

Water-Data Report 2010

02085000 ENO RIVER AT HILLSBOROUGH, NC

Neuse Basin
Upper Neuse Subbasin

LOCATION.--Lat 36°04'16", long 79°05'44" referenced to North American Datum of 1983, Orange County, NC, Hydrologic Unit 03020201, on left bank 900 ft downstream of bridge on North Carolina Highway 86 at Hillsborough, and 2 mi downstream of Sevenmile Creek.

DRAINAGE AREA.--66 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1927 to September 1971, October 1985 to current year.

REVISED RECORDS.--WDR NC-96-1: 1945, annual maximum discharge.

GAGE.--Water-stage recorder. Datum of gage is 487.44 ft above National Geodetic Vertical Datum of 1929. Telephone and satellite telemetry at streamgage.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions upstream from station of 0.19 ft³/s by Orange-Alamance Water System, Inc. and 1.7 ft³/s by town of Hillsborough for municipal supply, part of which is returned downstream of station as treated effluent. Maximum gage height for period of record, 21.13 ft, from high-water mark in gage shelter. No flow for part of September 13, 2002.

02085000 ENO RIVER AT HILLSBOROUGH, NC—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.4	36	28	66	61	46	70	14	31	3.6	5.7	2.9
2	e2.8	23	108	56	70	45	58	13	44	3.4	4.7	3.2
3	e2.5	7.3	673	45	209	55	50	13	47	3.0	4.2	2.8
4	e2.2	3.9	148	40	209	52	45	12	26	2.9	3.8	2.7
5	e1.9	3.3	108	37	568	47	41	12	19	2.8	19	2.8
6	e2.6	2.6	104	37	1,490	42	38	11	16	2.6	27	3.0
7	e2.6	2.5	70	35	290	40	34	11	15	2.4	9.0	2.6
8	e2.6	2.7	54	37	143	39	32	10	12	2.3	5.3	2.5
9	e2.4	2.1	625	34	113	38	40	8.4	10	2.6	4.2	2.9
10	e3.1	4.0	266	30	120	37	32	7.1	9.8	3.1	3.6	3.4
11	e2.5	399	109	29	99	38	29	8.1	9.1	2.3	3.3	3.5
12	e1.8	779	75	31	83	50	27	10	9.6	2.3	3.5	3.2
13	e2.5	659	94	32	80	130	26	9.9	36	6.8	2.7	2.5
14	e2.6	180	133	30	76	131	25	9.9	23	55	2.3	2.2
15	e3.5	82	94	28	72	112	24	9.7	13	10	2.3	2.2
16	e3.8	51	70	26	78	78	23	25	9.8	5.4	2.3	2.1
17	e2.6	34	56	219	70	62	23	171	11	24	2.2	2.1
18	e2.9	27	51	167	63	55	20	253	8.8	19	2.6	2.8
19	e2.1	32	159	89	57	49	19	88	7.4	12	4.0	2.8
20	e2.1	37	149	64	53	44	18	48	6.9	7.5	3.4	2.8
21	e1.9	32	124	60	50	42	23	30	5.3	5.6	3.5	2.4
22	e2.3	24	103	115	60	44	25	27	4.9	4.4	3.4	2.5
23	e3.6	337	88	89	81	51	21	128	4.3	3.6	3.4	2.3
24	e6.2	245	78	67	73	43	20	79	4.3	3.4	3.7	2.3
25	e3.4	100	424	627	87	38	27	45	4.7	3.1	3.5	2.3
26	e2.7	63	598	212	70	42	26	30	5.7	2.7	3.7	2.8
27	e4.5	52	161	107	59	43	20	21	5.3	43	3.0	7.4
28	e22	43	100	80	52	38	17	23	4.4	43	3.2	24
29	e11	32	75	67	---	483	16	126	4.2	11	3.4	11
30	3.5	29	59	79	---	173	14	62	4.0	7.0	2.9	410
31	3.7	---	64	71	---	94	---	33	---	5.4	2.4	---
Total	117.3	3,324.4	5,048	2,706	4,536	2,281	883	1,348.1	411.5	305.2	151.2	522.0
Mean	3.78	111	163	87.3	162	73.6	29.4	43.5	13.7	9.85	4.88	17.4
Max	22	779	673	627	1,490	483	70	253	47	55	27	410
Min	1.8	2.1	28	26	50	37	14	7.1	4.0	2.3	2.2	2.1
Cfsm	0.06	1.68	2.47	1.32	2.45	1.11	0.45	0.66	0.21	0.15	0.07	0.26
In.	0.07	1.87	2.85	1.53	2.56	1.29	0.50	0.76	0.23	0.17	0.09	0.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2010^a, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	27.5	44.3	58.0	86.5	107	117	92.4	48.9	38.0	35.6	30.8	37.2
Max	181	213	183	326	311	354	304	175	210	359	256	342
(WY)	(1930)	(1986)	(2003)	(1936)	(1998)	(1998)	(2003)	(2003)	(1995)	(1938)	(1939)	(1945)
Min	0.63	0.82	3.64	4.55	10.3	15.7	12.4	4.17	1.75	1.28	0.85	0.28
(WY)	(1987)	(1942)	(1942)	(2008)	(2008)	(2006)	(2002)	(2002)	(1986)	(1986)	(1987)	(1954)

