

RFP #354-UT25-06

Request for Proposals for Wastewater Flow Monitoring and Data Analysis

ADDENDUM #1

August 6, 2024

Please note that this addendum is to further clarify the RFP and answer questions submitted during the “RFP Questions” open period. All other terms and conditions given in the RFP are in full force and effect.

QUESTION & ANSWER

1. Question: I would like to see a sample of the monthly Excel submittal. Is that possible?

Answer: Samples of the current monthly data submittals are included as attachments to this addendum, as follows:

- *Attachment 1 - This is a sample of the raw data from one of the flow monitoring sites.*
- *Attachment 2 - An example of the monthly data summary for one of the flow monitoring sites.*
- *Attachment 3 - An overall data summary of the 33 flow monitoring sites in Cary’s wastewater collection system, provided monthly.*
- *Attachment 4 - Estimated infiltration rates for the 33 flow monitoring sites. This overall summary is currently provided, provided monthly.*
- *Attachment 5 – A summary of monthly rainfall data at each rain gauge.*

2. Question: Is it your intention to have the new flow monitoring contract start in January or would it start earlier?

Answer: Following review of the proposals and subsequent selection process, the Town intends to enter into an agreement with the Selected Firm as soon as possible. The intent is to provide the Selected Firm with sufficient time to procure the necessary equipment and arrange to begin flow monitoring operations in January 2025.

[illegible]

Site 4 - Cary, North Carolina Data Summary for the Month June-24	
Flow and Rainfall Summary	
(1) Estimated Current Pipe Capacity (See Note 1)	8.64 mgd
(2) Average Daily Flow (ADF)	0.604 mgd
(3) Average Base Flow (ABF)	0.598 mgd
(3a) Average Base Flow - Weekday	0.594 mgd
(3b) Average Base Flow - Weekend	0.604 mgd
(4) Average Daily Sanitary Sewer Flow (ASF)	0.531 mgd
(5) Non-Rainfall Groundwater Infiltration (GWI)	0.067 mgd
(6) Minimum Sanitary Flow (MSF)	0.064 mgd
(7) Minimum Base Flow (MBF)	0.130 mgd
(8) Ratio of MBF/ABF	21.8%
(9) Ratio of GWI/ABF	11.1%
(10) Total Rainfall Amount	0.50 in
(11) Peak Rainfall Intensity	0.34 in/hr
(12) Rain Event Rainfall Dependent Infiltration/Inflow (RDI/I)	47,087 gal
(13) Monthly Rainfall Dependent Infiltration/Inflow (RDI/I)	193,581 gal
(14) Peak RDI/I	0.868 mgd
(15) Peak Hour Flow (PHF) During Month	1.339 mgd
(16) Peaking Factor (PHF/ADF)	2.22
(17) Peak 15-minute Flow Depth	6.48 inches
(18) Peak 15-minute Flow Velocity	3.40 fps
(19) Peak 15-minute Flow Rate	1.466 mgd
(20) Total Monthly Flow	18.121 mg
(21) Total Monthly Sanitary Flow	17.928 mg
(22) I/I Percentage of Total Flow	1.07%
Flow Levels During Month	
(1) Pipe Diameter	23 inches
(2) Average Dry-Weather Level During Month % of Pipe Diameter	4.59 inches 20 %
Velocity During Month	
(1) Estimated Current Full-Pipe Velocity (See Note 1)	4.63 fps
(2) Average Dry-Weather Velocity During Month	2.14 fps

