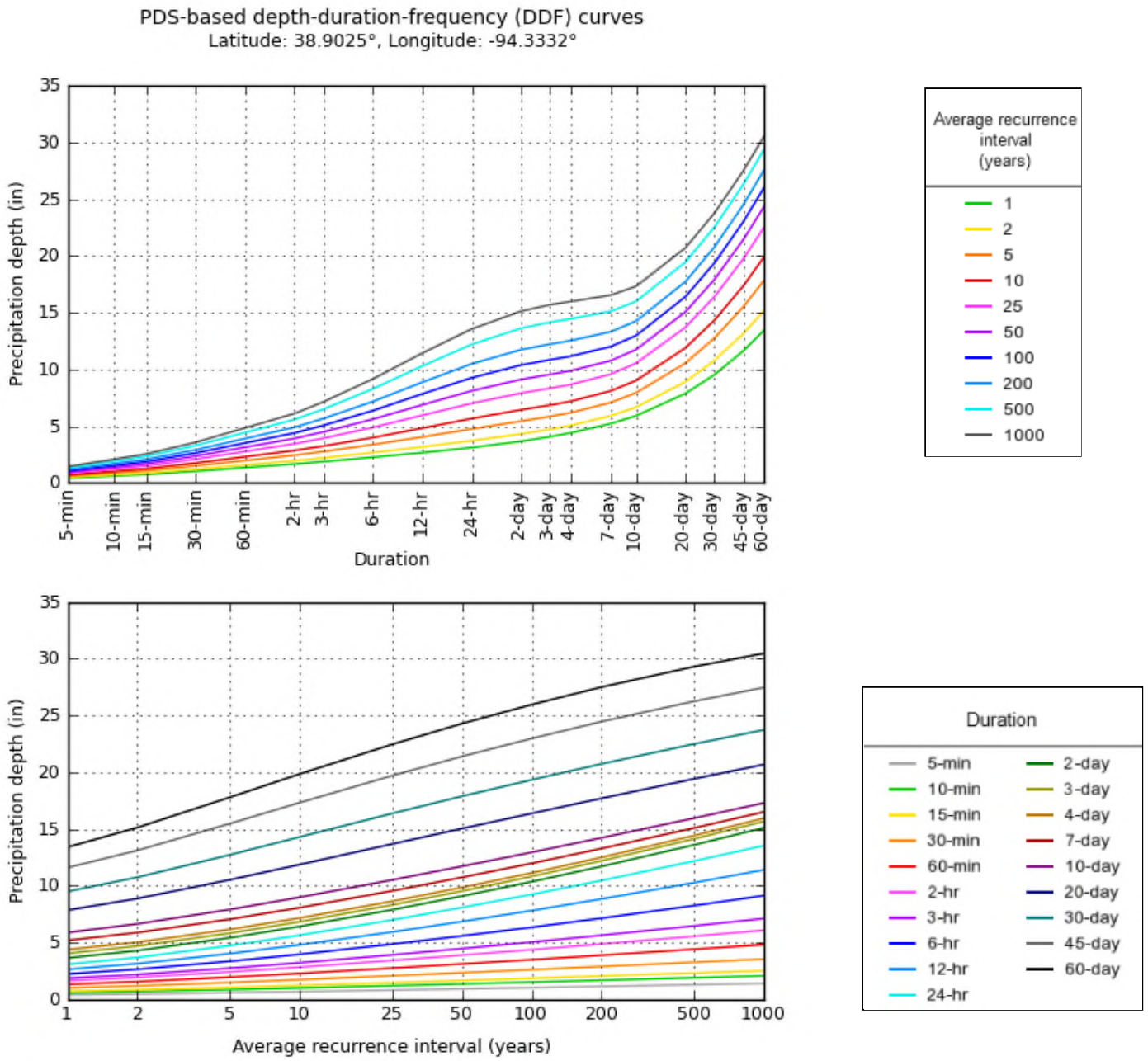
PF graphical



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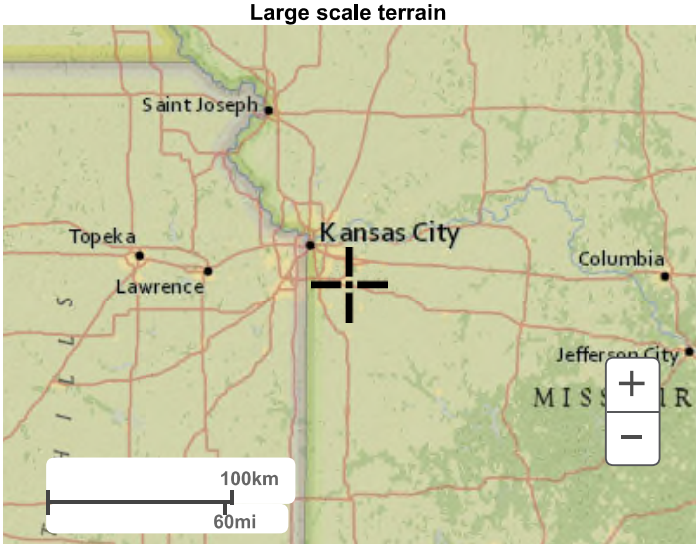
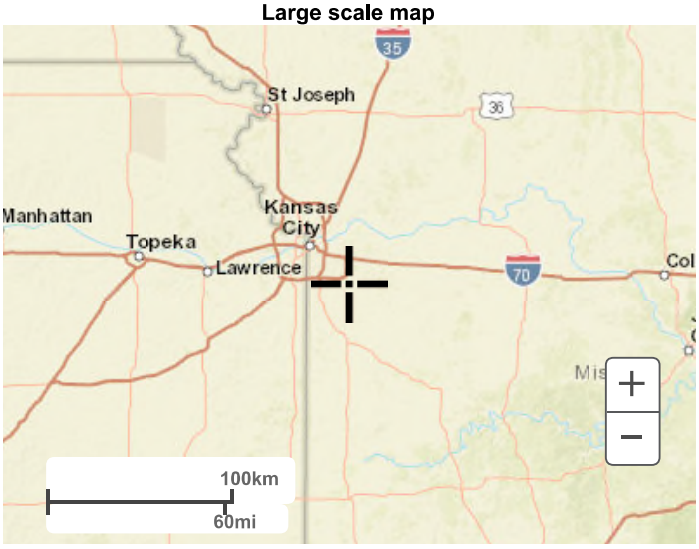
Maps & aerials

