

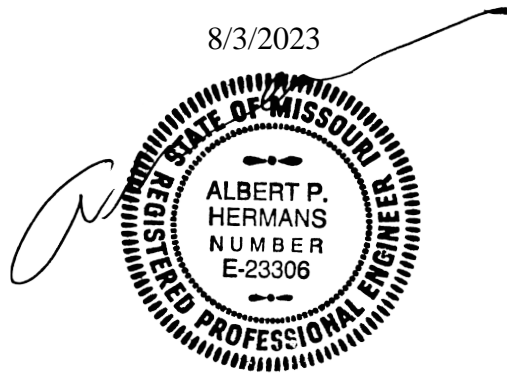
# **Revised Micro Storm Water Drainage Study Post Construction Revision**

Sequoia, Lee's Summit

Southwest Corner of NW Olive Street & NW Orchard Drive  
City of Lee's Summit, Jackson County, Missouri

Revision Date:

8/3/2023



Prepared By:

Albert Hermans, P.E.



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**MICRO STORM WATER DRAINAGE STUDY**  
**Sequoia**  
**500 NW Olive Street**  
**Lee's Summit, MO**

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**General Conditions:**

Sequoia, Lee's Summit:

Development Type: Residential

Parcel ID Number: 61-320-01-06-00-0-00-000, 61-310-05-12-00-0-00-000,  
61-310-06-01-00-0-00-000, 61320-07-01-00-0-00-000

Location: 500 NW Olive Street  
Lee's Summit, Missouri

Watershed Name: Cedar Creek

Total Site Acreage: 164,764 sq. ft. (3.783 Acres)

Disturbed Site Acreage: 164,764 sq. ft. (3.783 Acres)

Offsite Area Draining Over Site: 0 sq. ft. (0.00 Acres)

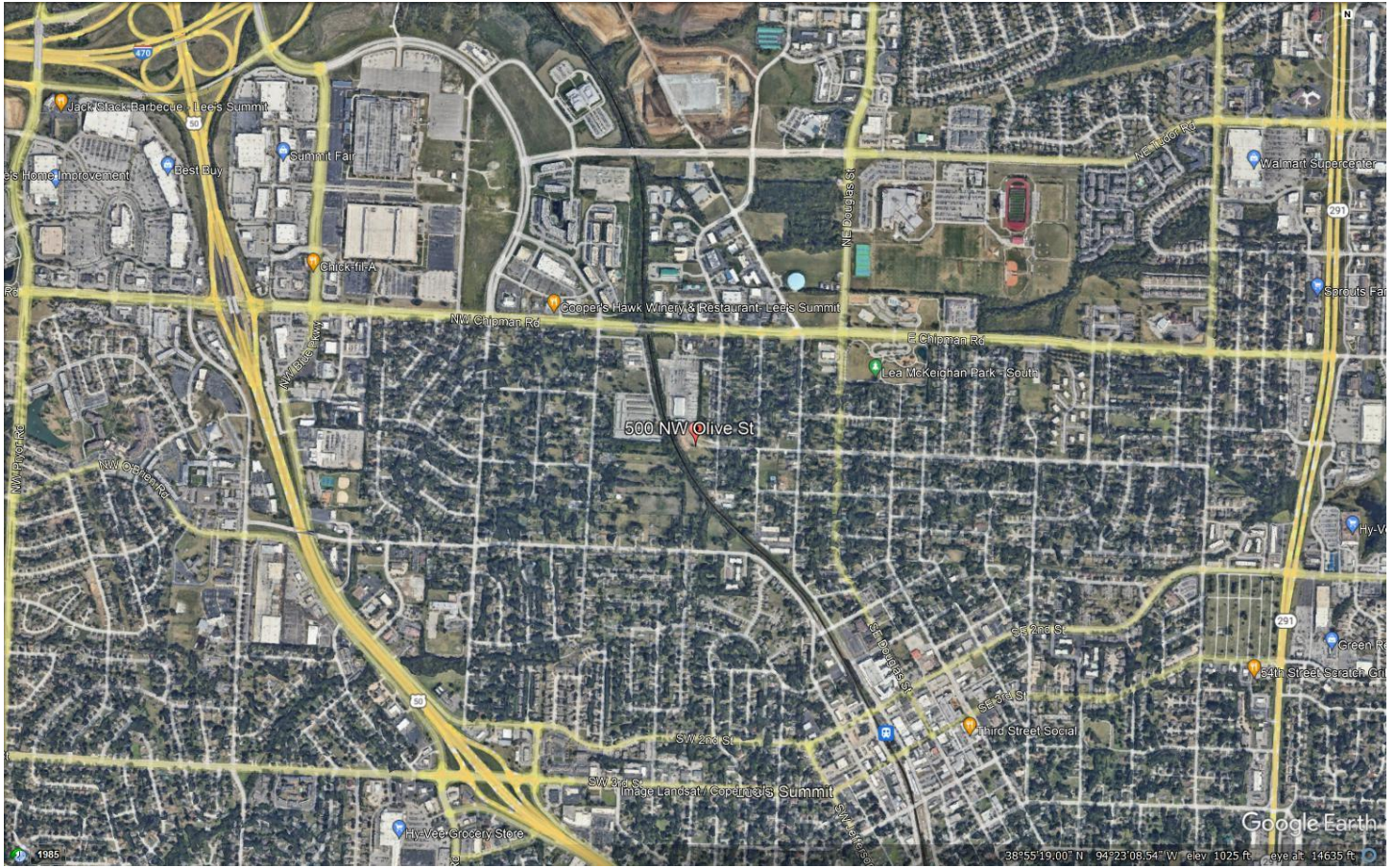
Soil Type: 10082 – Arisburg  
10128 – Sharpsburg  
10181 - Udarents

