

Water Quality Study

Van Wert County

Results from samples collected January – December 2007

Town Creek Nutrient Data

Nitrogen and Phosphorus concentrations at four locations in Town Creek

Town Creek Pesticide Data

Pesticide concentrations for samples collected in June and November at three locations in Town Creek.

Municipal and Township Well Pesticide Samples

Pesticide concentrations for June samples of six area municipalities and twelve rural wells.

Van Wert County Ecoli Results

Ecoli Levels from streams leaving Van Wert County and Township wells.

Rainfall Data

Amount of rainfall recorded prior to sampling day, and monthly totals for each year.

Genetic Testing

Identifying proximal bacterial pollution sources in Town Creek, Van Wert, Ohio
Report for 10/2006 and 05/2007

A Grant from The Van Wert County Foundation

Municipal Pesticide Samples – 2007

Location	Atrazine	Alachlor	Metolachlor	Metribuzin	Propachlor	Propazine	Simazine	Nitrates (ppm)
Convoy	*	*	*	N/T	8.1	*	*	*
Delphos	*	1.2	*	N/T	*	*	*	*
Middle Point	*	*	*	N/T	*	*	*	*
Ohio City	*	*	*	N/T	*	*	*	*
Van Wert	0.6	*	*	N/T	*	*	*	0.46
Willshire	*	*	*	N/T	*	*	*	*

Results in ppm

The 2007 samples had detectable levels of atrazine and nitrates in the Van Wert sample. However this is the first time Delphos and Convoy had detectable levels of pesticides. One interesting note is that both treatment facilities were currently under new construction at the time. The concentration of nitrates present did not exceed the EPA's HAL of 10ppm.

Township Wells Pesticide Samples – 2007

Location	Alachlor	Atrazine	Metolachlor	Metribuzin	Propachlor	Propazine	Simazine	Nitrates (ppm)
Union	*	*	*	N/T	*	*	*	*
Pleasant	*	*	*	N/T	*	*	*	*
Tully	*	*	*	N/T	*	*	*	*
Harrison	*	*	*	N/T	*	*	*	*
Willshire	*	*	*	N/T	*	*	*	*
Liberty	*	*	*	N/T	*	*	*	*
York	*	*	*	N/T	*	*	*	*
Jennings	*	0.9	*	N/T	*	*	*	*
Ridge	*	*	*	N/T	*	*	*	*
Washington	*	*	*	N/T	*	*	*	*
Jackson	*	*	*	N/T	*	*	*	*
Hoaglin	*	*	*	N/T	*	*	*	*

Results in ppm

The samples collected in June 2007, contained some detectable levels of pesticides in the water. The Jennings Township has had readings of atrazine in the past.

Town Creek Pesticide Data 2007

Location	Date	Alachlor	Acetochlor	Atrazine	Carbofuran	Cyanazine	Fluchloralin	Metolachlor	Metribuzin	Pendimethalin	Propachlor	Simazine	Trifluralin
TC-1	Jun-07	*	*	1.5	*	*	*	*	*	*	*	*	*
TC-2	Jun-07	*	*	1.0	*	*	*	*	0.5	*	*	*	*
TC-3	Jun-07	*	*	0.9	*	*	*	*	*	*	*	*	*
TC-1	Nov-07	*	*	*	*	*	*	*	*	*	*	*	*
TC-2	Nov-07	*	*	*	*	*	*	*	*	*	*	*	*
TC-3	Nov-07	*	*	*	*	*	*	*	*	*	*	*	*

Only pesticides detected throughout the study are included

- * = Sample was below the detection limit
Sample results are in parts per million (ppm)

Comments:

Town Creek Pesticide samples for 2007 followed a similar pattern as previous years, with some pesticides present in the June samples. The concentrations found in the June 2007 samples are slightly below average with amounts of Atrazine, and Metribuzin present. These concentrations might be the result of lower than normal levels of precipitation during the summer.

Total Nitrogen and Phosphorus 2007

Month	Nitrate (ppm)					Phosphate (ppm)				
	TC-1	TC-2	TC-3	TC-4	AVG.	TC-1	TC-2	TC-3	TC-4	AVG.
January	N/S	5.46	4.56	4.34	4.79	N/S	0.5	0.49	0.54	0.51
February	N/S	6.08	7.23	6.07	6.46	N/S	0	0.16	0.18	0.11
March	N/S	1.98	2.24	2.22	2.15	N/S	0.26	0.24	0.24	0.25
April	N/S	7.44	5.8	6	6.41	N/S	0.24	0.32	0.28	0.28
May	N/S	6.71	5.69	5.02	5.81	N/S	0	0.11	0.11	0.07
June	0.76	0.32	7.62	1.85	2.64	0.00	0.12	0.13	0.00	0.08
July	N/S	0	9.81	0.22	3.34	N/S	0.2	0.20	0.55	0.32
August	N/S	0	12.56	1.13	4.56	N/S	0.14	0.20	0.18	0.17
September	N/S	1.39	13.25	2.48	5.71	N/S	0.15	0.24	0.21	0.20
October	N/S	0.7	9.7	1.2	3.6	N/S	0	0.14	0.00	0.05
November	4.49	5.45	10.72	6.67	4.3	0.11	0	0.15	0.00	0.04
December	N/S	8.78	7.81	6.27	7.62	N/S	5.8	0.67	0.58	2.35

Nitrogen = nitrates + nitrites

Phosphorus=Total Phosphorus

N/S=Not sampled

Shaded boxes indicate values that exceed EPA's HAL of 10ppm Nitrogen.