Small scale terrain

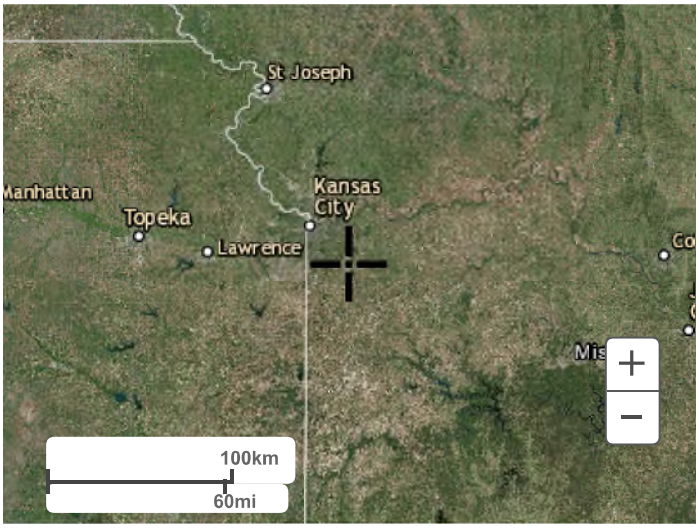
Large scale terrain



Large scale map



Large scale aerial



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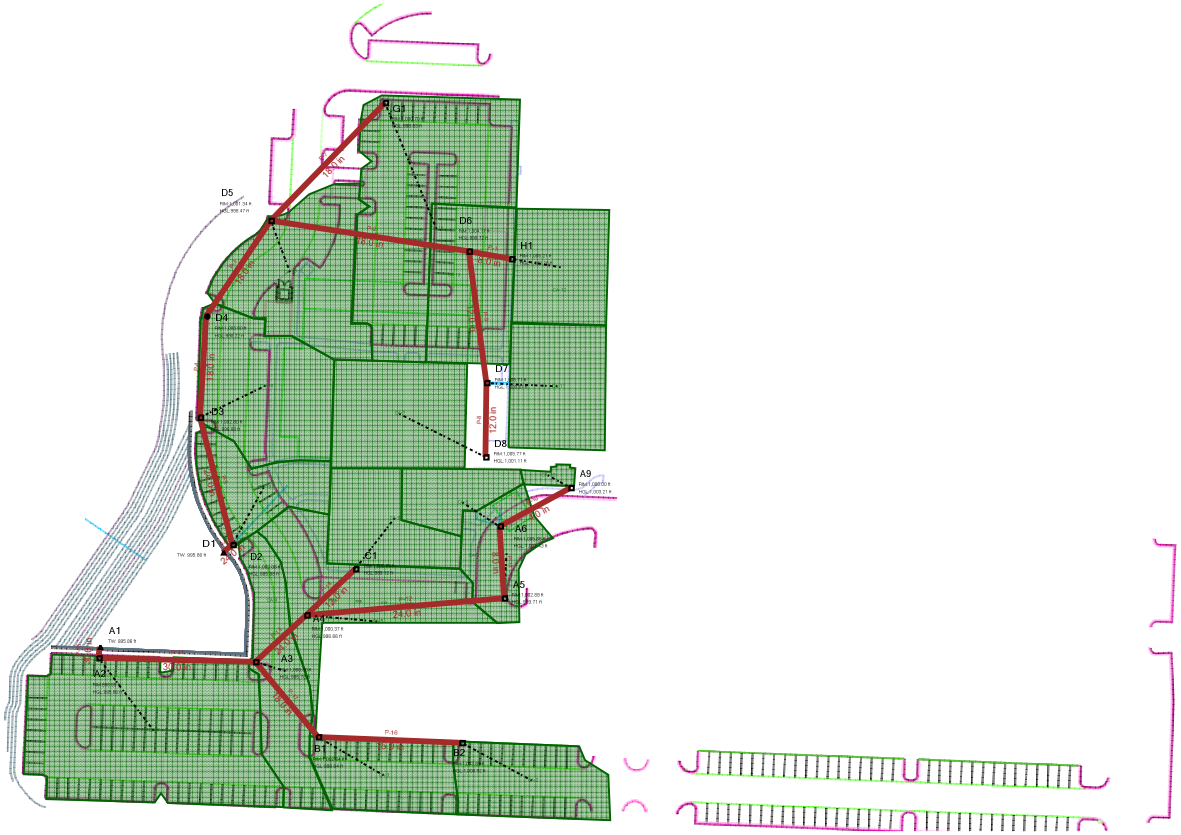
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Appendix VIII – StormCAD Hydraulic Model

