STORMWATER MANAGEMENT REPORT

Prepared By:

GPD Group
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Akron, OH 44311

Prepared For:

City of Hudson Planning Commission/Engineering
1140 Terex Road
Hudson, OH 44236

HUDSON HIGH SCHOOL ORCHESTRA ADDITION

2500 Hudson-Aurora Road
Hudson, OH 44236

Property Owner:
Board of Education Hudson Local School

Civil Engineer:
Michael Cefaratti, P.E.

Design Date:
May 2025

Revision Date:
- -

GPD Project Number:
2024098.02

General

The following report includes stormwater management calculations as required by the City of Hudson Planning Commission/Engineering. This report is a supplement to the site development plans submitted.

Project Information

The project area is owned by the Board of Education Hudson Local Schools consisting of 52.70 acres of land located at 2500 Hudson-Aurora Road in the City of Hudson, Summit County, Ohio. The property is located north of the Ohio Turnpike, southeast of Hudson-Aurora Road, and west of Stow Road. See Figure 1 below.

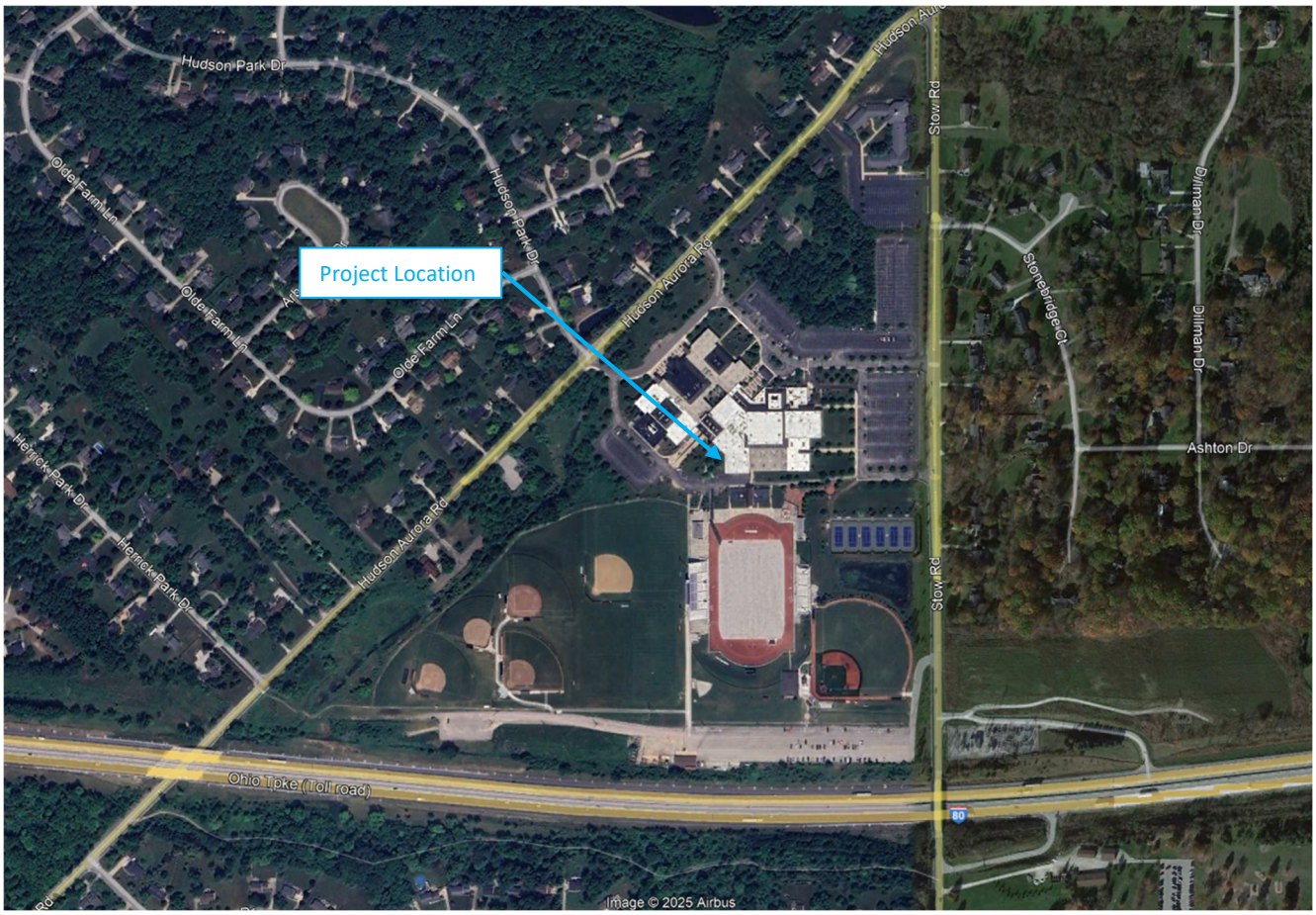


Figure 1: Location Map

Existing Project Site

The existing project site is an open courtyard with several mature trees and concrete sidewalk that connects a small surface lot to the High School. In general, the topography across the area of development grades northeast to southwest. Stormwater is collected by multiple inlet structures located in the larger surface lot to the west and discharges to a roadside ditch along Hudson-Aurora Road.