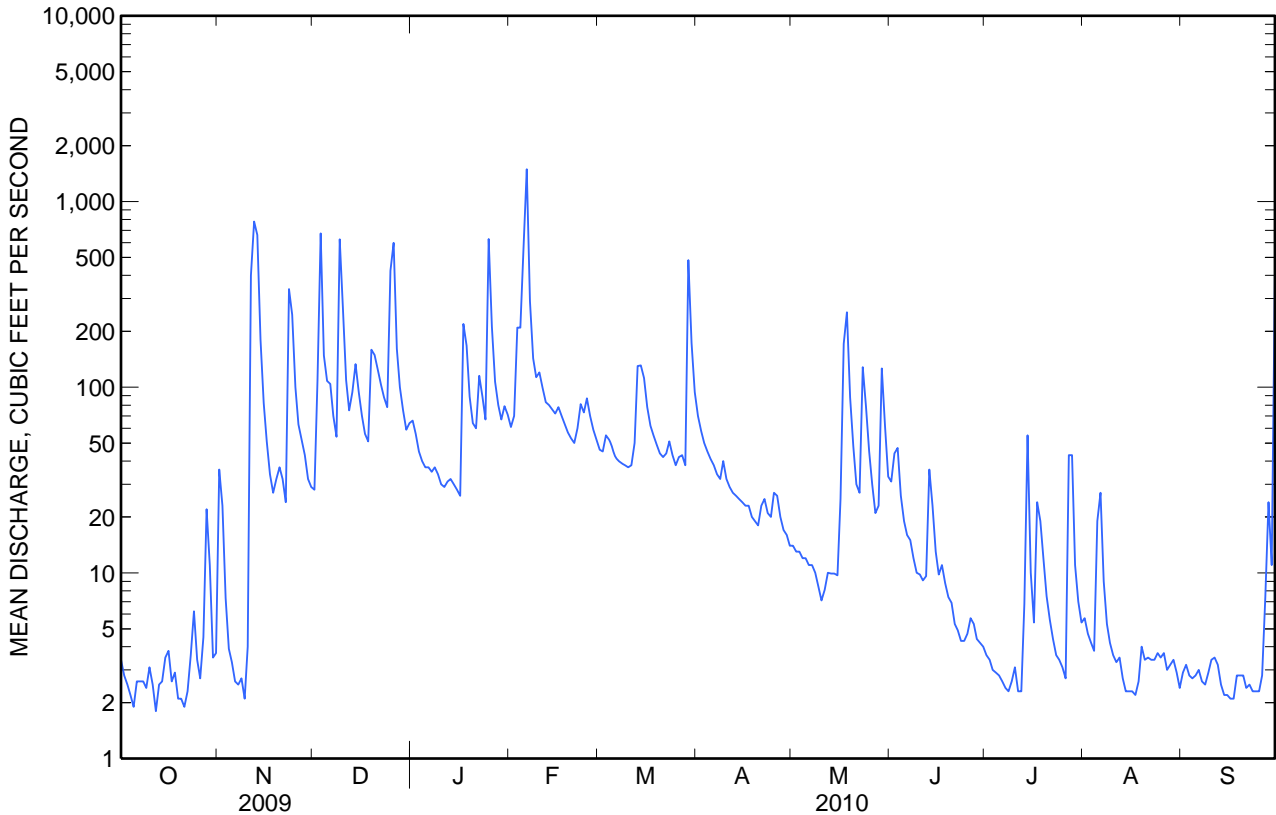
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SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1928 - 2010 ^a	
Annual total	19,944.3		21,633.7			
Annual mean	54.6		59.3		59.9	
Highest annual mean					154	2003
Lowest annual mean					9.67	2002
Highest daily mean	779	Nov 12	1,490	Feb 6	4,600	Sep 6, 1996
Lowest daily mean	1.8	Oct 12	1.8	Oct 12	0.02	Jul 10, 1986
Annual seven-day minimum	2.4	Oct 3	2.4	Sep 13	0.10	Oct 6, 1954
Maximum peak flow			3,060	Feb 6	10,800	Sep 6, 1996
Maximum peak stage			14.93	Feb 6	^b 21.13	Sep 6, 1996
Instantaneous low flow			Not Determined		^b 0.00	Sep 13, 2002
Annual runoff (cfsm)	0.828		0.898		0.908	
Annual runoff (inches)	11.24		12.19		12.34	
10 percent exceeds	122		122		114	
50 percent exceeds	20		24		25	
90 percent exceeds	2.8		2.6		3.7	