Scenario: Base



FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)
P-5	D3	995.83	D2	992.60	109.3	0.030	24.0	0.013	8.69	9.97
P-14	A3	994.89	A2	992.27	130.3	0.020	30.0	0.013	5.91	7.61
P-1	H1	1,000.69	D6	998.91	35.7	0.050	8.0	0.012	1.00	7.58
P-17	B1	998.14	A3	994.89	81.5	0.040	18.0	0.013	1.78	7.24
P-18	C1	998.73	A4	996.03	55.7	0.048	12.0	0.012	0.87	6.96
P-13	A4	996.03	A3	994.89	57.7	0.020	24.0	0.013	3.22	6.50
P-4	D4	996.66	D3	995.83	84.1	0.010	18.0	0.013	7.60	6.44
P-2	D6	998.91	D5	997.24	166.7	0.010	18.0	0.013	4.43	5.69
P-11	A6	1,001.07	A5	999.33	59.9	0.029	8.0	0.012	0.59	5.39
P-3	D5	997.24	D4	996.66	95.8	0.006	18.0	0.013	7.69	5.26
P-9	D7	1,000.01	D6	998.91	110.2	0.010	12.0	0.012	2.41	5.18
P-12	A5	999.33	A4	996.03	164.7	0.020	24.0	0.013	1.19	4.86
P-16	B2	1,000.54	B1	998.14	119.4	0.020	15.0	0.013	0.94	4.81
P-8	D8	1,000.62	D7	1,000.01	61.5	0.010	12.0	0.012	1.32	4.43
P-10	A9	1,003.05	A6	1,001.07	67.0	0.030	4.0	0.012	0.08	3.32
P-7	G1	997.65	D5	997.24	136.4	0.003	18.0	0.013	2.29	3.07
P-6	D2	992.60	D1	992.00	10.3	0.059	24.0	0.013	9.24	2.94
P-15	A2	992.27	A1	992.00	9.5	0.028	30.0	0.013	8.62	1.76

FlexTable: Catch Basin Table

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (In) (ft)	Depth (Out) (ft)	Headloss Method	Headloss Coefficient (Standard)	Flow (Total Out) (cfs)
H1	1,005.21	1,000.69	1,001.38	0.47	Standard	1.000	1.00
G1	1,000.70	997.65	998.87	1.18	Standard	1.000	2.29
D8	1,005.77	1,000.62	1,001.29	0.49	Standard	1.000	1.32
D7	1,005.71	1,000.01	1,000.82	0.66	Standard	0.500	2.41
D6	1,004.17	998.91	999.98	0.81	Standard	0.800	4.43
D5	1,001.34	997.24	998.78	1.23	Standard	0.800	7.69
D3	1,002.80	995.83	997.18	1.05	Standard	0.700	8.69
D2	1,002.08	992.60	995.97	3.28	Standard	0.700	9.24
C1	1,002.89	998.73	999.27	0.39	Standard	1.000	0.87
B2	1,003.89	1,000.54	1,001.06	0.38	Standard	1.000	0.94
B1	1,002.64	998.14	998.77	0.50	Standard	0.700	1.78
A9	1,006.00	1,003.05	1,003.27	0.16	Standard	1.000	0.08
A6	1,005.85	1,001.07	1,001.53	0.36	Standard	0.700	0.59
A5	1,002.89	999.33	999.80	0.38	Standard	0.700	1.19
A4	1,000.37	996.03	996.86	0.63	Standard	0.900	3.22
A3	1,000.80	994.89	995.96	0.81	Standard	0.900	5.91
A2	999.55	992.27	995.90	3.59	Standard	0.800	8.62

FlexTable: Manhole Table

Label	Elevation (Rim) (ft)	Elevation (Invert Out) (ft)	Hydraulic Grade Line (In) (ft)	Depth (Out) (ft)	Headloss Method	Headloss Coefficient (Standard)
D4	1,003.60	996.66	998.08	1.07	Standard	0.700

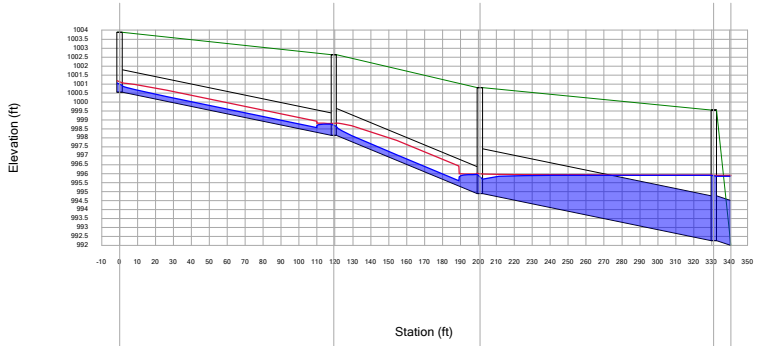
FlexTable: Outfall Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Elevation (User Defined Tailwater) (ft)	Flow (Total Out) (cfs)
D1	992.00	992.00	User Defined Tailwater	995.86	9.22
A1	992.00	992.00	User Defined Tailwater	995.86	8.59