Assumed Hydrologic Group: B

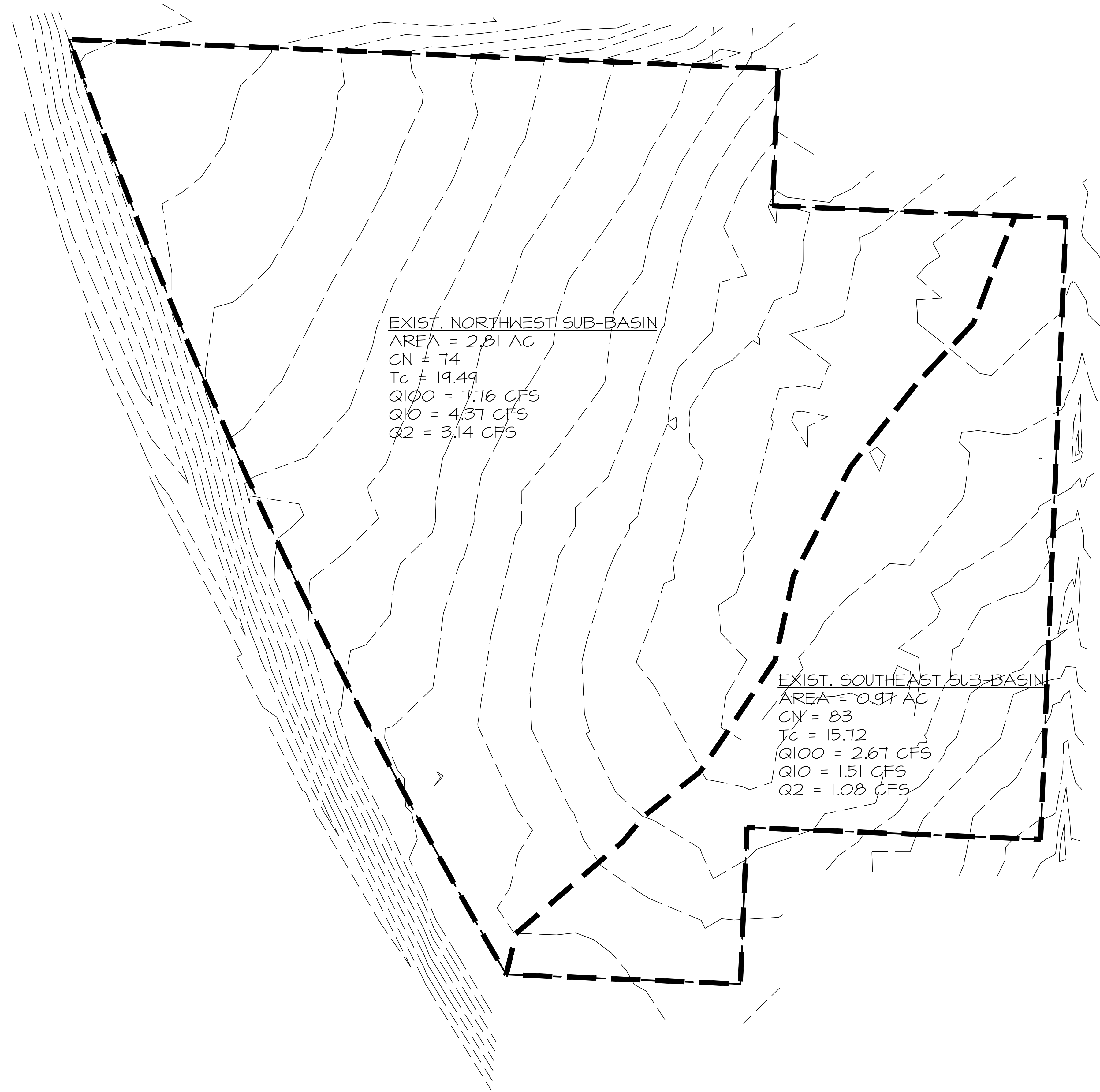
**Methodology:**

For purposes of determining storm water runoff quantities, the Rational Method will be used.

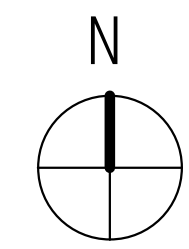
Resources used in the preparation of this report include APWA 5600.







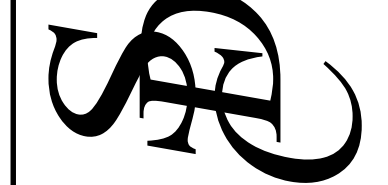
**PRE-DEVELOPMENT CONTOUR PLAN AND DRAINAGE AREAS**  
SCALE: 1" = 30'-0"



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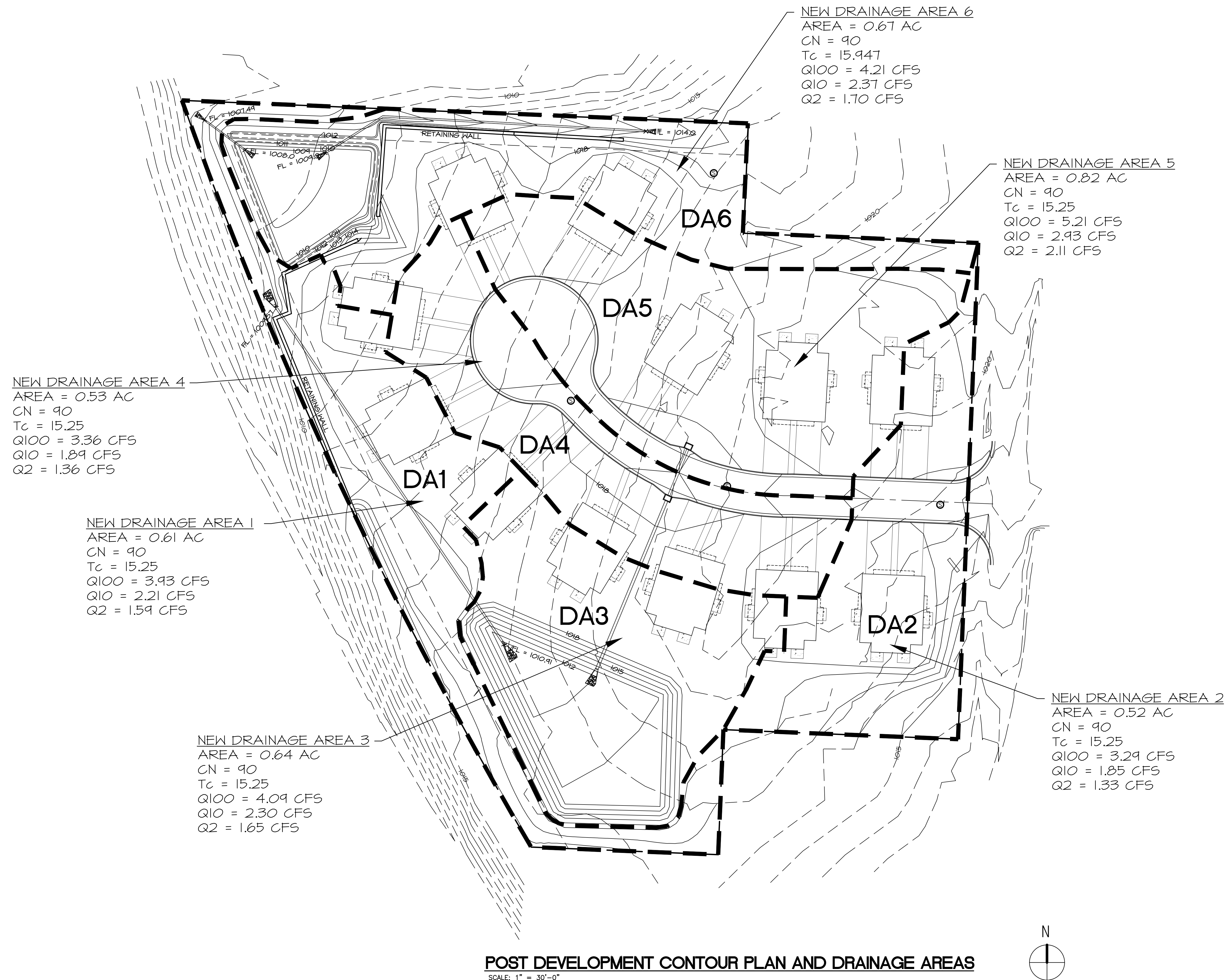
**SEQUOIA RESIDENTIAL**  
**500 NW OLIVE STREET**  
**LEE'S SUMMIT, MO**