^a See Period of Record.

^b See Remarks.



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1990 to current year.

REMARKS.--Station operated to define water quality as part of a regional surface-water quality assessment.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 1 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; P, phosphorus; SiO₂, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Medium name	Sample type	Barometric pressure, mm Hg (00025)	Color, water, filtered, platinum cobalt units (00080)	Discharge, instantaneous, ft ³ /s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)
10-05-2009	0900	Surface water	Regular	753	35	3.5	7.1	74	6.7
12-08-2009	0900	Surface water	Regular	761	80	54	11.4	94	6.9
01-25-2010	1115	Surface water	Regular	735	250	1,050	10.7	100	6.7
02-24-2010	0915	Surface water	Regular	745	75	69	11.1	95	6.8
02-24-2010	0916	<i>QC sample - Surface water</i>	<i>Replicate</i>	--	75	--	--	--	--
02-24-2010	0946	<i>QC sample - Artificial</i>	<i>Blank</i>	--	--	--	--	--	--
04-01-2010	0930	Surface water	Regular	753	88	72	9.6	95	7.0
06-15-2010	1130	Surface water	Regular	755	62	13	7.0	88	7.0
08-04-2010	1130	Surface water	Regular	753	50	4.7	6.3	78	6.9

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 2 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; P, phosphorus; SiO₂, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Specific conductance, water, unfiltered, μS/cm at 25 °C (00095)	Temperature, water, °C (00010)	Dissolved solids dried at 180 °C, water, filtered, mg/L (70300)	Hardness, water, mg/L as CaCO ₃ (00900)	Calcium, water, filtered, mg/L (00915)	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)	ANC, water, unfiltered, inflection-point, incremental titration method, field, mg/L as CaCO ₃ (00419)
10-05-2009	92	16.8	73	32.0	7.82	3.04	1.82	4.95	28.7
12-08-2009	72	7.0	58	23.3	5.54	2.30	1.93	3.82	17.7
01-25-2010	53	10.8	57	16.3	3.67	1.73	2.12	2.88	10.6
02-24-2010	82	7.6	53	21.4	5.08	2.13	1.19	6.23	16.5
02-24-2010	--	--	60	21.2	5.02	2.10	1.20	6.18	16.7
02-24-2010	--	--	--	< .18	< .04	< .016	< .06	< .10	--
04-01-2010	71	14.5	61	21.7	5.16	2.15	1.31	4.32	16.6
06-15-2010	100	26.7	79	31.8	7.76	3.01	1.36	5.76	29.5
08-04-2010	104	25.5	82	33.8	8.37	3.13	1.86	5.87	26.1