FlexTable: Catchment Table

Label	Outflow Element	Scaled Area (acres)	Runoff Coefficient (Rational)	Time of Concentration (min)	Flow (Total Out) (cfs)	Use Scaled Area?
CA-1	A2	0.531	0.900	10.000	2.94	True
CA-2	B2	0.170	0.900	10.000	0.94	True
CA-3	B1	0.157	0.900	10.000	0.87	True
CA-4	A3	0.184	0.900	10.000	1.02	True
CA-5	A4	0.245	0.850	10.000	1.28	True
CA-6	A5	0.118	0.850	10.000	0.62	True
CA-7	D8	0.225	0.950	10.000	1.32	True
CA-8	C1	0.148	0.950	10.000	0.87	True
CA-9	A6	0.088	0.950	10.000	0.51	True
CA-10	A9	0.014	0.950	10.000	0.08	True
CA-11	D7	0.189	0.950	10.000	1.11	True
CA-12	H1	0.171	0.950	10.000	1.00	True
CA-13	D6	0.210	0.850	10.000	1.10	True
CA-16	G1	0.438	0.850	10.000	2.29	True
CA-17	D5	0.278	0.700	10.000	1.20	True
CA-18	D3	0.266	0.750	10.000	1.23	True
CA-19	D2	0.142	0.750	10.000	0.66	True

Profile Report
Profile: Profile - A1-B2
Profile - A1-B2 - Base

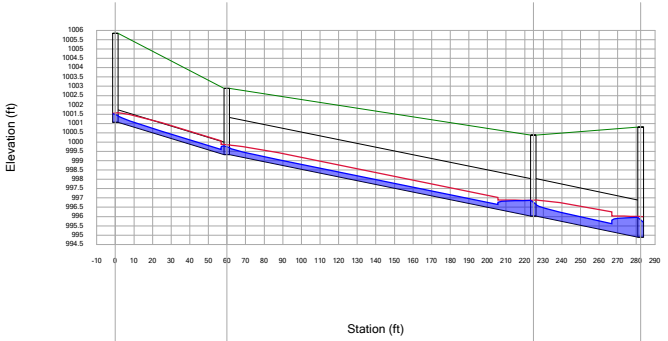


ID\Label		1022 \ P-16		1023 \ P-17		1017 \ P-14	1019 \ P-15	
Link Length (ft)		119.4		81.5		130.3	9.5	
Rise (in)\Material		15.0 \ Concrete (centrif. spun)		18.0 \ Concrete (centrif. spun)		30.0 \ Concrete (centrif. spun)	30.0 \ Concrete (centrif. spun)	
Flow (cfs)		0.94		1.78		5.91	8.62	
Slope (ft/ft)		0.020		0.040		0.020	0.028	
ID\Label	1020 \ B2		1021 \ B1		1014 \ A3		1016 \ A2	1018 \ A1
Ground (ft)	1003.89		1002.64		1000.80		999.52	999.50
Invert (ft)	1000.54		998.14		994.89		992.27	992.00
Station (ft)	0.0		119.4		200.9		331.2	340.7

Profile Report

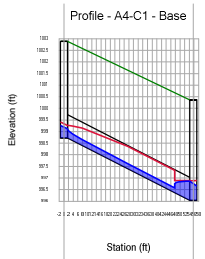
Profile: Profile - A3-A6

Profile - A3-A6 - Base



ID\Label		1011 \ P-11	1013 \ P-12	1015 \ P-13	
Link Length (ft)		59.9	164.7	57.7	
Rise (in)\Material		8.0 \ PVC	24.0 \ Concrete (centrif. spun)	24.0 \ Concrete (centrif. spun)	
Flow (cfs)		0.59	1.19	3.22	
Slope (ft/ft)		0.029	0.020	0.020	
ID\Label	1008 \ A6	1010 \ A5		1012 \ A4	1014 \ A3
Ground (ft)	1005.85	1002.89		1000.37	1000.80
Invert (ft)	1001.07	999.33		996.03	994.89
Station (ft)	0.0	59.9		224.6	282.3

Profile Report
Profile: Profile - A4-C1

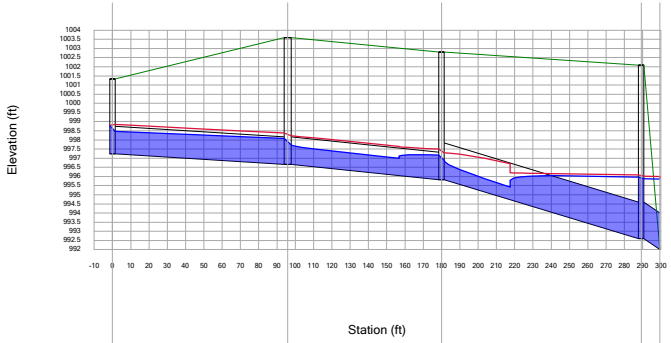


ID\Label	1025 \ P-18	
Link Length (ft)	55.7	
Rise (in)\Material	12.0 \ PVC	
Flow (cfs)	0.87	
Slope (ft/ft)	0.048	
ID\Label	1024 \ C1	1012 \ A4
Ground (ft)	1002.89	1000.37
Invert (ft)	998.73	996.03
Station (ft)	0.0	55.7