**ENGINEERING, INC.**  
Consulting Structural and Civil Engineers  
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Raytown, Missouri 64133  
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### **Existing Condition Analysis:**

Prior to the proposed development, the site under consideration is partially developed. There are three houses and a variety of sheds on the property along with associated drives. The site is bordered on the west by railroad right-of-way, on the east by Olive Street (except for cut outs at the northeast and southeast corners), on the north by commercial and residential property, and on the south by residential property.

The site slopes to the east and west generally from a ridge running from the northeast part of the lot to the southwest part of the lot. Runoff flowing to the west drops a maximum of 14 feet to the low point at the northwest corner. Most of the runoff bleeds off the site along the west property line. Runoff flowing to the east drops a maximum of 7 feet to the low point at the southeast corner. The east part of the property adjoining Olive Street drains into an existing ditch at the west side of Olive Street.

The site is located in Zone “X”, area outside of the 0.2% annual chance floodplain. The nearest 100-year flood way is located approximately 3,900 feet southwest of the site near NW Blue Parkway and NW Executive Way. Another 100-year flood way is located approximately 4.650 feet northeast of the site near the southwest corner of NE Todor Road. Reference the January 20, 2017 FEMA Flood Insurance Rate Map 29095C0417G. The base flood elevation southwest of the site is approximately 954 where it is closest to the site. The lowest elevation at the site is 1008 at the northwest corner.

#### **Onsite Runoff – East Side**

Storm Event	Peak Runoff	Volume
100 Year	2.673 cfs	3214 Ft <sup>3</sup>
10 Year	1.505 cfs	1810 Ft <sup>3</sup>
2 Year	1.081 cfs	1300 Ft <sup>3</sup>

#### **Onsite Runoff – West Side**

Storm Event	Peak Runoff	Volume
100 Year	7.758 cfs	9328 Ft <sup>3</sup>
10 Year	4.368 cfs	5252 Ft <sup>3</sup>
2 Year	3.137 cfs	3772 Ft <sup>3</sup>

### **Proposed Condition Analysis:**

The proposed work will include construction of 12 new duplexes, associated driveways, and a new cul-de-sac. The resultant total impervious area will be approximately 52,700 square feet and the remaining pervious area will be approximately 112,064 square feet. The runoff from the northerly 29,269 square feet will be collected and routed to a pond at the northwest corner of the property. The runoff will collect in the pond and discharge through a pipe to the northwest corner of the property and onto the railroad right-of-way. The runoff from the center 86,281 square feet will be collected and routed to a pond near the southwest part of the property. The runoff will collect in the pond and discharge through a pipe flowing to the north and onto the railroad right-of-way. The runoff from the westerly 26,760 square feet is uncaptured and flows to the railroad right-of-way. The runoff from the easterly 22,454 square feet is uncaptured and flows to the ditch on the west side of Olive Street. The total runoff released offsite is approximately the same as that before redevelopment.

The detention ponds have been designed to detain and release downstream peak flow at less than or equal to pre-development levels.

#### **Site Runoff Before Detention – NW Pond**

Storm Event	Peak Runoff	Volume
100 Year	4.210 cfs	5382 Ft <sup>3</sup>
10 Year	2.369 cfs	3028 Ft <sup>3</sup>
2 Year	1.699 cfs	2172 Ft <sup>3</sup>

#### **Site Runoff Before Detention – South Pond**

Storm Event	Peak Runoff	Volume
100 Year	12.659 cfs	15,474 Ft <sup>3</sup>
10 Year	7.126 cfs	8711 Ft <sup>3</sup>
2 Year	5.116 cfs	6254 Ft <sup>3</sup>

#### **Uncollected Runoff From Developed Area (South)**

Storm Event	Peak Runoff	Volume
100 Year	3.926 cfs	4799 Ft <sup>3</sup>
10 Year	2.210 cfs	2702 Ft <sup>3</sup>
2 Year	1.587 cfs	1940 Ft <sup>3</sup>

#### **Uncollected Runoff From Developed Area (East)**

Storm Event	Peak Runoff	Volume
100 Year	3.294 cfs	4027 Ft <sup>3</sup>
10 Year	1.854 cfs	2266 Ft <sup>3</sup>
2 Year	1.331 cfs	1627 Ft <sup>3</sup>

**Summary:**

The change in impervious area for the proposed development is an increase of approximately 50,000 square feet with the same decrease in pervious area. The ponds will capture the runoff from most of the developed area of the site and store it for release offsite. The south part of the developed area will drain uncaptured onto the railroad right-of-way similar to the pre-development condition. The east part of the developed area will drain uncaptured into the ditch at the west side of Olive Street similar to the pre-development condition.

The available storage volume of the ponds is 44,000 cubic feet below the spillways. The runoff from the 100% and more frequent storms will be contained in the ponds with 1.0 feet or more freeboard.

**Conclusions and Recommendations:**

The proposed detention ponds will not increase storm water peak flow released to the watershed downstream for storms under 100-year or more frequent recurrence intervals.