Site demolition will include the removal of the mature trees and partial removal of the concrete sidewalk. Refer to the site improvement plans for full limits and extents of removals for this project.

A National Resources Conservation Service (NRCS) web soil survey was performed for the property to determine the soil type that underlies the existing site. The soil types were determined to be Mahoning silt loam (MgB) and Trumbull silt loam (Tr). The underlying soils on the property have a hydrologic soil rating of 'D' and 'C/D'. Calculations provided herein will use hydrologic soil ratings of 'D' to determine curve numbers for pre-development and post-development stormwater runoff conditions. The NRCS site soils map, including

more detailed descriptions of the existing soil properties and qualities, can be found in the Appendix of this report.

Proposed Site

Site construction will include a building addition for the existing high school, asphalt pavement, concrete sidewalks, and minor site utilities. In general, the topography across the area of development will match that of existing. Rainwater falling on the roof of the new building will be collected and discharged directly into the existing storm infrastructure located just south of the new addition.

Water Quality Analysis

Per the requirements of the City of Hudson and the *Ohio Environmental Protection Agency (OEPA) General Stormwater Permit OHC000006*, sites disturbing over one-acre of land are required to provide post construction Best Management Practices (BMP's) to treat stormwater runoff before it discharges off the site. With a total project disturbance of less than one-acre, post-construction BMP's will not be required for this development project.

Water Quantity Analysis

The building addition roof downspout will connect directly into an existing 24" storm pipe located just south of the new addition. The existing storm system routes west to a structure where a smaller diameter pipe will restrict the flow of the upstream system. Once the smaller diameter pipe hits capacity, the water will surcharge into an adjacent existing open basin to provide storage during the larger storm events. Accepted by the City of Hudson Engineering Department, no further water quantity or modifications to the existing system are required for this project.

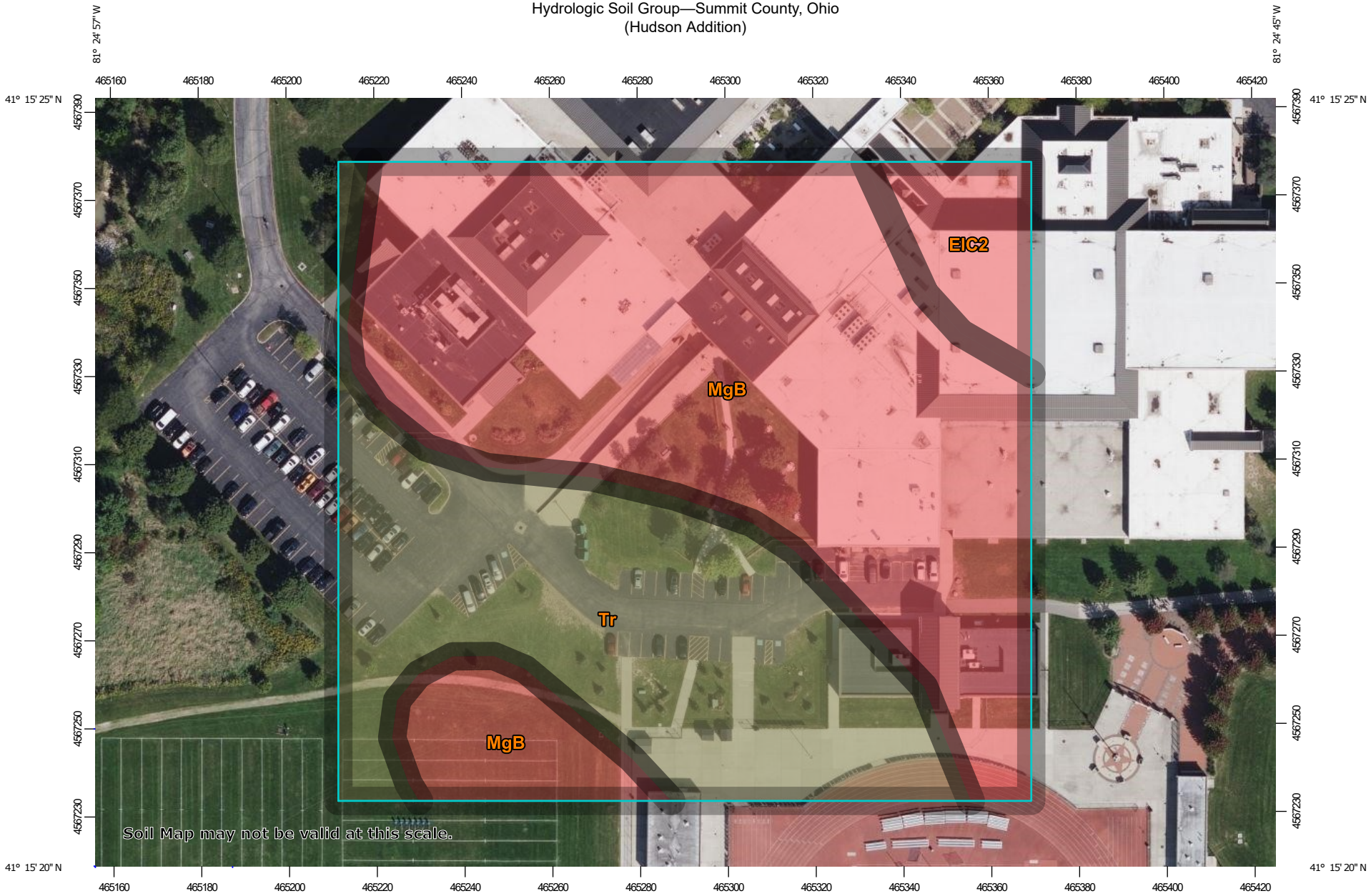
The table below summarizes the pre-development and post-development flows for the project area. The mapping and hydrographs associated with the table can be provided in the table below.