Profile Report

Profile: Profile - D1-D5

Profile - D1-D5 - Base

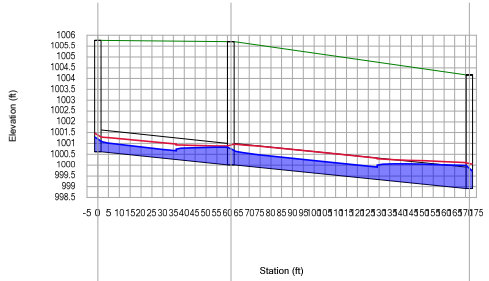


ID\Label	994 \ P-3	996 \ P-4	998 \ P-5	1000 \ P-6
Link Length (ft)	95.8	84.1	109.3	10.3
Rise (in)\Material	18.0 \ Concrete (centrif. spun)	18.0 \ Concrete (centrif. spun)	24.0 \ Concrete (centrif. spun)	24.0 \ Concrete (centrif. spun)
Flow (cfs)	7.69	7.60	8.69	9.24
Slope (ft/ft)	0.006	0.010	0.030	0.059
ID\Label	991 \ D5	993 \ D4	995 \ D3	999 \ D2	1001 \ D1
Ground (ft)	1001.34	1003.60	1002.80	1002.28	1002.00
Invert (ft)	997.24	996.66	995.83	992.56	992.00
Station (ft)	0.0	95.8	180.0	289.3	299.5

Profile Report

Profile: Profile - D6-D8

Profile - D6-D8 - Base

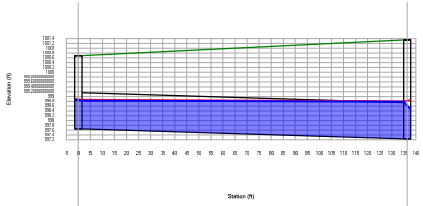


ID\Label		1005 \ P-8	1006 \ P-9	
Link Length (ft)		61.5	110.2	
Rise (in)\Material		12.0 \ PVC	12.0 \ PVC	
Flow (cfs)		1.32	2.41	
Slope (ft/ft)		0.010	0.010	
ID\Label	1003 \ D8	1004 \ D7		989 \ D6
Ground (ft)	1005.77	1005.71		1004.17
Invert (ft)	1000.62	1000.01		998.91
Station (ft)	0.0	61.5		171.7

Profile Report

Profile: Profile - D5-G1

Profile - D5-G1 - Base

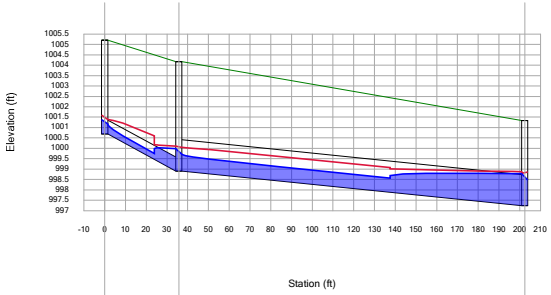


ID\Label	1002 \ P-7	
Link Length (ft)	136.4	
Rise (in)\Material	18.0 \ Concrete (centrif. spun)	
Flow (cfs)	2.29	
Slope (ft/ft)	0.003	
ID\Label	1001 \ G1	991 \ D5
Ground (ft)	1000.70	1001.34
Invert (ft)	997.65	997.24
Station (ft)	0.0	136.4

Profile Report

Profile: Profile - D5-H1

Profile - D5-H1 - Base



ID\Label	990 \ P-1	992 \ P-2	
Link Length (ft)	35.7	166.7	
Rise (in)\Material	8.0 \ PVC	18.0 \ Concrete (centrif. spun)	
Flow (cfs)	1.00	4.43	
Slope (ft/ft)	0.050	0.010	
ID\Label	988 \ H1	989 \ D6	991 \ D5
Ground (ft)	1005.21	1004.17	1001.34
Invert (ft)	1000.69	998.91	997.24
Station (ft)	0.0	35.7	202.4

Storm Data Detailed Report: LeesSummit

Element Details

ID	987	Notes
Label	LeesSummit	

Duration (min)	1 Year (in/h)	2 Year (in/h)	5 Year (in/h)	10 Year (in/h)	25 Year (in/h)	50 Year (in/h)	100 Year (in/h)
5.000	4.980	5.810	7.190	8.340	9.970	11.300	12.600
10.000	3.640	4.250	5.260	6.110	7.300	8.240	9.200
15.000	2.960	3.460	4.280	4.970	5.940	6.700	7.480
30.000	2.050	2.410	2.990	3.490	4.180	4.720	5.260
60.000	1.340	1.580	1.970	2.300	2.770	3.140	3.510
120.000	0.828	0.973	1.220	1.430	1.720	1.960	2.200
180.000	0.623	0.733	0.919	1.080	1.310	1.500	1.690
360.000	0.377	0.445	0.563	0.666	0.815	0.937	1.060
720.000	0.220	0.263	0.336	0.400	0.494	0.570	0.651
1,440.000	0.129	0.155	0.198	0.236	0.292	0.338	0.386
2,880.000	0.076	0.090	0.113	0.134	0.165	0.190	0.216
4,320.000	0.056	0.065	0.081	0.095	0.116	0.133	0.151
10,080.000	0.046	0.053	0.064	0.075	0.090	0.103	0.116
14,400.000	0.031	0.035	0.042	0.048	0.057	0.064	0.071