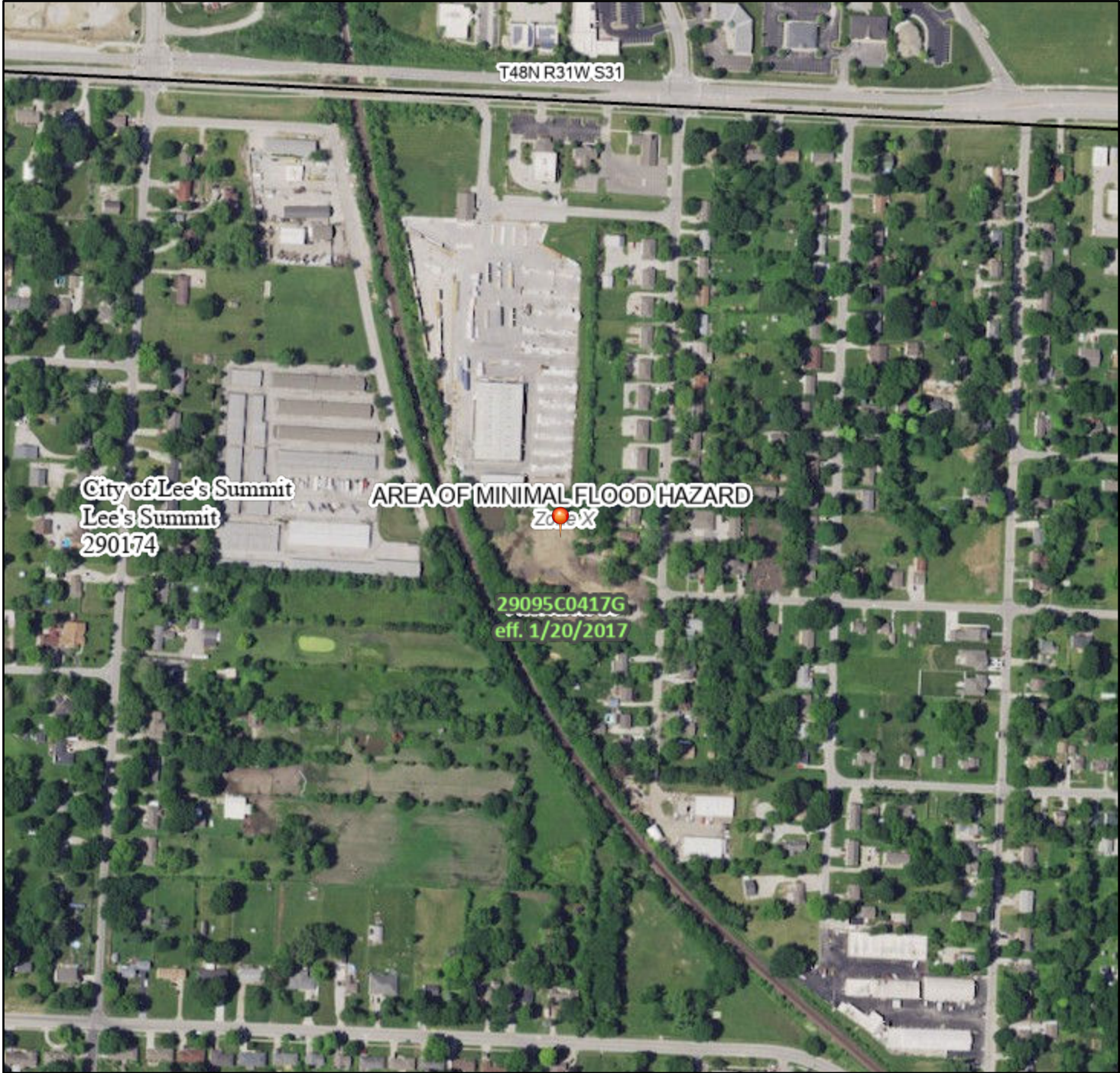


**Supporting Calculations and Information:**

# National Flood Hazard Layer FIRMette



94°23'27"W 38°55'33"N



1:6,000

94°22'50"W 38°55'5"N

Basemap Imagery Source: USGS National Map 2023

## Legend

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

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



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

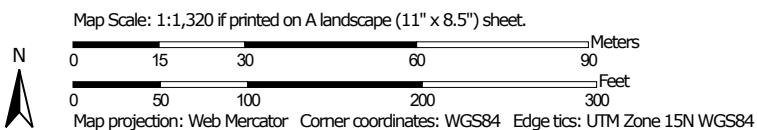
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **8/4/2023 at 11:40 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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



# Soil Map—Jackson County, Missouri (SEQUOIA SOIL MAP)



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

8/3/2023  
Page 1 of 3

Soil Map—Jackson County, Missouri  
(SEQUOIA SOIL MAP)

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### 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 24, Aug 31, 2022

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

Date(s) aerial images were photographed: Aug 30, 2022—Sep 8, 2022

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

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10082	Arisburg-Urban land complex, 1 to 5 percent slopes	2.0	30.3%
10128	Sharpsburg-Urban land complex, 2 to 5 percent slopes	4.2	63.9%
10181	Udarents-Urban land-Sampsel complex, 5 to 9 percent slopes	0.4	5.8%
<b>Totals for Area of Interest</b>		<b>6.6</b>	<b>100.0%</b>



DRAINAGE AREA                      42214                      SQ. FT.                      =                      0.9691                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      42214                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      0                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.3000

TRAVEL DISTANCE                      267                      FEET                      (<300 FEET)

ELEVATION DROP                      7                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.62                      %

TRAVEL TIME =                      15.000                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.719

Q=KCIA =                      1.081                      CFS

EAST RUNOFF  
UNDEVELOPED

DRAINAGE AREA	42214	SQ. FT.	=	0.9691	ACRES
---------------	-------	---------	---	--------	-------

STORM RETURN INTERVAL	10	YEARS
-----------------------	----	-------

PERVIOUS AREA	42214	SQ. FT.	RUNOFF COEFFICIENT	0.3
IMPERVIOUS AREA	0	SQ. FT.	RUNOFF COEFFICIENT	0.9
SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	

SITE RUNOFF COEFFICIENT =	0.3000
---------------------------	--------

TRAVEL DISTANCE	267	FEET	(<300 FEET)
ELEVATION DROP	7	FEET	

SLOPE	0.03	FT/FT	=	2.62	%
-------	------	-------	---	------	---

TRAVEL TIME =	15.000	MIN.
---------------	--------	------

"K" FACTOR =	1
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RAINFALL INTENSITY =	5.178
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Q=KCIA =	1.505	CFS
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EAST RUNOFF  
UNDEVELOPED

