



Storm Drainage Calculations *Rolesville NC*

Frazier Farms Park Phase 1A / May 2023 / 2020110039



FRAZIER FARM PARK

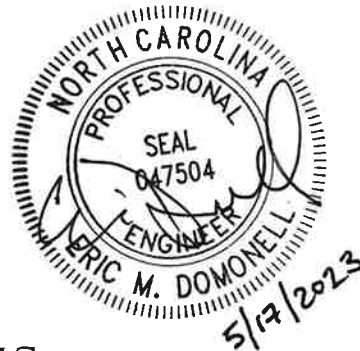
PHASE 1A

ROLESVILLE, NORTH CAROLINA

STORM DRAINAGE CALCULATIONS

PROJECT NUMBER: 2020110039
CERTIFIED BY: ERIC DOMONELL, PE

DATE: MAY 2023



MCADAMS
621 HILLSBOROUGH STREET
SUITE 500
RALEIGH, NORTH CAROLINA 27603
NC Lic. # C-0293



NOAA Atlas 14, Volume 2, Version 3
Location name: Wake Forest, North Carolina, USA*
Latitude: 35.9388°, Longitude: -78.4234°
Elevation: m/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

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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	4.84 (4.44-5.30)	5.62 (5.15-6.13)	6.40 (5.86-6.97)	7.19 (6.58-7.85)	7.99 (7.27-8.71)	8.64 (7.82-9.41)	9.20 (8.29-10.0)	9.72 (8.70-10.6)	10.3 (9.13-11.2)	10.8 (9.52-11.8)
10-min	3.86 (3.55-4.23)	4.49 (4.12-4.91)	5.12 (4.69-5.58)	5.75 (5.26-6.27)	6.37 (5.80-6.94)	6.88 (6.23-7.49)	7.31 (6.59-7.97)	7.70 (6.90-8.41)	8.14 (7.22-8.89)	8.51 (7.49-9.31)
15-min	3.22 (2.95-3.53)	3.76 (3.45-4.11)	4.32 (3.96-4.71)	4.85 (4.44-5.29)	5.38 (4.90-5.86)	5.80 (5.26-6.33)	6.16 (5.56-6.72)	6.48 (5.80-7.07)	6.82 (6.06-7.46)	7.12 (6.27-7.79)
30-min	2.21 (2.02-2.42)	2.60 (2.38-2.84)	3.07 (2.81-3.34)	3.51 (3.21-3.83)	3.98 (3.63-4.34)	4.37 (3.96-4.76)	4.72 (4.25-5.14)	5.04 (4.52-5.50)	5.43 (4.82-5.93)	5.76 (5.08-6.31)
60-min	1.38 (1.26-1.51)	1.63 (1.50-1.78)	1.97 (1.80-2.14)	2.29 (2.09-2.50)	2.65 (2.42-2.89)	2.96 (2.69-3.23)	3.25 (2.93-3.54)	3.54 (3.17-3.86)	3.90 (3.46-4.26)	4.21 (3.71-4.61)
2-hr	0.806 (0.733-0.889)	0.958 (0.874-1.05)	1.17 (1.06-1.28)	1.37 (1.25-1.51)	1.62 (1.46-1.77)	1.84 (1.65-2.00)	2.04 (1.82-2.23)	2.26 (2.00-2.47)	2.54 (2.23-2.77)	2.79 (2.43-3.05)
3-hr	0.569 (0.517-0.631)	0.677 (0.618-0.747)	0.827 (0.753-0.913)	0.982 (0.890-1.08)	1.17 (1.05-1.28)	1.34 (1.20-1.47)	1.50 (1.33-1.65)	1.68 (1.48-1.84)	1.91 (1.67-2.09)	2.13 (1.83-2.34)
6-hr	0.342 (0.312-0.379)	0.407 (0.372-0.449)	0.498 (0.454-0.548)	0.592 (0.538-0.650)	0.707 (0.638-0.774)	0.812 (0.728-0.888)	0.917 (0.815-1.00)	1.03 (0.905-1.12)	1.18 (1.02-1.29)	1.32 (1.13-1.44)