02085000 ENO RIVER AT HILLSBOROUGH, NC—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 3 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; P, phosphorus; SiO₂, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Bi carbonate, water, unfiltered, inflection-point, incremental titration method, field, mg/L (00450)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Silica, water, filtered, mg/L as SiO ₂ (00955)	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Nitrite, water, filtered, mg/L as N (00613)
	10-05-2009	35.0	4.76	.08	7.39	4.74	.30	< .020	.138
12-08-2009	21.6	4.90	< .08	11.3	5.99	.52	.073	.311	.006
01-25-2010	12.9	4.56	E .07	9.13	4.72	1.1	.035	.243	.005
02-24-2010	20.1	10.0	< .08	11.6	5.28	.29	< .020	.355	E .002
02-24-2010	20.3	10.0	< .08	11.6	5.27	< .10	< .020	.352	E .002
02-24-2010	--	.54	< .08	< .06	< .18	< .10	< .020	< .016	< .002
04-01-2010	20.2	6.01	< .08	10.5	5.27	.38	E .011	.245	.003
06-15-2010	36.0	10.6	.09	13.1	4.75	1.4	1.02	.342	.004
08-04-2010	31.8	6.20	.09	11.0	8.76	.34	.033	.346	.006

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 4 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; P, phosphorus; SiO₂, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Orthophosphate, water, filtered, mg/L as P (00671)	Phosphorus, water, unfiltered, mg/L as P (00665)	Aluminum, water, unfiltered, recoverable, μg/L (01105)	Cadmium, water, unfiltered, μg/L (01027)	Chromium, water, unfiltered, recoverable, μg/L (01034)	Cobalt, water, unfiltered, recoverable, micrograms per liter (01037)	Copper, water, unfiltered, recoverable, μg/L (01042)	Iron, water, unfiltered, recoverable, μg/L (01045)	Lead, water, unfiltered, recoverable, μg/L (01051)
	10-05-2009	E .005	.018	49	< .04	< .42	.16	E .86	508
12-08-2009	.009	.041	--	--	--	--	--	--	--
01-25-2010	.021	.269	1,930	.04	2.0	2.5	4.9	3,640	3.87
02-24-2010	.009	.033	--	--	--	--	--	--	--
02-24-2010	.008	.030	--	--	--	--	--	--	--
02-24-2010	< .008	< .008	< 6	< .04	< .42	.05	1.8	< 9	< .06
04-01-2010	E .008	.039	253	< .04	E .38	.40	1.6	1,020	.48
06-15-2010	.011	.032	--	--	--	--	--	--	--
08-04-2010	.009	.021	--	--	--	--	--	--	--

02085000 ENO RIVER AT HILLSBOROUGH, NC—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 5 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; P, phosphorus; SiO₂, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Manganese, water, unfiltered, recoverable, μg/L (01055)	Mercury, water, unfiltered, recoverable, μg/L (71900)	Molybdenum, water, unfiltered, recoverable, micrograms per liter (01062)	Nickel, water, unfiltered, recoverable, μg/L (01067)	Silver, water, unfiltered, recoverable, μg/L (01077)	Zinc, water, unfiltered, recoverable, μg/L (01092)	Arsenic, water, unfiltered, μg/L (01002)	Selenium, water, unfiltered, μg/L (01147)	Organic carbon, water, unfiltered, mg/L (00680)	Suspended sediment concentration, mg/L (80154)
10-05-2009	94.4	< .010	E .1	E .25	< .02	2.2	.37	E .09	6.5	5
12-08-2009	--	--	--	--	--	--	--	--	7.6	9
01-25-2010	357	.017	E .1	1.2	.02	12.7	.77	.16	14.7	212
02-24-2010	--	--	--	--	--	--	--	--	4.5	9
02-24-2010	--	--	--	--	--	--	--	--	4.5	--
02-24-2010	< .8	< .010	< .1	< .36	< .02	< 2.0	< .18	< .10	< .6	--
04-01-2010	91.8	< .010	E .1	.44	< .02	E 1.4	.37	.12	5.7	--
06-15-2010	--	--	--	--	--	--	--	--	5.0	5
08-04-2010	--	--	--	--	--	--	--	--	5.1	3