	Storm Event						
	1	2	5	10	25	50	100
Pre	0.317	0.438	0.624	0.782	1.018	1.216	1.432
Post	0.484	0.619	0.815	0.977	1.214	1.411	1.623
Delta	0.167	0.181	0.191	0.195	0.196	0.195	0.191

Table 1: Pre-development and post-development flow rates.

Appendix

Hydrologic Soil Group—Summit County, Ohio
(Hudson Addition)



Map Scale: 1:1,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N 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 1:20,000.

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: Summit County, Ohio
Survey Area Data: Version 21, Aug 29, 2024

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

Date(s) aerial images were photographed: Sep 12, 2020—Sep 21, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
EIC2	Ellsworth silt loam, 6 to 12 percent slopes, eroded	D	0.3	5.2%
MgB	Mahoning silt loam, 2 to 6 percent slopes	D	3.4	60.4%
Tr	Trumbull silt loam, 0 to 2 percent slopes	C/D	2.0	34.4%
Totals for Area of Interest			**5.7**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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HUDSON HIGH SCHOOL
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HUDSON, OHIO 44236

JOB NO.
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STORMWATER MANAGEMENT MAP
PRE DEVELOPMENT

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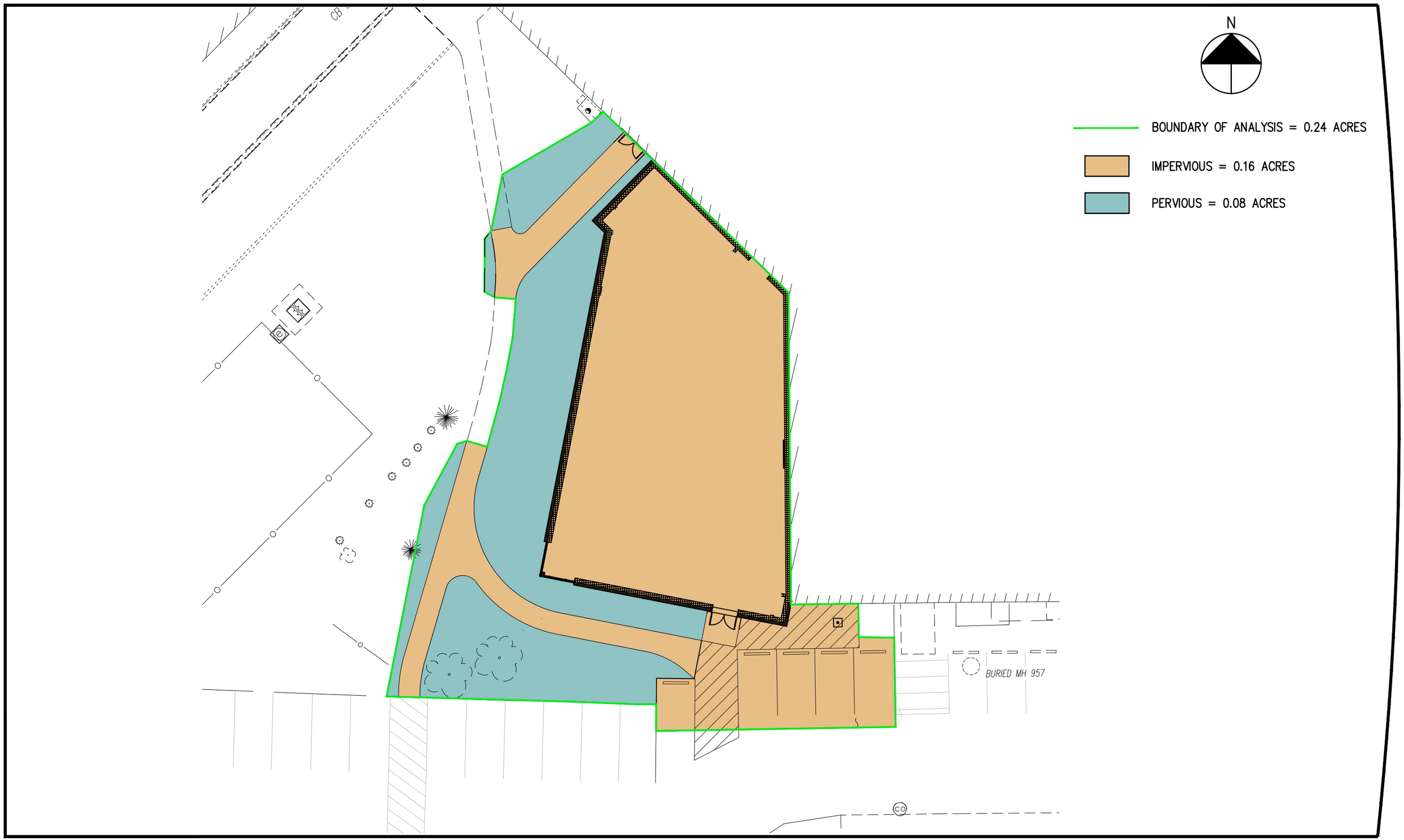
JOB NO.
2024098.02