Summary of Flows and Capacity Analysis
June-24

Basin	Site ID	Interceptor	Pipe Diameter (in)	Theoretical Full Pipe Capacity (mgd) ¹	Estimated Current Full Pipe Capacity (mgd) ²	Avg Flow Depth		mgd	% of Current Capacity	Peak Flow Depth ³		mgd	% of Current Capacity
						inches	% of Diameter			inches	% of Diameter		
NCWRF	1	Black Creek	24		7.6	3.8	16%	0.4	5%	4.9	21%	0.7	9%
	12	Black Creek	30		14.0	5.6	19%	1.1	8%	8.0	27%	2.1	15%
	8	Carpenter	30		16.7	3.3	11%	0.6	4%	4.4	15%	1.0	6%
	11	Upper Preston	30		20.5	4.1	14%	0.8	4%	5.4	18%	1.4	7%
	13	Jenks Carpenter	24		8.6	2.9	12%	0.3	3%	4.5	19%	0.6	7%
	16	Crabtree Creek	36		17.3	9.3	26%	2.5	14%	12.4	34%	4.0	23%
	22	Indian Creek	20		5.4	3.8	19%	0.4	7%	5.4	27%	0.7	14%
	23	York Interceptor	24		6.5	6.0	25%	0.8	12%	7.9	33%	1.5	24%
	24	Aviation Parkway	16		4.3	2.4	15%	0.2	4%	2.9	18%	0.3	7%
	25	Brier Creek	42		13.0	6.8	16%	0.7	5%	9.2	22%	1.3	10%
	3	Crabtree Creek	47		12.2	18.8	40%	3.5	29%	23.1	50%	5.9	49%
	27	Harrison Oaks	17		5.4	3.3	19%	0.3	5%	8.3	49%	1.1	20%
SCWRF	28	Medfield Rd	12		1.7	2.9	24%	0.2	10%	5.1	42%	0.5	27%
	34	Black Creek	52		34.6	14.4	28%	5.8	17%	21.1	40%	11.2	32%
	4	Walnut Creek	23		8.6	4.6	20%	0.6	7%	6.5	26%	1.5	17%
	5	MacDonald Woods	21		7.0	2.9	14%	0.3	4%	3.9	19%	0.5	8%
	2	Lynns Branch	21		1.8	9.6	46%	0.6	32%	11.0	52%	0.9	48%
	7	Upper Swift Creek @ Carmel Court	20		4.6	4.9	24%	0.6	12%	7.5	37%	1.4	29%
	9	Lower Wyndfall	18		3.2	2.8	16%	0.1	4%	3.9	22%	0.3	9%
	6	Upper Swift Creek @ Regency	30		13.0	7.7	26%	1.6	12%	9.9	33%	3.0	23%
	10	Long Branch	12		1.6	4.8	40%	0.5	30%	6.5	55%	0.9	52%
	17	Speight Branch	24		13.0	5.6	23%	1.4	11%	9.3	39%	3.6	28%
	15	Camp Branch	48		33.5	11.5	24%	4.7	14%	15.5	32%	6.8	20%
	31	Lower Swift Creek Interceptor	42		43.2	9.2	22%	4.3	10%	12.1	28%	7.2	17%
	32	Lower Swift Creek Interceptor	30		8.6	10.2	34%	2.0	23%	13.2	44%	3.4	39%
Western Wake WRF	33	Tributary to Lower Swift Creek Interceptor	12		1.0	2.1	18%	0.0	5%	3.1	26%	0.1	13%
	14	Panther Creek	30		6.8	8.0	27%	0.9	13%	9.8	33%	1.5	23%
	18	Kit Creek	41		19.4	8.1	20%	1.5	8%	10.0	24%	2.3	12%
	26	White Oak Interceptor	36		18.9	6.4	18%	1.1	6%	9.0	25%	2.3	12%
	30	Green Level Interceptor	48		71.3	5.6	12%	3.0	4%	8.8	18%	6.2	9%
	29	Nancy Branch	15		2.2	5.2	35%	0.5	22%	6.7	45%	0.8	38%
	37	Beaver Creek Gravity Sewer	37		21.6	7.8	21%	2.1	10%	11.2	30%	3.5	16%
	54	West Reedy Branch Interceptor	54		78.8	9.8	18%	4.0	5%	12.7	23%	7.1	9%

(1) Theoretical full pipe capacity is based on design slopes and a Mannings "n" value of 0.013.

(2) Estimated current full pipe capacity is based on metered flow depths and flow rates. It accounts for older pipes (higher friction values) debris, etc.

(3) Peak flows and depths are the maximum flows and depths that occurred during the month. The peak flows and depths listed December have occurred during rain events.

(4) Average flows and/or depths that exceed 40% of the capacity or pipe diameter are shaded. Peak flows and/or depths that exceed 75% of the capacity or pipe diameter are shaded.