DRAINAGE AREA	42214	SQ. FT.	=	0.9691	ACRES
---------------	-------	---------	---	--------	-------

STORM RETURN INTERVAL	100	YEARS
-----------------------	-----	-------

PERVIOUS AREA	42214	SQ. FT.	RUNOFF COEFFICIENT	0.3
---------------	-------	---------	--------------------	-----

IMPERVIOUS AREA	0	SQ. FT.	RUNOFF COEFFICIENT	0.9
-----------------	---	---------	--------------------	-----

SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
--------------------	--	---------	--------------------	--

SITE RUNOFF COEFFICIENT =	0.3000
---------------------------	--------

TRAVEL DISTANCE	267	FEET	(<300 FEET)
-----------------	-----	------	-------------

ELEVATION DROP	7	FEET
----------------	---	------

SLOPE	0.03	FT/FT	=	2.62	%
-------	------	-------	---	------	---

TRAVEL TIME =	15.000	MIN.
---------------	--------	------

"K" FACTOR =	1.25
--------------	------

RAINFALL INTENSITY =	7.356
----------------------	-------

Q=KCIA =	2.673	CFS
----------	-------	-----

EAST RUNOFF  
UNDEVELOPED

DRAINAGE AREA                      122500                      SQ. FT.                      =                      2.8122                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      122500                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      0                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.3000

TRAVEL DISTANCE                      489                      FEET                      (<300 FEET)

ELEVATION DROP                      14                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.86                      %

TRAVEL TIME =                      15.000                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.719

Q=KCIA =                      3.137                      CFS

WEST RUNOFF  
UNDEVELOPED

DRAINAGE AREA                      122500                      SQ. FT.                      =                      2.8122                      ACRES

STORM RETURN INTERVAL                      10                      YEARS

PERVIOUS AREA                      122500                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      0                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.3000

TRAVEL DISTANCE                      489                      FEET                      (<300 FEET)

ELEVATION DROP                      14                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.86                      %

TRAVEL TIME =                      15.000                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      5.178

Q=KCIA =                      4.368                      CFS

WEST RUNOFF  
UNDEVELOPED



DRAINAGE AREA                      122500                      SQ. FT.                      =                      2.8122                      ACRES

STORM RETURN INTERVAL                      100                      YEARS

PERVIOUS AREA                      122500                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      0                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.3000

TRAVEL DISTANCE                      489                      FEET                      (<300 FEET)

ELEVATION DROP                      14                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.86                      %

TRAVEL TIME =                      15.000                      MIN.

"K" FACTOR =                      1.25

RAINFALL INTENSITY =                      7.356

Q=KCIA =                      7.758                      CFS

WEST RUNOFF  
UNDEVELOPED

DRAINAGE AREA	86281	SQ. FT.	=	1.9807	ACRES
---------------	-------	---------	---	--------	-------

STORM RETURN INTERVAL	2	YEARS
-----------------------	---	-------

PERVIOUS AREA	86281	SQ. FT.	RUNOFF COEFFICIENT	0.3
---------------	-------	---------	--------------------	-----

IMPERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	0.9
-----------------	--	---------	--------------------	-----

SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
--------------------	--	---------	--------------------	--

SITE RUNOFF COEFFICIENT =	0.3000
---------------------------	--------

TRAVEL DISTANCE	239	FEET	(<300 FEET)
-----------------	-----	------	-------------

ELEVATION DROP	4.5	FEET
----------------	-----	------

SLOPE	0.02	FT/FT	=	1.88	%
-------	------	-------	---	------	---

TRAVEL TIME =	15.250	MIN.
---------------	--------	------

"K" FACTOR =	1
--------------	---

RAINFALL INTENSITY =	3.690
----------------------	-------

Q=KCIA =	2.193	CFS
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TO SOUTH POND  
UNDEVELOPED

DRAINAGE AREA	86281	SQ. FT.	=	1.9807	ACRES
---------------	-------	---------	---	--------	-------

STORM RETURN INTERVAL	10	YEARS
-----------------------	----	-------

PERVIOUS AREA	86281	SQ. FT.	RUNOFF COEFFICIENT	0.3
---------------	-------	---------	--------------------	-----

IMPERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	0.9
-----------------	--	---------	--------------------	-----

SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
--------------------	--	---------	--------------------	--

SITE RUNOFF COEFFICIENT =	0.3000
---------------------------	--------

TRAVEL DISTANCE	239	FEET	(<300 FEET)
-----------------	-----	------	-------------

ELEVATION DROP	4.5	FEET
----------------	-----	------

SLOPE	0.02	FT/FT	=	1.88	%
-------	------	-------	---	------	---

TRAVEL TIME =	15.250	MIN.
---------------	--------	------

"K" FACTOR =	1
--------------	---

RAINFALL INTENSITY =	5.140
----------------------	-------

Q=KCIA =	3.054	CFS
----------	-------	-----

TO SOUTH POND  
UNDEVELOPED

DRAINAGE AREA	86281	SQ. FT.	=	1.9807	ACRES
---------------	-------	---------	---	--------	-------

STORM RETURN INTERVAL	100	YEARS
-----------------------	-----	-------

PERVIOUS AREA	86281	SQ. FT.	RUNOFF COEFFICIENT	0.3
---------------	-------	---------	--------------------	-----

IMPERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	0.9
-----------------	--	---------	--------------------	-----

SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
--------------------	--	---------	--------------------	--

SITE RUNOFF COEFFICIENT =	0.3000
---------------------------	--------

TRAVEL DISTANCE	239	FEET	(<300 FEET)
-----------------	-----	------	-------------

ELEVATION DROP	4.5	FEET
----------------	-----	------

SLOPE	0.02	FT/FT	=	1.88	%
-------	------	-------	---	------	---

TRAVEL TIME =	15.250	MIN.
---------------	--------	------

"K" FACTOR =	1.25
--------------	------

RAINFALL INTENSITY =	7.304
----------------------	-------

Q=KCIA =	5.425	CFS
----------	-------	-----

TO SOUTH POND  
UNDEVELOPED

DRAINAGE AREA                      86281                      SQ. FT.                      =                      1.9807                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      28760                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      57521                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      239                      FEET                      (<300 FEET)

ELEVATION DROP                      4.5                      FEET

SLOPE                      0.02                      FT/FT                      =                      1.88                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.690