STORMWATER MANAGEMENT MAP
POST DEVELOPMENT



NOAA Atlas 14, Volume 2, Version 3
Location name: Hudson, Ohio, USA*
Latitude: 41.2564°, Longitude: -81.414°
Elevation: 1050 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

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	**0.323** (0.294-0.355)	**0.386** (0.352-0.425)	**0.467** (0.424-0.512)	**0.528** (0.479-0.579)	**0.607** (0.548-0.666)	**0.667** (0.599-0.731)	**0.726** (0.650-0.796)	**0.786** (0.698-0.862)	**0.866** (0.763-0.952)	**0.924** (0.808-1.02)
10-min	**0.502** (0.458-0.552)	**0.603** (0.550-0.663)	**0.725** (0.659-0.795)	**0.816** (0.740-0.894)	**0.929** (0.838-1.02)	**1.01** (0.908-1.11)	**1.09** (0.978-1.20)	**1.17** (1.04-1.29)	**1.27** (1.12-1.40)	**1.35** (1.18-1.48)
15-min	**0.615** (0.561-0.677)	**0.737** (0.672-0.811)	**0.890** (0.809-0.977)	**1.00** (0.910-1.10)	**1.15** (1.04-1.26)	**1.25** (1.12-1.37)	**1.36** (1.22-1.49)	**1.46** (1.30-1.60)	**1.59** (1.40-1.75)	**1.68** (1.47-1.85)
30-min	**0.814** (0.742-0.895)	**0.987** (0.900-1.08)	**1.22** (1.11-1.34)	**1.39** (1.26-1.53)	**1.62** (1.46-1.78)	**1.79** (1.61-1.96)	**1.96** (1.76-2.15)	**2.13** (1.89-2.34)	**2.35** (2.07-2.59)	**2.52** (2.20-2.78)
60-min	**0.994** (0.906-1.09)	**1.21** (1.10-1.33)	**1.53** (1.39-1.68)	**1.77** (1.61-1.94)	**2.10** (1.90-2.30)	**2.36** (2.12-2.58)	**2.62** (2.35-2.87)	**2.89** (2.57-3.17)	**3.25** (2.87-3.58)	**3.54** (3.10-3.90)
2-hr	**1.16** (1.05-1.27)	**1.40** (1.28-1.55)	**1.78** (1.62-1.96)	**2.08** (1.89-2.29)	**2.50** (2.26-2.75)	**2.85** (2.56-3.13)	**3.21** (2.86-3.52)	**3.59** (3.18-3.94)	**4.13** (3.62-4.54)	**4.57** (3.97-5.03)
3-hr	**1.23** (1.12-1.36)	**1.50** (1.36-1.65)	**1.90** (1.72-2.09)	**2.22** (2.01-2.44)	**2.68** (2.41-2.94)	**3.06** (2.73-3.36)	**3.46** (3.07-3.80)	**3.88** (3.42-4.26)	**4.49** (3.91-4.94)	**4.98** (4.30-5.49)
6-hr	**1.48** (1.35-1.63)	**1.79** (1.63-1.97)	**2.26** (2.06-2.48)	**2.64** (2.40-2.89)	**3.20** (2.88-3.50)	**3.66** (3.28-4.00)	**4.16** (3.70-4.55)	**4.71** (4.14-5.15)	**5.50** (4.77-6.03)	**6.17** (5.28-6.79)
12-hr	**1.74** (1.59-1.92)	**2.09** (1.91-2.31)	**2.61** (2.38-2.88)	**3.05** (2.76-3.36)	**3.68** (3.32-4.05)	**4.22** (3.77-4.64)	**4.80** (4.26-5.28)	**5.44** (4.78-5.99)	**6.38** (5.52-7.03)	**7.17** (6.13-7.92)
24-hr	**2.04** (1.90-2.22)	**2.45** (2.27-2.66)	**3.04** (2.81-3.30)	**3.53** (3.26-3.82)	**4.25** (3.89-4.59)	**4.85** (4.41-5.24)	**5.50** (4.96-5.95)	**6.20** (5.55-6.72)	**7.23** (6.37-7.86)	**8.09** (7.04-8.82)
2-day	**2.36** (2.19-2.55)	**2.82** (2.62-3.05)	**3.47** (3.22-3.74)	**4.00** (3.70-4.32)	**4.78** (4.39-5.15)	**5.42** (4.95-5.85)	**6.10** (5.53-6.60)	**6.84** (6.14-7.42)	**7.90** (6.98-8.61)	**8.78** (7.66-9.63)
3-day	**2.53** (2.35-2.72)	**3.02** (2.81-3.25)	**3.69** (3.43-3.98)	**4.25** (3.94-4.57)	**5.04** (4.64-5.42)	**5.68** (5.22-6.13)	**6.37** (5.80-6.88)	**7.11** (6.42-7.70)	**8.15** (7.26-8.87)	**9.02** (7.94-9.88)
4-day	**2.69** (2.52-2.90)	**3.21** (3.00-3.46)	**3.92** (3.65-4.21)	**4.49** (4.18-4.82)	**5.30** (4.90-5.70)	**5.95** (5.48-6.40)	**6.64** (6.08-7.16)	**7.37** (6.69-7.97)	**8.40** (7.54-9.13)	**9.27** (8.22-10.1)
7-day	**3.25** (3.04-3.47)	**3.86** (3.62-4.13)	**4.66** (4.36-4.99)	**5.32** (4.96-5.68)	**6.23** (5.78-6.66)	**6.96** (6.43-7.45)	**7.73** (7.10-8.29)	**8.53** (7.78-9.17)	**9.65** (8.69-10.4)	**10.5** (9.40-11.5)
10-day	**3.74** (3.52-3.99)	**4.44** (4.17-4.73)	**5.31** (4.98-5.66)	**6.00** (5.62-6.39)	**6.94** (6.49-7.40)	**7.69** (7.16-8.20)	**8.46** (7.83-9.03)	**9.24** (8.51-9.90)	**10.3** (9.40-11.1)	**11.1** (10.1-12.1)
20-day	**5.18** (4.90-5.48)	**6.11** (5.79-6.48)	**7.19** (6.80-7.62)	**8.03** (7.59-8.51)	**9.14** (8.61-9.69)	**10.0** (9.39-10.6)	**10.8** (10.1-11.5)	**11.7** (10.9-12.4)	**12.7** (11.8-13.6)	**13.6** (12.5-14.6)
30-day	**6.53** (6.20-6.88)	**7.69** (7.30-8.10)	**8.94** (8.48-9.42)	**9.89** (9.38-10.4)	**11.1** (10.5-11.7)	**12.1** (11.4-12.7)	**13.0** (12.2-13.7)	**13.9** (13.0-14.7)	**15.0** (13.9-15.9)	**15.8** (14.6-16.8)
45-day	**8.37** (7.99-8.78)	**9.82** (9.37-10.3)	**11.3** (10.8-11.8)	**12.4** (11.8-12.9)	**13.8** (13.1-14.4)	**14.8** (14.0-15.5)	**15.7** (14.9-16.5)	**16.7** (15.7-17.5)	**17.8** (16.7-18.8)	**18.6** (17.4-19.7)
60-day	**10.1** (9.68-10.6)	**11.8** (11.3-12.4)	**13.5** (12.9-14.1)	**14.7** (14.0-15.4)	**16.2** (15.5-17.0)	**17.3** (16.5-18.2)	**18.3** (17.4-19.3)	**19.3** (18.3-20.3)	**20.4** (19.3-21.6)	**21.2** (20.0-22.5)