Wet-Weather Flow Summary and Infiltration Rates June-24

Basin	Site ID	Interceptor	Incremental In-Dia-Miles	Total Upspread In-Dia-Miles	Date of Rain Event	Rain (in)	Average Flow (mgd)	Peak Hourly Flow (mgd)	Summary of Largest I/I Rain Event of the Month				Monthly I/I Volume (gal)	Monthly I/I Rate (gpd/in-dia-mile)
									Peaking Factor	Surcharged?	Rain Event I/I Volume (gal)	Rain Event I/I Rate (gal/in-dia-mile)		
NCWRF	1	Black Creek	164	221									26,107	4
	12	Black Creek	316	536									263,853	16
	8	Carpenter	349	349									48,681	5
	11	Upper Preston	539	539	June 6, 2024	0.77	0.85	1.36	1.6	NO	49,982	93	69,026	4
	13	Jenks Carpenter	129	129	June 6, 2024	0.77	0.25	0.42	1.6	NO	25,111	195	38,478	10
	16	Crabtree Creek	621	1,633									481,619	10
	22	Indian Creek	142	142									52,441	12
	23	York Interceptor	193	333									53,046	5
	24	Aviation Parkway	45	45									153,489	114
	25	Brier Creek	336	336									109,949	11
	3	Crabtree Creek	379	2,772									747,476	9
	27	Harrison Oaks	77	77									61,574	27
	28	Medfield Rd	57	57									119,552	70
	34	Black Creek	267	267	June 6, 2024	0.38	0.60	1.34	2.2	NO	47,087	176	2,216,127	24
	4	Walnut Creek	165	165									193,581	23
	5	MacDonald Woods	235	398									126,947	11
	2	Lynns Branch	333	333	June 6, 2024	0.77	0.57	1.16	2.0	NO	75,681	227	228,217	23
	7	Upper Swift Creek @ Carmel Court	102	102	June 6, 2024	0.48	0.13	0.25	2.0	NO	14,865	146	35,240	12
	9	Upper Swift Creek @ Regency	613	1,047	June 6, 2024	0.48	1.60	2.83	1.8	NO	119,190	114	273,732	9
	6	Upper Swift Creek @ Regency	151	151	June 6, 2024	0.48	0.48	0.74	1.5	NO	24,955	165	10,862	2
	10	Long Branch	375	641									174,258	9
	17	Speight Branch	348	2,828	June 6, 2024	0.42	4.66	6.75	1.4	NO	287,000	101	353,736	4
	15	Camp Branch	110	2,482	June 6, 2024	0.48	4.28	6.75	1.6	NO	243,964	98	462,383	6
	31	Lower Swift Creek Interceptor	88	1,735	June 6, 2024	0.48	2.00	3.24	1.6	NO	120,638	70	540,135	10
	32	Lower Swift Creek Interceptor	53	53	June 6, 2024	0.48	0.05	0.10	2.0	NO	2,726	51	29,568	19
Western Wake WR	33	butlary to Lower Swift Creek Intercep	441	441									225,031	17
	14	Panther Creek	508	508									44,791	3
	18	Kit Creek	617	617									742,358	40
	26	White Oak Interceptor	496	1,653									1,597,281	32
	30	Green Level Interceptor	218	218									156,865	24
	29	Nancy Branch											618,745	
	37	Beaver Creek Gravity Sewer											654,664	
SCWRF	54	West Reedy Branch Interceptor												

Note: If the cell is blank, there was minimal or no I/I reaction to the rain event.
Infiltration rates shown in the schematic below are the monthly I/I rates shown in gpd/in-dia-mile.

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Attachment 5 to Addendum 1

Date	RG-01	RG-02	RG-03	RG-04	RG-05	RG-06	RG-07
1-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3-Jun-24	0.11	0.00	0.09	0.00	0.00	0.00	0.00
4-Jun-24	0.14	0.00	0.00	0.00	0.00	0.00	0.00
5-Jun-24	0.01	0.00	0.00	0.00	0.00	0.00	0.00
6-Jun-24	0.15	0.42	0.10	0.48	0.77	0.38	0.73
7-Jun-24	0.00	0.00	0.00	0.12	0.00	0.00	0.01
8-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9-Jun-24	0.01	0.17	0.11	0.11	0.08	0.03	0.10
10-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.01
11-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27-Jun-24	0.00	0.00	0.00	0.00	0.01	0.00	0.00
28-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29-Jun-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30-Jun-24	0.71	0.30	0.31	0.25	0.31	0.09	0.52
Total	1.13	0.89	0.61	0.96	1.17	0.50	1.37