Q=KCIA =                      5.116                      CFS

TO SOUTH POND  
AFTER



DRAINAGE AREA	86281	SQ. FT.	=	1.9807	ACRES
---------------	-------	---------	---	--------	-------

STORM RETURN INTERVAL	10	YEARS
-----------------------	----	-------

PERVIOUS AREA	28760	SQ. FT.	RUNOFF COEFFICIENT	0.3
---------------	-------	---------	--------------------	-----

IMPERVIOUS AREA	57521	SQ. FT.	RUNOFF COEFFICIENT	0.9
-----------------	-------	---------	--------------------	-----

SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
--------------------	--	---------	--------------------	--

SITE RUNOFF COEFFICIENT =	0.7000
---------------------------	--------

TRAVEL DISTANCE	239	FEET	(<300 FEET)
-----------------	-----	------	-------------

ELEVATION DROP	4.5	FEET
----------------	-----	------

SLOPE	0.02	FT/FT	=	1.88	%
-------	------	-------	---	------	---

TRAVEL TIME =	15.250	MIN.
---------------	--------	------

"K" FACTOR =	1
--------------	---

RAINFALL INTENSITY =	5.140
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Q=KCIA =	7.126	CFS
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TO SOUTH POND  
AFTER

DRAINAGE AREA	86281	SQ. FT.	=	1.9807	ACRES
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STORM RETURN INTERVAL	100	YEARS
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PERVIOUS AREA	28760	SQ. FT.	RUNOFF COEFFICIENT	0.3
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IMPERVIOUS AREA	57521	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	239	FEET	(<300 FEET)
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ELEVATION DROP	4.5	FEET
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SLOPE	0.02	FT/FT	=	1.88	%
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TRAVEL TIME =	15.250	MIN.
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"K" FACTOR =	1.25
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RAINFALL INTENSITY =	7.304
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Q=KCIA =	12.659	CFS
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TO SOUTH POND  
AFTER

DRAINAGE AREA                      29269                      SQ. FT.                      =                      0.6719                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      29269                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      0                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.3000

TRAVEL DISTANCE                      268                      FEET                      (<300 FEET)

ELEVATION DROP                      8                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.99                      %

TRAVEL TIME =                      15.947                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.612

Q=KCIA =                      0.728                      CFS

TO NW POND & DA #6  
UNDEVELOPED



DRAINAGE AREA                      29269                      SQ. FT.                      =                      0.6719                      ACRES

STORM RETURN INTERVAL                      10                      YEARS

PERVIOUS AREA                      29269                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      0                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.3000

TRAVEL DISTANCE                      268                      FEET                      (<300 FEET)

ELEVATION DROP                      8                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.99                      %

TRAVEL TIME =                      15.947                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      5.036

Q=KCIA =                      1.015                      CFS

TO NW POND & PA #6  
UNDEVELOPED

DRAINAGE AREA                      29269                      SQ. FT.                      =                      0.6719                      ACRES

STORM RETURN INTERVAL                      100                      YEARS

PERVIOUS AREA                      29269                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      0                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.3000

TRAVEL DISTANCE                      268                      FEET                      (<300 FEET)

ELEVATION DROP                      8                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.99                      %

TRAVEL TIME =                      15.947                      MIN.

"K" FACTOR =                      1.25

RAINFALL INTENSITY =                      7.161

Q=KCIA =                      1.804                      CFS

TO NW POND & DA #6  
UNDEVELOPED

DRAINAGE AREA                      29269                      SQ. FT.                      =                      0.6719                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      9756                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      19513                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      268                      FEET                      (<300 FEET)

ELEVATION DROP                      8                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.99                      %

TRAVEL TIME =                      15.947                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.612

Q=KCIA =                      1.699                      CFS

TO NW POND & DA #6  
AFTER

DRAINAGE AREA                      29269                      SQ. FT.                      =                      0.6719                      ACRES

STORM RETURN INTERVAL                      10                      YEARS

PERVIOUS AREA                      9756                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      19513                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      268                      FEET                      (<300 FEET)

ELEVATION DROP                      8                      FEET

SLOPE                      0.03                      FT/FT                      =                      2.99                      %

TRAVEL TIME =                      15.947                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      5.036

Q=KCIA =                      2.369                      CFS

TO NW POND & DA #6  
AFTER



DRAINAGE AREA	29269	SQ. FT.	=	0.6719	ACRES
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STORM RETURN INTERVAL	100	YEARS
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PERVIOUS AREA	9756	SQ. FT.	RUNOFF COEFFICIENT	0.3
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IMPERVIOUS AREA	19513	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	268	FEET	(<300 FEET)
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ELEVATION DROP	8	FEET
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SLOPE	0.03	FT/FT	=	2.99	%
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TRAVEL TIME =	15.947	MIN.
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"K" FACTOR =	1.25
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RAINFALL INTENSITY =	7.161
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Q=KCIA =	4.210	CFS
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TO NW POND & DA #6  
AFTER

DRAINAGE AREA                      26760                      SQ. FT.                      =                      0.6143                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      8920                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      17840                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      300                      FEET                      (<300 FEET)

ELEVATION DROP                      7                      FEET

SLOPE                      0.02                      FT/FT                      =                      2.33                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.690

Q=KCIA =                      1.587                      CFS

PA #1 AFTER

DRAINAGE AREA                      26760                      SQ. FT.                      =                      0.6143                      ACRES

STORM RETURN INTERVAL                      10                      YEARS

PERVIOUS AREA                      8920                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      17840                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      300                      FEET                      (<300 FEET)

ELEVATION DROP                      7                      FEET

SLOPE                      0.02                      FT/FT                      =                      2.33                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      5.140

Q=KCIA =                      2.210                      CFS

DA #1 AFTER

DRAINAGE AREA	26760	SQ. FT.	=	0.6143	ACRES
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STORM RETURN INTERVAL	100	YEARS
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PERVIOUS AREA	8920	SQ. FT.	RUNOFF COEFFICIENT	0.3
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IMPERVIOUS AREA	17840	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	300	FEET	(<300 FEET)
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ELEVATION DROP	7	FEET
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SLOPE	0.02	FT/FT	=	2.33	%
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TRAVEL TIME =	15.250	MIN.
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"K" FACTOR =	1.25
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RAINFALL INTENSITY =	7.304
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Q=KCIA =	3.926	CFS
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DA #1 AFTER

DRAINAGE AREA                      22454                      SQ. FT.                      =                      0.5155                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      7485                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      14969                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      250                      FEET                      (<300 FEET)

ELEVATION DROP                      6                      FEET

SLOPE                      0.02                      FT/FT                      =                      2.40                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.690