[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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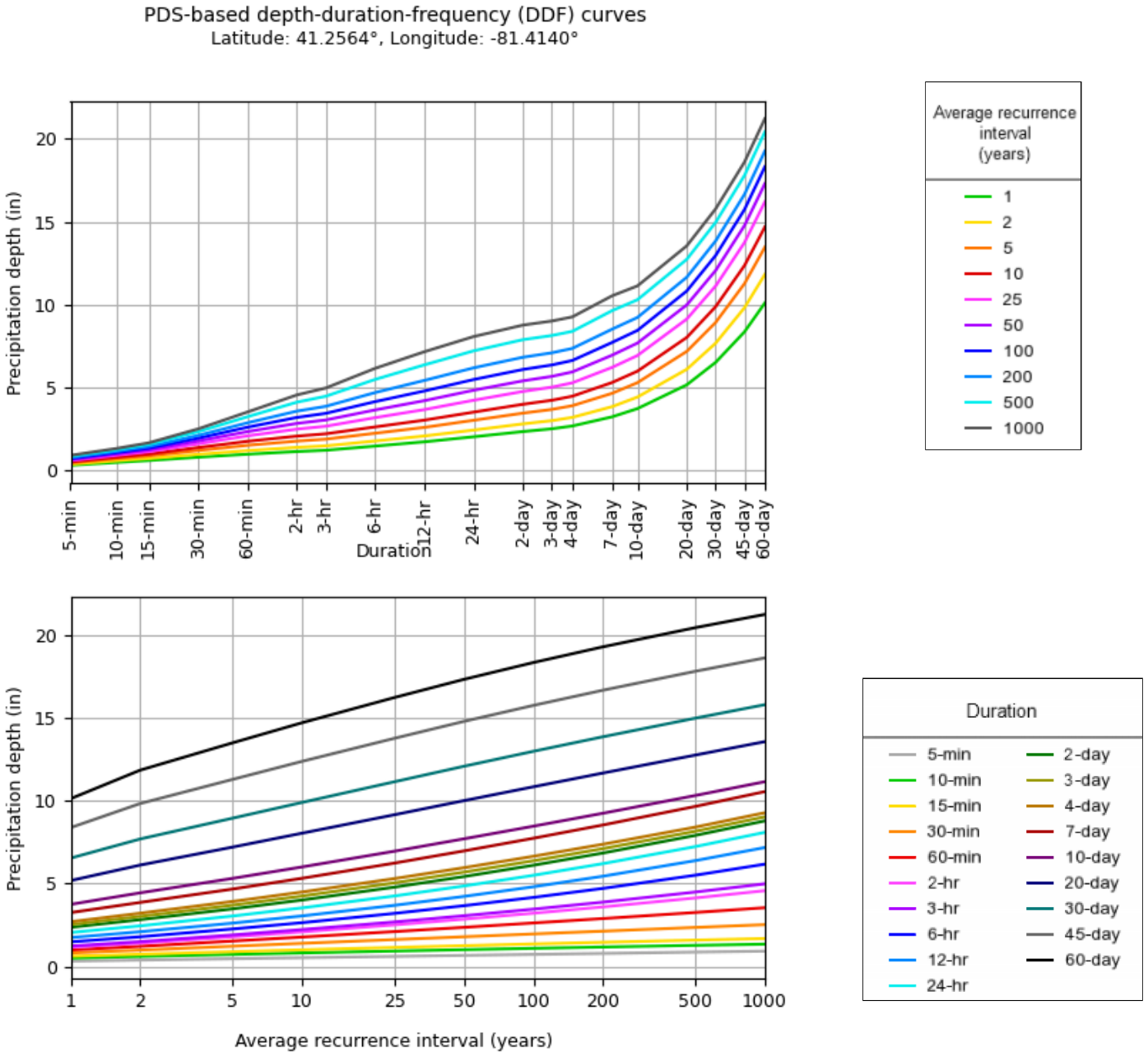
PF graphical