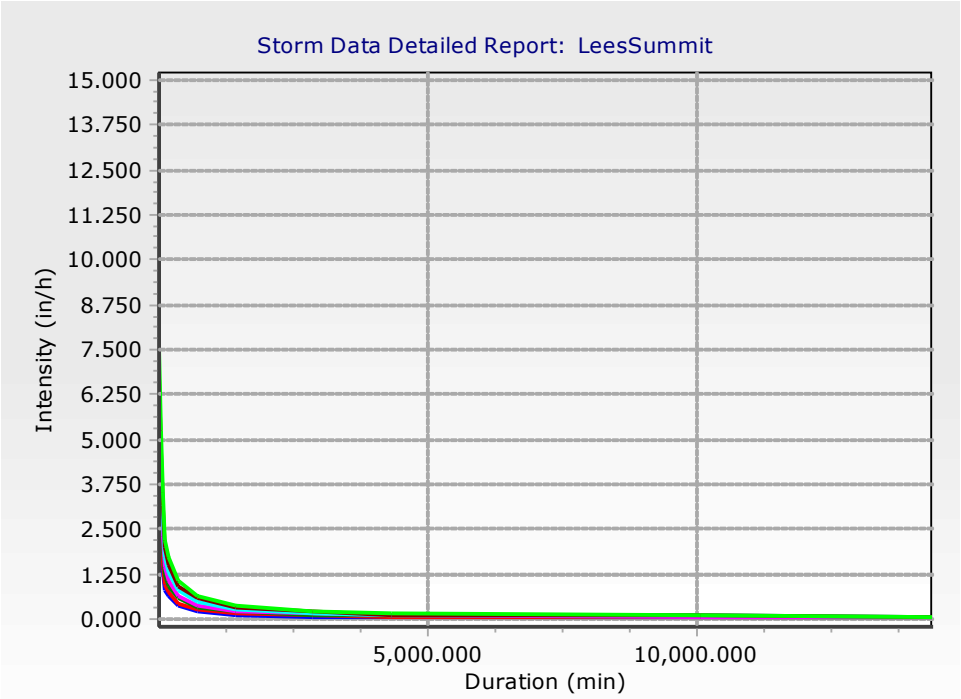
Library Status Summary

	Synchronization Details
ID	987
Label	LeesSummit

Storm Data Detailed Report: LeesSummit

Library Status Summary

	Synchronization Details
Modified Date	1/5/2018 4:02:09 PM
Library Source	Orphan (local)
Library Modified Date	Orphan (local)
Synchronization Status	Orphan (local)
Engineering Reference Guid	Orphan (local)



NOAA Atlas 14, Volume 8, Version 2
Location name: Lees Summit, Missouri, USA*
Latitude: 38.9042°, Longitude: -94.333°
Elevation: 1003.25 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.98 (3.89-6.34)	5.81 (4.54-7.40)	7.19 (5.59-9.18)	8.34 (6.47-10.7)	9.97 (7.51-13.2)	11.3 (8.30-15.0)	12.6 (8.99-17.1)	13.9 (9.60-19.4)	15.7 (10.5-22.5)	17.1 (11.1-24.8)
10-min	3.64 (2.85-4.64)	4.25 (3.32-5.42)	5.26 (4.10-6.72)	6.11 (4.73-7.84)	7.30 (5.50-9.64)	8.24 (6.08-11.0)	9.20 (6.58-12.5)	10.2 (7.03-14.2)	11.5 (7.67-16.5)	12.5 (8.15-18.2)
15-min	2.96 (2.32-3.78)	3.46 (2.70-4.40)	4.28 (3.33-5.46)	4.97 (3.85-6.37)	5.94 (4.47-7.84)	6.70 (4.94-8.95)	7.48 (5.35-10.2)	8.28 (5.71-11.6)	9.35 (6.24-13.4)	10.2 (6.63-14.8)
30-min	2.05 (1.60-2.61)	2.41 (1.88-3.07)	2.99 (2.33-3.83)	3.49 (2.70-4.47)	4.18 (3.14-5.51)	4.72 (3.48-6.29)	5.26 (3.76-7.17)	5.82 (4.01-8.12)	6.57 (4.38-9.40)	7.14 (4.65-10.4)
60-min	1.34 (1.05-1.71)	1.58 (1.23-2.01)	1.97 (1.53-2.51)	2.30 (1.78-2.95)	2.77 (2.08-3.66)	3.14 (2.31-4.19)	3.51 (2.52-4.80)	3.90 (2.69-5.46)	4.43 (2.96-6.35)	4.84 (3.15-7.02)
2-hr	0.828 (0.652-1.05)	0.973 (0.766-1.23)	1.22 (0.955-1.54)	1.43 (1.11-1.81)	1.72 (1.31-2.26)	1.96 (1.46-2.60)	2.20 (1.59-2.98)	2.45 (1.70-3.40)	2.79 (1.88-3.97)	3.06 (2.01-4.40)
3-hr	0.623 (0.493-0.784)	0.733 (0.579-0.923)	0.919 (0.724-1.16)	1.08 (0.847-1.37)	1.31 (1.00-1.72)	1.50 (1.12-1.98)	1.69 (1.22-2.28)	1.89 (1.32-2.62)	2.16 (1.46-3.07)	2.38 (1.57-3.42)
6-hr	0.377 (0.300-0.470)	0.445 (0.355-0.556)	0.563 (0.447-0.705)	0.666 (0.526-0.837)	0.815 (0.629-1.06)	0.937 (0.707-1.23)	1.06 (0.778-1.43)	1.20 (0.845-1.65)	1.38 (0.943-1.95)	1.53 (1.02-2.18)
12-hr	0.220 (0.177-0.273)	0.263 (0.211-0.326)	0.336 (0.269-0.417)	0.400 (0.318-0.499)	0.494 (0.384-0.640)	0.570 (0.434-0.747)	0.651 (0.480-0.871)	0.736 (0.524-1.01)	0.854 (0.587-1.20)	0.949 (0.635-1.34)
24-hr	0.129 (0.105-0.159)	0.155 (0.125-0.190)	0.198 (0.159-0.244)	0.236 (0.189-0.292)	0.292 (0.229-0.376)	0.338 (0.259-0.439)	0.386 (0.287-0.513)	0.437 (0.313-0.595)	0.508 (0.352-0.709)	0.565 (0.381-0.795)
2-day	0.076 (0.062-0.093)	0.090 (0.073-0.110)	0.113 (0.092-0.139)	0.134 (0.108-0.165)	0.165 (0.130-0.210)	0.190 (0.147-0.245)	0.216 (0.162-0.285)	0.244 (0.177-0.330)	0.284 (0.198-0.393)	0.315 (0.214-0.440)
3-day	0.056 (0.046-0.069)	0.065 (0.054-0.080)	0.081 (0.066-0.099)	0.095 (0.077-0.116)	0.116 (0.092-0.147)	0.133 (0.103-0.171)	0.151 (0.113-0.198)	0.170 (0.123-0.229)	0.197 (0.138-0.271)	0.218 (0.149-0.303)
4-day	0.046 (0.038-0.055)	0.053 (0.043-0.064)	0.064 (0.053-0.078)	0.075 (0.061-0.091)	0.090 (0.072-0.114)	0.103 (0.080-0.132)	0.116 (0.088-0.152)	0.130 (0.095-0.175)	0.150 (0.106-0.207)	0.166 (0.114-0.231)
7-day	0.031 (0.026-0.037)	0.035 (0.029-0.042)	0.042 (0.035-0.051)	0.048 (0.039-0.058)	0.057 (0.045-0.071)	0.064 (0.050-0.081)	0.071 (0.054-0.093)	0.079 (0.058-0.105)	0.090 (0.064-0.123)	0.098 (0.068-0.136)
10-day	0.025 (0.020-0.029)	0.028 (0.023-0.033)	0.033 (0.027-0.040)	0.038 (0.031-0.045)	0.044 (0.035-0.055)	0.049 (0.038-0.062)	0.054 (0.041-0.070)	0.059 (0.044-0.078)	0.067 (0.047-0.090)	0.072 (0.050-0.099)
20-day	0.016 (0.014-0.019)	0.019 (0.015-0.022)	0.022 (0.018-0.026)	0.025 (0.021-0.030)	0.029 (0.023-0.035)	0.031 (0.025-0.039)	0.034 (0.026-0.043)	0.037 (0.027-0.048)	0.040 (0.029-0.054)	0.043 (0.030-0.059)
30-day	0.013 (0.011-0.016)	0.015 (0.013-0.018)	0.018 (0.015-0.021)	0.020 (0.017-0.024)	0.023 (0.018-0.028)	0.025 (0.020-0.031)	0.027 (0.021-0.034)	0.029 (0.021-0.037)	0.031 (0.022-0.042)	0.033 (0.023-0.045)
45-day	0.011 (0.009-0.013)	0.012 (0.010-0.014)	0.014 (0.012-0.017)	0.016 (0.013-0.019)	0.018 (0.015-0.022)	0.020 (0.016-0.024)	0.021 (0.016-0.027)	0.023 (0.017-0.029)	0.024 (0.017-0.032)	0.025 (0.018-0.034)
60-day	0.009 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.015)	0.014 (0.012-0.016)	0.016 (0.013-0.019)	0.017 (0.013-0.021)	0.018 (0.014-0.023)	0.019 (0.014-0.025)	0.020 (0.015-0.027)	0.021 (0.015-0.029)