12-hr	0.201 (0.183-0.221)	0.239 (0.219-0.262)	0.293 (0.269-0.322)	0.350 (0.319-0.384)	0.421 (0.382-0.460)	0.487 (0.438-0.530)	0.554 (0.493-0.602)	0.626 (0.550-0.680)	0.725 (0.628-0.788)	0.818 (0.697-0.890)
24-hr	0.119 (0.111-0.128)	0.144 (0.134-0.155)	0.181 (0.168-0.195)	0.211 (0.195-0.227)	0.251 (0.232-0.270)	0.284 (0.261-0.305)	0.317 (0.291-0.342)	0.352 (0.322-0.380)	0.401 (0.364-0.433)	0.440 (0.398-0.476)
2-day	0.069 (0.064-0.074)	0.083 (0.078-0.090)	0.104 (0.097-0.112)	0.120 (0.112-0.129)	0.142 (0.132-0.153)	0.160 (0.148-0.172)	0.179 (0.164-0.192)	0.198 (0.181-0.213)	0.224 (0.204-0.242)	0.245 (0.222-0.266)
3-day	0.049 (0.046-0.052)	0.059 (0.055-0.063)	0.073 (0.068-0.078)	0.084 (0.078-0.090)	0.100 (0.092-0.107)	0.112 (0.103-0.120)	0.125 (0.115-0.134)	0.138 (0.126-0.148)	0.156 (0.142-0.168)	0.171 (0.154-0.184)
4-day	0.039 (0.036-0.041)	0.046 (0.043-0.050)	0.058 (0.054-0.061)	0.066 (0.062-0.071)	0.078 (0.073-0.084)	0.088 (0.081-0.094)	0.098 (0.090-0.105)	0.108 (0.099-0.116)	0.122 (0.111-0.131)	0.133 (0.121-0.143)
7-day	0.026 (0.024-0.027)	0.031 (0.029-0.033)	0.037 (0.035-0.040)	0.043 (0.040-0.046)	0.050 (0.047-0.054)	0.056 (0.052-0.060)	0.062 (0.058-0.067)	0.069 (0.063-0.074)	0.077 (0.071-0.083)	0.084 (0.077-0.091)
10-day	0.020 (0.019-0.022)	0.024 (0.023-0.026)	0.029 (0.028-0.031)	0.033 (0.031-0.035)	0.039 (0.036-0.041)	0.043 (0.040-0.046)	0.047 (0.044-0.050)	0.051 (0.048-0.055)	0.057 (0.053-0.062)	0.062 (0.057-0.067)
20-day	0.014 (0.013-0.015)	0.016 (0.015-0.017)	0.019 (0.018-0.020)	0.022 (0.020-0.023)	0.025 (0.023-0.026)	0.027 (0.026-0.029)	0.030 (0.028-0.032)	0.033 (0.030-0.035)	0.036 (0.033-0.039)	0.039 (0.036-0.042)
30-day	0.011 (0.011-0.012)	0.013 (0.013-0.014)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.020 (0.018-0.021)	0.021 (0.020-0.023)	0.023 (0.022-0.025)	0.025 (0.023-0.027)	0.027 (0.025-0.029)	0.029 (0.027-0.031)
45-day	0.010 (0.009-0.010)	0.011 (0.011-0.012)	0.013 (0.012-0.014)	0.014 (0.014-0.015)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.020)	0.020 (0.019-0.021)	0.021 (0.020-0.023)	0.023 (0.021-0.024)
60-day	0.009 (0.008-0.009)	0.010 (0.010-0.011)	0.012 (0.011-0.012)	0.013 (0.012-0.013)	0.014 (0.013-0.015)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.019)	0.019 (0.018-0.020)