NOAA Atlas 14, Volume 2, Version 3

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Maps & aerials

Small scale terrain

NOAA Atlas 14, Volume 2, Version 3
Location name: Hudson, Ohio, USA*
Latitude: 41.2564°, Longitude: -81.414°
Elevation: 1050 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

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	**3.88** (3.53-4.26)	**4.63** (4.22-5.10)	**5.60** (5.09-6.14)	**6.34** (5.75-6.95)	**7.28** (6.58-7.99)	**8.00** (7.19-8.77)	**8.71** (7.80-9.55)	**9.43** (8.38-10.3)	**10.4** (9.16-11.4)	**11.1** (9.70-12.2)
10-min	**3.01** (2.75-3.31)	**3.62** (3.30-3.98)	**4.35** (3.95-4.77)	**4.90** (4.44-5.36)	**5.57** (5.03-6.11)	**6.07** (5.45-6.65)	**6.56** (5.87-7.19)	**7.04** (6.26-7.72)	**7.63** (6.73-8.39)	**8.08** (7.06-8.89)
15-min	**2.46** (2.24-2.71)	**2.95** (2.69-3.24)	**3.56** (3.24-3.91)	**4.02** (3.64-4.40)	**4.59** (4.14-5.03)	**5.01** (4.50-5.49)	**5.43** (4.86-5.95)	**5.83** (5.19-6.40)	**6.35** (5.60-6.98)	**6.73** (5.88-7.41)
30-min	**1.63** (1.48-1.79)	**1.97** (1.80-2.17)	**2.44** (2.22-2.67)	**2.79** (2.53-3.06)	**3.24** (2.92-3.55)	**3.58** (3.21-3.92)	**3.92** (3.51-4.30)	**4.26** (3.79-4.67)	**4.71** (4.15-5.17)	**5.04** (4.41-5.55)
60-min	**0.994** (0.906-1.09)	**1.21** (1.10-1.33)	**1.53** (1.39-1.68)	**1.77** (1.61-1.94)	**2.10** (1.90-2.30)	**2.36** (2.12-2.58)	**2.62** (2.35-2.87)	**2.89** (2.57-3.17)	**3.25** (2.87-3.58)	**3.54** (3.10-3.90)
2-hr	**0.577** (0.525-0.635)	**0.702** (0.640-0.773)	**0.892** (0.812-0.981)	**1.04** (0.945-1.14)	**1.25** (1.13-1.38)	**1.42** (1.28-1.56)	**1.60** (1.43-1.76)	**1.80** (1.59-1.97)	**2.06** (1.81-2.27)	**2.28** (1.98-2.52)
3-hr	**0.409** (0.372-0.451)	**0.498** (0.452-0.549)	**0.632** (0.574-0.697)	**0.740** (0.669-0.814)	**0.892** (0.802-0.980)	**1.02** (0.910-1.12)	**1.15** (1.02-1.26)	**1.29** (1.14-1.42)	**1.49** (1.30-1.64)	**1.66** (1.43-1.83)
6-hr	**0.247** (0.225-0.272)	**0.298** (0.272-0.328)	**0.376** (0.343-0.413)	**0.440** (0.399-0.482)	**0.533** (0.481-0.583)	**0.611** (0.547-0.668)	**0.695** (0.617-0.760)	**0.786** (0.691-0.860)	**0.918** (0.796-1.01)	**1.03** (0.881-1.13)
12-hr	**0.144** (0.131-0.159)	**0.173** (0.158-0.192)	**0.216** (0.197-0.239)	**0.252** (0.229-0.278)	**0.305** (0.275-0.336)	**0.350** (0.313-0.385)	**0.398** (0.353-0.438)	**0.451** (0.396-0.496)	**0.529** (0.458-0.583)	**0.595** (0.508-0.657)