Q=KCIA =                      1.331                      CFS

DA #2 AFTER

DRAINAGE AREA                      22454                      SQ. FT.                      =                      0.5155                      ACRES

STORM RETURN INTERVAL                      10                      YEARS

PERVIOUS AREA                      7485                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      14969                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      250                      FEET                      (<300 FEET)

ELEVATION DROP                      6                      FEET

SLOPE                      0.02                      FT/FT                      =                      2.40                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      5.140

Q=KCIA =                      1.854                      CFS

DA #2 AFTER



DRAINAGE AREA	22454	SQ. FT.	=	0.5155	ACRES
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STORM RETURN INTERVAL	100	YEARS
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PERVIOUS AREA	7485	SQ. FT.	RUNOFF COEFFICIENT	0.3
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IMPERVIOUS AREA	14969	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	250	FEET	(<300 FEET)
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ELEVATION DROP	6	FEET
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SLOPE	0.02	FT/FT	=	2.40	%
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TRAVEL TIME =	15.250	MIN.
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"K" FACTOR =	1.25
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RAINFALL INTENSITY =	7.304
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Q=KCIA =	3.294	CFS
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DA # 2 AFTER

DRAINAGE AREA                      27876                      SQ. FT.                      =                      0.6399                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      9292                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      18584                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      250                      FEET                      (<300 FEET)

ELEVATION DROP                      8                      FEET

SLOPE                      0.03                      FT/FT                      =                      3.20                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.690

Q=KCIA =                      1.653                      CFS

DA #3 AFTER

DRAINAGE AREA                      27876                      SQ. FT.                      =                      0.6399                      ACRES

STORM RETURN INTERVAL                      10                      YEARS

PERVIOUS AREA                      9292                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      18584                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      250                      FEET                      (<300 FEET)

ELEVATION DROP                      8                      FEET

SLOPE                      0.03                      FT/FT                      =                      3.20                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      5.140

Q=KCIA =                      2.302                      CFS

DA #3 AFTER

DRAINAGE AREA	27876	SQ. FT.	=	0.6399	ACRES
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STORM RETURN INTERVAL	100	YEARS
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PERVIOUS AREA	9292	SQ. FT.	RUNOFF COEFFICIENT	0.3
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IMPERVIOUS AREA	18584	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	250	FEET	(<300 FEET)
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ELEVATION DROP	8	FEET
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SLOPE	0.03	FT/FT	=	3.20	%
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TRAVEL TIME =	15.250	MIN.
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"K" FACTOR =	1.25
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RAINFALL INTENSITY =	7.304
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Q=KCIA =	4.090	CFS
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DA #3 AFTER

DRAINAGE AREA                      22892                      SQ. FT.                      =                      0.5255                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      7631                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      15261                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      225                      FEET                      (<300 FEET)

ELEVATION DROP                      3                      FEET

SLOPE                      0.01                      FT/FT                      =                      1.33                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.690

Q=KCIA =                      1.357                      CFS

DA # 4 AFTER

DRAINAGE AREA                      22892                      SQ. FT.                      =                      0.5255                      ACRES

STORM RETURN INTERVAL                      10                      YEARS

PERVIOUS AREA                      7631                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      15261                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      225                      FEET                      (<300 FEET)

ELEVATION DROP                      3                      FEET

SLOPE                      0.01                      FT/FT                      =                      1.33                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      5.140

Q=KCIA =                      1.891                      CFS

PA #4 AFTER



DRAINAGE AREA	22892	SQ. FT.	=	0.5255	ACRES
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STORM RETURN INTERVAL	100	YEARS
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PERVIOUS AREA	7631	SQ. FT.	RUNOFF COEFFICIENT	0.3
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IMPERVIOUS AREA	15261	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	225	FEET	(<300 FEET)
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ELEVATION DROP	3	FEET
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SLOPE	0.01	FT/FT	=	1.33	%
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TRAVEL TIME =	15.250	MIN.
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"K" FACTOR =	1.25
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RAINFALL INTENSITY =	7.304
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Q=KCIA =	3.359	CFS
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DA #4 AFTER

DRAINAGE AREA                      35513                      SQ. FT.                      =                      0.8153                      ACRES

STORM RETURN INTERVAL                      2                      YEARS

PERVIOUS AREA                      11838                      SQ. FT.                      RUNOFF COEFFICIENT                      0.3

IMPERVIOUS AREA                      23675                      SQ. FT.                      RUNOFF COEFFICIENT                      0.9

SEMI-PERVIOUS AREA                      SQ. FT.                      RUNOFF COEFFICIENT

SITE RUNOFF COEFFICIENT =                      0.7000

TRAVEL DISTANCE                      240                      FEET                      (<300 FEET)

ELEVATION DROP                      4.5                      FEET

SLOPE                      0.02                      FT/FT                      =                      1.88                      %

TRAVEL TIME =                      15.250                      MIN.

"K" FACTOR =                      1

RAINFALL INTENSITY =                      3.690

Q=KCIA =                      2.106                      CFS

DA #S AFTER

DRAINAGE AREA	35513	SQ. FT.	=	0.8153	ACRES
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STORM RETURN INTERVAL	10	YEARS
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PERVIOUS AREA	11838	SQ. FT.	RUNOFF COEFFICIENT	0.3
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IMPERVIOUS AREA	23675	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	240	FEET	(<300 FEET)
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ELEVATION DROP	4.5	FEET
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SLOPE	0.02	FT/FT	=	1.88	%
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TRAVEL TIME =	15.250	MIN.
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"K" FACTOR =	1
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RAINFALL INTENSITY =	5.140
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Q=KCIA =	2.933	CFS
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DA #5 AFTER

DRAINAGE AREA	35513	SQ. FT.	=	0.8153	ACRES
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STORM RETURN INTERVAL	100	YEARS
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PERVIOUS AREA	11838	SQ. FT.	RUNOFF COEFFICIENT	0.3
---------------	-------	---------	--------------------	-----

IMPERVIOUS AREA	23675	SQ. FT.	RUNOFF COEFFICIENT	0.9
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SEMI-PERVIOUS AREA		SQ. FT.	RUNOFF COEFFICIENT	
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SITE RUNOFF COEFFICIENT =	0.7000
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TRAVEL DISTANCE	240	FEET	(<300 FEET)
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ELEVATION DROP	4.5	FEET
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SLOPE	0.02	FT/FT	=	1.88	%
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TRAVEL TIME =	15.250	MIN.
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"K" FACTOR =	1.25
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RAINFALL INTENSITY =	7.304
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Q=KCIA =	5.210	CFS
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PA #S AFTER