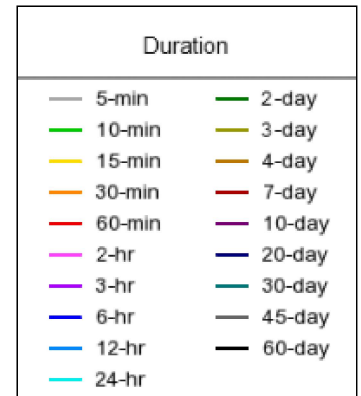
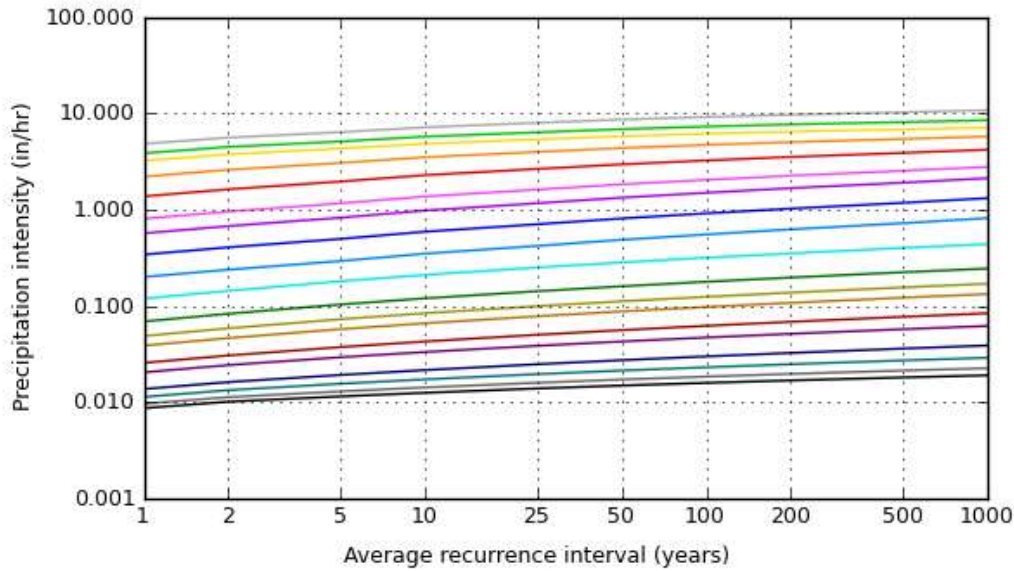
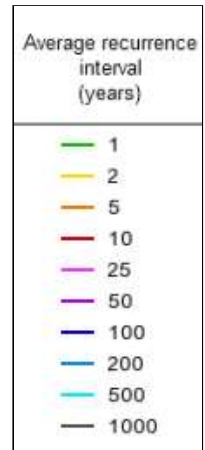
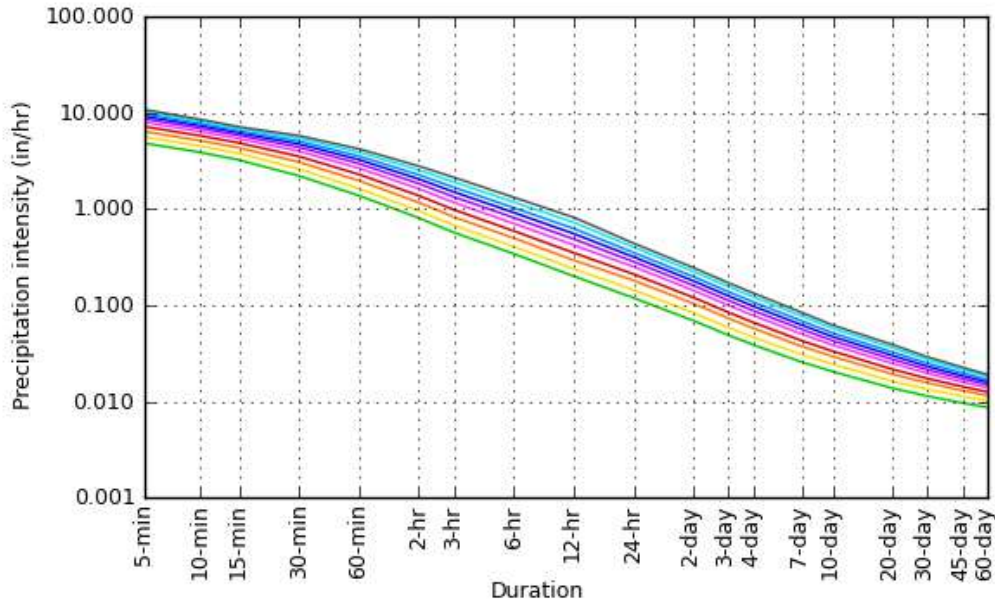
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average 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