24-hr	**0.085** (0.078-0.092)	**0.102** (0.094-0.110)	**0.126** (0.117-0.137)	**0.147** (0.135-0.159)	**0.176** (0.162-0.191)	**0.202** (0.183-0.218)	**0.229** (0.206-0.247)	**0.258** (0.231-0.280)	**0.301** (0.265-0.327)	**0.336** (0.293-0.367)
2-day	**0.049** (0.045-0.053)	**0.058** (0.054-0.063)	**0.072** (0.067-0.078)	**0.083** (0.077-0.089)	**0.099** (0.091-0.107)	**0.112** (0.103-0.121)	**0.127** (0.115-0.137)	**0.142** (0.127-0.154)	**0.164** (0.145-0.179)	**0.182** (0.159-0.200)
3-day	**0.035** (0.032-0.037)	**0.041** (0.039-0.045)	**0.051** (0.047-0.055)	**0.058** (0.054-0.063)	**0.069** (0.064-0.075)	**0.078** (0.072-0.085)	**0.088** (0.080-0.095)	**0.098** (0.089-0.106)	**0.113** (0.100-0.123)	**0.125** (0.110-0.137)
4-day	**0.028** (0.026-0.030)	**0.033** (0.031-0.036)	**0.040** (0.038-0.043)	**0.046** (0.043-0.050)	**0.055** (0.051-0.059)	**0.062** (0.057-0.066)	**0.069** (0.063-0.074)	**0.076** (0.069-0.083)	**0.087** (0.078-0.095)	**0.096** (0.085-0.105)
7-day	**0.019** (0.018-0.020)	**0.022** (0.021-0.024)	**0.027** (0.025-0.029)	**0.031** (0.029-0.033)	**0.037** (0.034-0.039)	**0.041** (0.038-0.044)	**0.046** (0.042-0.049)	**0.050** (0.046-0.054)	**0.057** (0.051-0.062)	**0.062** (0.055-0.068)
10-day	**0.015** (0.014-0.016)	**0.018** (0.017-0.019)	**0.022** (0.020-0.023)	**0.025** (0.023-0.026)	**0.028** (0.027-0.030)	**0.032** (0.029-0.034)	**0.035** (0.032-0.037)	**0.038** (0.035-0.041)	**0.042** (0.039-0.046)	**0.046** (0.042-0.050)
20-day	**0.010** (0.010-0.011)	**0.012** (0.012-0.013)	**0.014** (0.014-0.015)	**0.016** (0.015-0.017)	**0.019** (0.017-0.020)	**0.020** (0.019-0.022)	**0.022** (0.021-0.023)	**0.024** (0.022-0.025)	**0.026** (0.024-0.028)	**0.028** (0.025-0.030)
30-day	**0.009** (0.008-0.009)	**0.010** (0.010-0.011)	**0.012** (0.011-0.013)	**0.013** (0.013-0.014)	**0.015** (0.014-0.016)	**0.016** (0.015-0.017)	**0.018** (0.016-0.019)	**0.019** (0.018-0.020)	**0.020** (0.019-0.022)	**0.021** (0.020-0.023)
45-day	**0.007** (0.007-0.008)	**0.009** (0.008-0.009)	**0.010** (0.009-0.010)	**0.011** (0.010-0.011)	**0.012** (0.012-0.013)	**0.013** (0.012-0.014)	**0.014** (0.013-0.015)	**0.015** (0.014-0.016)	**0.016** (0.015-0.017)	**0.017** (0.016-0.018)
60-day	**0.007** (0.006-0.007)	**0.008** (0.007-0.008)	**0.009** (0.008-0.009)	**0.010** (0.009-0.010)	**0.011** (0.010-0.011)	**0.012** (0.011-0.012)	**0.012** (0.012-0.013)	**0.013** (0.012-0.014)	**0.014** (0.013-0.014)	**0.014** (0.013-0.015)