# SOUTH POND

TIME (HR.)	INFLOW (CFS)	I (CFS)	S2/TΔ+O2/2(CFS)	O2 (CFS)	S2 (FT3)
0.033	0.66	0.33	0.33	0.15	30.36
0.067	1.98	1.32	1.50	0.75	134.46
0.100	3.82	2.90	3.65	2.20	305.34
0.133	6.54	5.18	6.62	2.66	635.52
0.167	9.48	8.01	11.98	3.14	1,249.08
0.200	11.59	10.54	19.38	3.61	2,108.34
0.233	12.56	12.08	27.84	4.03	3,099.06
0.267	12.60	12.58	36.39	4.37	4,105.08
0.300	11.92	12.26	44.29	4.62	5,037.36
0.333	10.77	11.35	51.02	4.80	5,833.56
0.367	9.33	10.05	56.26	4.94	6,455.04
0.400	7.49	8.41	59.73	5.02	6,866.70
0.433	5.78	6.64	61.35	5.06	7,058.10
0.467	4.66	5.22	61.51	5.06	7,077.24
0.500	3.75	4.21	60.65	5.04	6,975.54
0.533	3.09	3.42	59.03	5.01	6,783.06
0.567	2.51	2.80	56.82	4.95	6,521.64
0.600	2.01	2.26	54.13	4.89	6,202.62
0.633	1.63	1.82	51.07	4.81	5,839.62
0.667	1.31	1.47	47.73	4.72	5,444.82
0.700	1.06	1.19	44.20	4.61	5,027.34
0.733	0.86	0.96	40.55	4.50	4,595.64
0.767	0.68	0.77	36.82	4.38	4,155.06
0.800	0.56	0.62	33.06	4.24	3,712.02
0.833	0.45	0.51	29.32	4.09	3,272.64
0.867	0.36	0.41	25.63	3.93	2,840.22
0.900	0.30	0.33	22.04	3.75	2,419.02
0.933	0.24	0.27	18.55	3.57	2,012.34
0.967	0.19	0.22	15.20	3.36	1,622.52
1.000	0.16	0.18	12.02	3.14	1,253.34
1.033	0.13	0.15	9.02	2.90	908.58
1.067	0.11	0.12	6.24	2.61	592.56
1.100	0.09	0.10	3.73	2.26	312.36
1.133	0.07	0.08	1.55	0.78	139.80
1.167	0.05	0.06	0.84	0.40	76.08
1.200	0.04	0.05	0.48	0.23	43.68
1.233	0.02	0.03	0.28	0.13	25.86
1.267	0.00	0.01	0.16	0.07	14.76
1.300	0.00	-	0.09	0.04	7.80
1.333	0.00	-	0.04	0.02	4.20
1.367	0.00	-	0.03	0.02	1.92
1.400	0.00	-	0.01	0.01	0.36
1.433	0.00	-	(0.00)	-	(0.00)
1.467	0.00	-	(0.00)	-	(0.00)
1.500	0.00	-	(0.00)	-	(0.00)
1.533	0.00	-	(0.00)	-	(0.00)
1.567	0.00	-	(0.00)	-	(0.00)
1.600	0.00	-	(0.00)	-	(0.00)
1.633	0.00	-	(0.00)	-	(0.00)

Δt = 0.033



# NW POND

TIME (HR.)	INFLOW (CFS)	I (CFS)	S2/TΔ+O2/2(CFS)	O2 (CFS)	S2 (FT3)
0.033	0.20	0.10	0.10	0.03	10.24
0.067	0.61	0.41	0.48	0.14	48.49
0.100	1.19	0.90	1.23	0.35	126.97
0.133	1.99	1.59	2.47	0.81	247.99
0.167	2.96	2.48	4.13	1.20	424.09
0.200	3.70	3.33	6.26	1.29	674.47
0.233	4.11	3.91	8.88	1.38	983.29
0.267	4.21	4.16	11.67	1.46	1,312.21
0.300	4.10	4.16	14.36	1.53	1,631.23
0.333	3.76	3.93	16.76	1.59	1,915.45
0.367	3.35	3.56	18.72	1.64	2,148.07
0.400	2.84	3.10	20.17	1.68	2,320.27
0.433	2.23	2.54	21.03	1.70	2,421.85
0.467	1.77	2.00	21.33	1.71	2,457.55
0.500	1.44	1.61	21.23	1.70	2,445.61
0.533	1.17	1.31	20.83	1.69	2,398.39
0.567	0.98	1.08	20.21	1.68	2,325.01
0.600	0.80	0.89	19.43	1.66	2,231.47
0.633	0.64	0.72	18.49	1.64	2,120.11
0.667	0.53	0.59	17.43	1.61	1,995.61
0.700	0.43	0.48	16.31	1.58	1,861.93
0.733	0.35	0.39	15.12	1.55	1,720.93
0.767	0.29	0.32	13.89	1.52	1,575.07
0.800	0.23	0.26	12.63	1.49	1,425.79
0.833	0.19	0.21	11.35	1.45	1,274.59
0.867	0.15	0.17	10.07	1.41	1,123.03
0.900	0.13	0.14	8.79	1.37	972.55
0.933	0.10	0.12	7.53	1.33	823.99
0.967	0.08	0.09	6.29	1.29	677.65
1.000	0.07	0.08	5.08	1.24	535.03
1.033	0.06	0.07	3.90	1.19	396.97
1.067	0.05	0.06	2.77	0.93	276.37
1.100	0.04	0.05	1.88	0.60	190.03
1.133	0.03	0.04	1.32	0.41	133.63
1.167	0.03	0.03	0.94	0.29	95.41
1.200	0.02	0.03	0.68	0.21	68.89
1.233	0.02	0.02	0.49	0.15	50.17
1.267	0.01	0.02	0.36	0.11	36.73
1.300	0.00	0.01	0.26	0.08	26.29
1.333	0.00	-	0.18	0.05	18.49
1.367	0.00	-	0.13	0.04	13.03
1.400	0.00	-	0.09	0.03	9.19
1.433	0.00	-	0.06	0.02	6.55
1.467	0.00	-	0.05	0.02	4.57
1.500	0.00	-	0.03	0.01	3.13
1.533	0.00	-	0.02	0.01	2.11
1.567	0.00	-	0.01	0.01	1.21
1.600	0.00	-	0.01	0.01	0.43
1.633	0.00	-	0.00	0.00	0.00

Δt = 0.033