PDS-based intensity-duration-frequency (IDF) curves

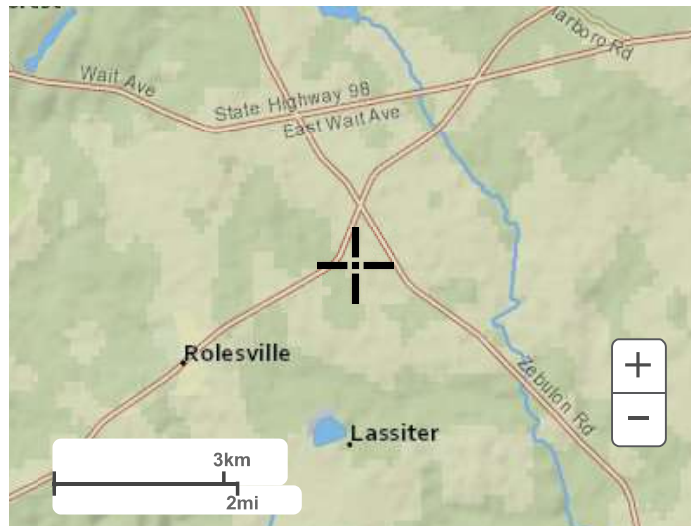
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Maps & aerials

Small scale terrain



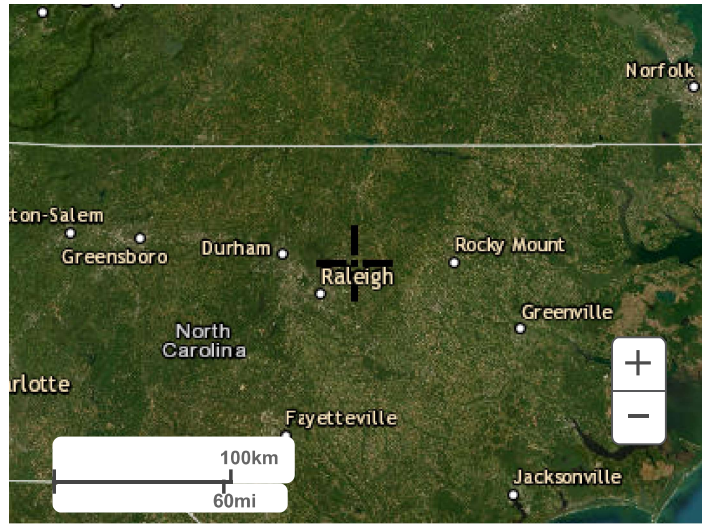
Large scale terrain



Large scale map



Large scale aerial

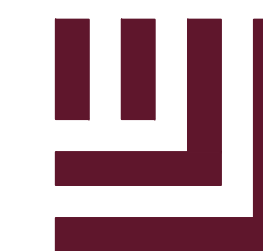


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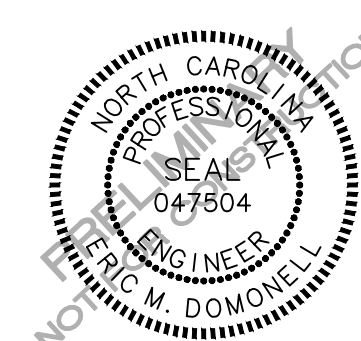
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CLIENT

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CONSTRUCTION DRAWINGS
PHASE 1A
11624 LOUISBURG ROAD
ROLESVILLE, NORTH CAROLINA