[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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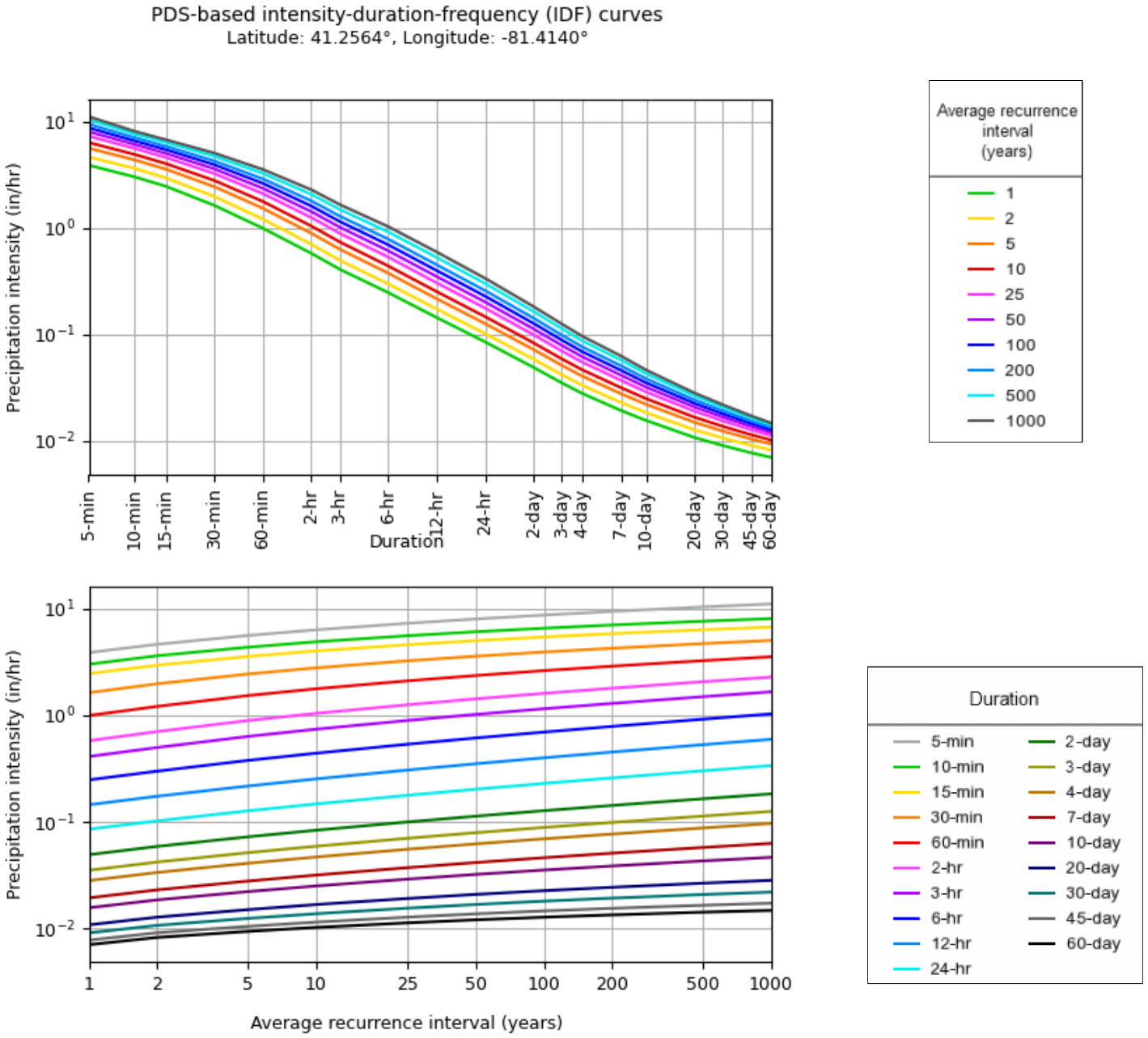
PF graphical



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Maps & aerials

Small scale terrain

Hydraflow Table of Contents

Watershed Model Schematic

Legend

Hyd.	Origin	Description
1	SCS Runoff	PRE
3	SCS Runoff	POST

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	0.317	0.438	-------	0.624	0.782	1.018	1.216	1.432	PRE
3	SCS Runoff	------	0.484	0.619	-------	0.815	0.977	1.214	1.411	1.623	POST

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.317	1	720	718	------	------	------	PRE
3	SCS Runoff	0.484	1	719	1,109	------	------	------	POST

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.438	1	719	992	------	------	------	PRE
3	SCS Runoff	0.619	1	719	1,435	------	------	------	POST

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.624	1	719	1,413	------	------	------	PRE
3	SCS Runoff	0.815	1	719	1,916	------	------	------	POST

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.782	1	719	1,779	------	------	------	PRE
3	SCS Runoff	0.977	1	719	2,322	------	------	------	POST

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.018	1	719	2,337	------	------	------	PRE
3	SCS Runoff	1.214	1	719	2,927	------	------	------	POST

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.216	1	719	2,814	------	------	------	PRE
3	SCS Runoff	1.411	1	719	3,435	------	------	------	POST

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.432	1	719	3,339	------	------	------	PRE
3	SCS Runoff	1.623	1	719	3,989	------	------	------	POST

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	42.4733	10.0000	0.8838	--------
2	48.9583	10.0000	0.8710	--------
3	0.0000	0.0000	0.0000	--------
5	50.4399	9.4000	0.8244	--------
10	51.4349	8.9000	0.7960	--------
25	47.3122	7.6000	0.7392	--------
50	43.5610	6.5000	0.6946	--------
100	41.5855	5.7000	0.6606	--------

File name: Hudson Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	3.88	3.01	2.47	2.10	1.83	1.63	1.47	1.34	1.23	1.14	1.06	0.99
2	4.63	3.60	2.97	2.53	2.21	1.97	1.78	1.62	1.49	1.38	1.29	1.21
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.59	4.38	3.62	3.11	2.73	2.44	2.21	2.02	1.87	1.74	1.63	1.53
10	6.33	4.96	4.11	3.53	3.11	2.79	2.53	2.33	2.15	2.01	1.88	1.77
25	7.27	5.68	4.72	4.07	3.60	3.24	2.95	2.72	2.53	2.36	2.22	2.10
50	7.99	6.21	5.17	4.47	3.97	3.58	3.27	3.03	2.82	2.64	2.49	2.36
100	8.69	6.74	5.62	4.87	4.33	3.92	3.59	3.33	3.11	2.92	2.76	2.62

Tc = time in minutes. Values may exceed 60.

Precip. file name: O:\2024\2024098\02 - HHS Fine Arts\4_Working Files\00_CAD\C\swm\detention\Hudson Depth.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.04	2.45	1.00	3.04	3.53	4.25	4.85	5.50
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00