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

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

Please refer to NOAA Atlas 14 document for more information.

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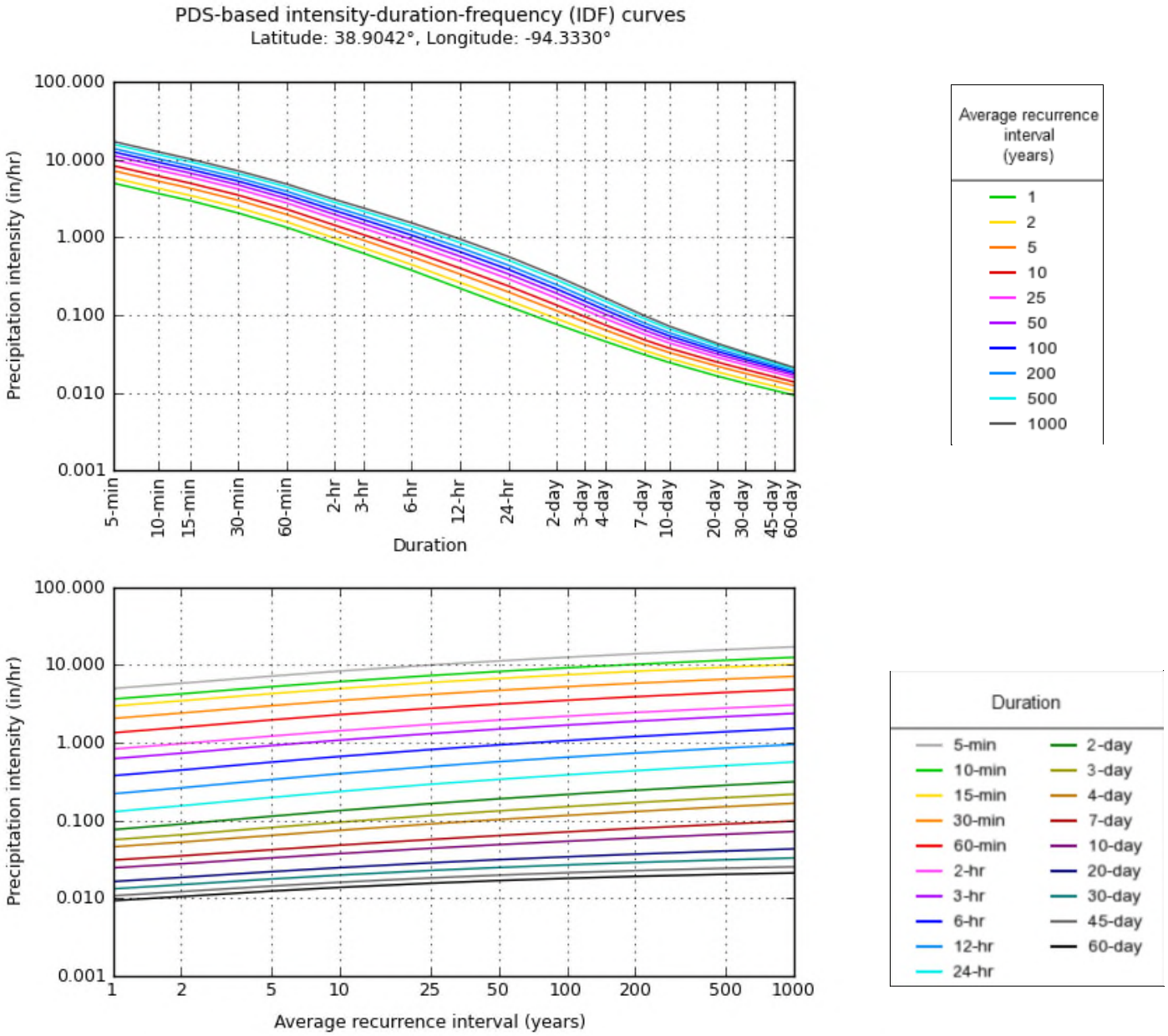
PF graphical