REVISIONS

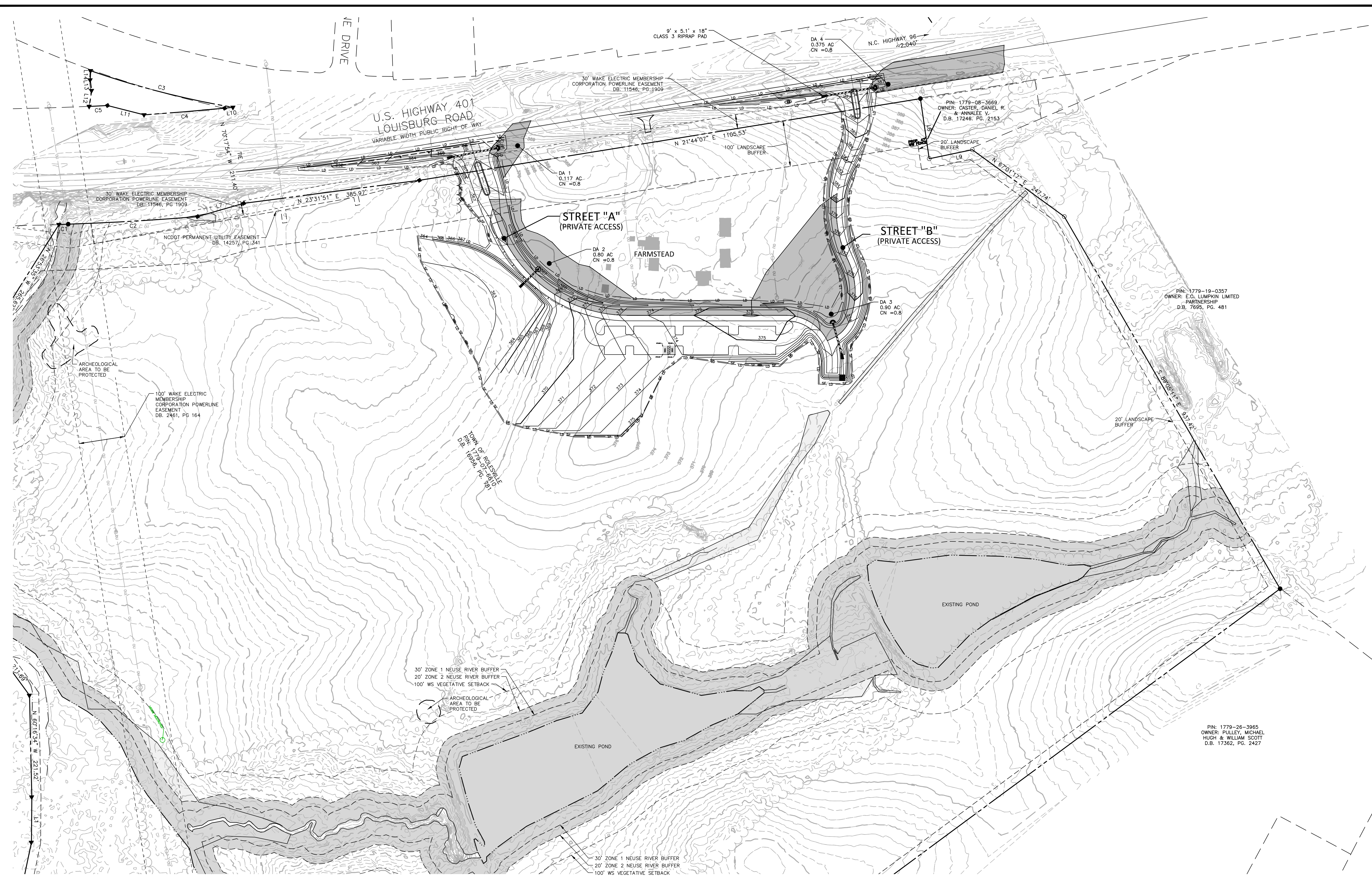
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PLAN INFORMATION

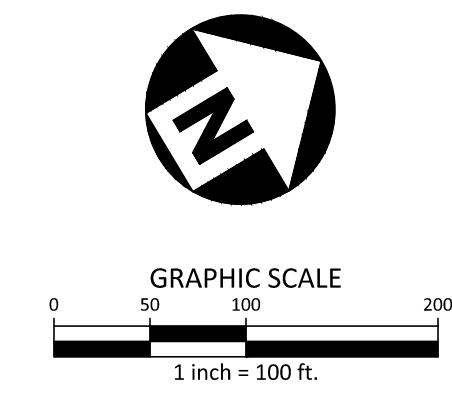
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CHECKED BY EMD
DRAWN BY SME
SCALE 1"=100'
DATE 03.22.2023

SHEET

DRAINAGE AREA MAP



ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF ROLESVILLE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS



PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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