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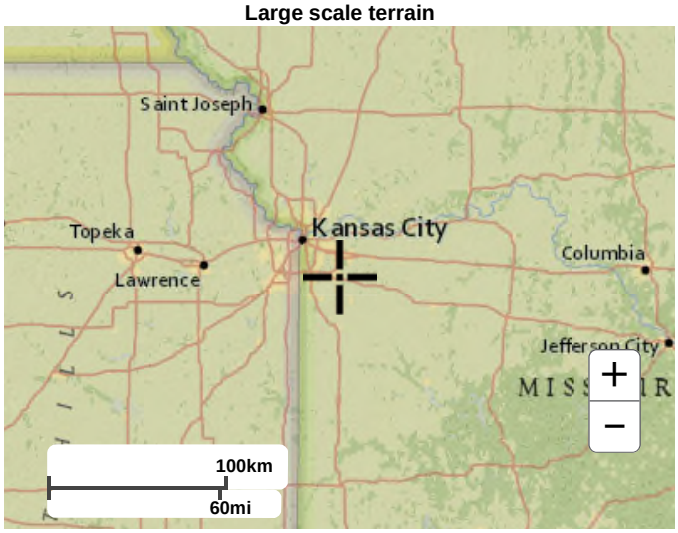
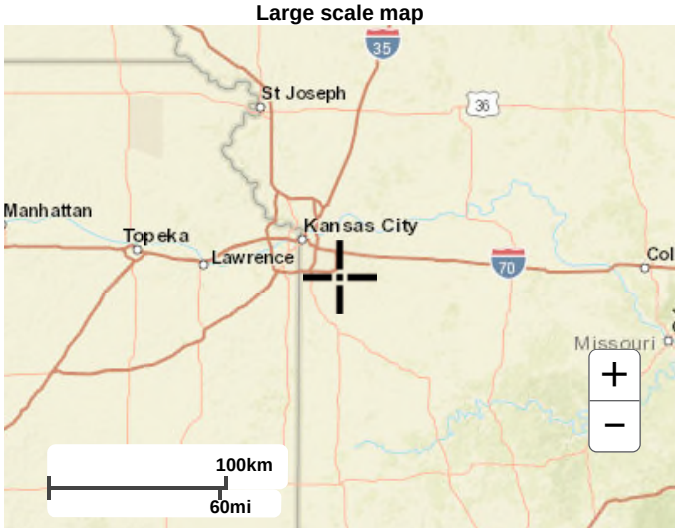
Maps & aerials

Small scale terrain

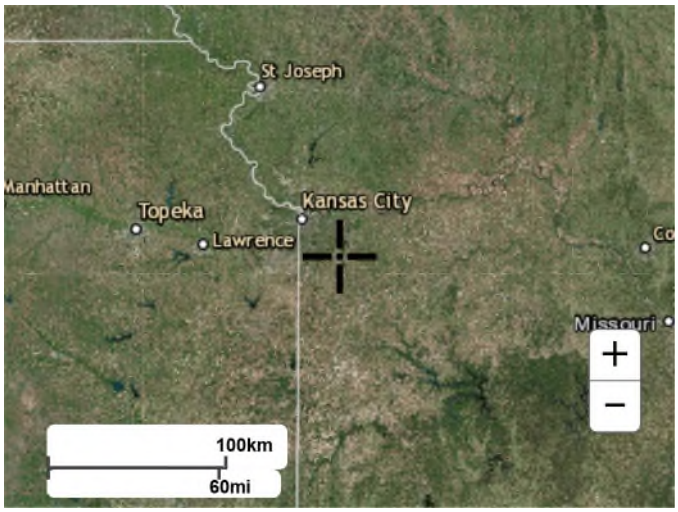
Large scale terrain



Large scale map



Large scale aerial



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

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