Comments:

Nitrogen concentrations were average comparing to other years of the study.

Phosphorus concentrations throughout 2007 were about average compared to the last couple of years.

Town Creek E. Coli Test col/100ml

	1-Jun-01	Nov-01	1-Jun-02	3-Nov-02	3-Jun-03	3-Nov-03	1-Jun-04	1-Nov-04	1-Jun-05	1-Nov-05	1-Jun-06	1-Nov-06	1-Jun-07	1-Nov-07
Location	E.Coli/col/100ml													
TC1	160	740	390	630	*	300	2000	1920	4400	500	500	790	3800	0
TC2	600	920	290	0	400	140	2000	1760	3800	500	200	1110	1400	6
TC3	260	300	660	2390	1000	308	6000	2840	5200	14000	1800	2040	1600	1
TC4	680	190	230	20	200	90	4000	3000	5600	300	600	1080	1700	28

E.coli levels are hard to predict. The only factor that appears is that the E. coli levels are slightly higher downstream of Van Wert

Streams leaving Van Wert County (E.Coli Test)col/100ml

	1-Mar-05	3-Jun-05	3-Sep-05	1-Dec-05	1-Mar-06	3-Jun-06	3-Sep-06	1-Dec-06	1-Mar-07	3-Jun-07	3-Sep-07	1-Dec-07
Town Creek	16000	5600	1900	3200	0	600	13300	2600	15700	1700	100	5600
Maddox Creek	17000	400	4200	5900	200	400	13900	3300	6200	400	800	3560
Hoaglin Creek	10000	2000	9400	8500	0	200	42400	800	2700	400	850	2400
Hagerman Creek	9000	600	6000	7200	400	200	39200	1500	1700	400	1500	1840
Upper Prairie Creek	27000	3200	12400	3200	400	600	8000	1300	2200	400	1900	1660
Middle Creek	6000	3200	22800	5800	800	500	20600	1200	1600	500	1350	1300
Blue Creek	5000	4400	5600	2600	0	200	19400	1100	1500	1100	2000	4360

The levels of E.coli are sporadic and somewhat inconsistent. They don't follow any weather related events.

Location	Coliform 01	E.Coli 01	Coliform 02	Ecoli 02	Coliform 03	Ecoli 03	Coliform 04	Ecoli 04	Coliform 05	Ecoli 05	Coliform 06	Ecoli 06	Coliform 07	Ecoli 07	Year Dug	Depth	Casing
Harrison	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	N/A	N/A	N/A
Hoaglin	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1970's	40'	Metal
Jackson	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1987	52'	PVC
Jennings	Present	Absent	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1979	38'	Metal
Liberty	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1974	108'	Metal
Pleasant	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1975	140'	Metal
Ridge	Present	Absent	Present	Absent	Absent	Absent	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1939	85'	Galvanized

Location	Coliform 01	E.Coli 01	Coliform 02	Ecoli 02	Coliform 03	Ecoli 03	Coliform 04	Ecoli 04	Coliform 05	Ecoli 05	Coliform 06	Ecoli 06	Coliform 07	Ecoli 07	Year Dug	Depth	Casing
Tully	Absent	Absent	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1978	105'	Iron
Union	Present	Absent	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	N/A	N/A	N/A
Washington	Present	Absent	Present	Absent	Absent	Absent	Present	Absent	Absent	Absent	Present	Absent	Absent	Absent	1952	35'	Steel
Willshire	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1979	88'	Steel
York	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	N/A	N/A	Steel

Shaded boxes indicate values that Coliform was present.

The 2007 sample shows that no Coliform Bacteria were present in the wells during the June sample.

Total Rain Fall in inches

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Average
Jan.	3.82	1.81	1.89	2.75	1.98	2.97	2.70	2.29	1.71	3.82	1.65	0.65	1.63	1.45	2.54	6.01	2.53	8.47	2.82
Feb.	6.40	0.94	1.20	1.60	0.70	0.75	0.36	3.70	1.53	1.94	1.45	2.18	2.51	2.42	0.41	1.07	2.24	0.8	1.79
Mar.	1.87	2.38	2.24	1.34	0.72	1.86	1.97	2.50	3.15	1.26	1.53	0.61	3.42	1.76	1.95	1.14	1.22	3.67	1.92
Apr.	1.89	3.87	4.09	5.21	4.43	4.70	4.37	0.78	5.03	5.11	1.51	3.43	3.71	2.07	0.64	3.26	2.62	4.36	3.39
May	5.28	3.94	2.53	3.04	1.77	4.24	5.21	4.58	3.23	2.13	4.98	5.78	5.56	8.18	5.69	1.31	4.2	1.18	4.22
June	3.47	0.12	2.09	8.68	5.27	4.95	4.65	3.79	7.56	3.64	9.23	2.61	2.4	4.55	5.54	2.91	2.81	0.85	4.17
July	8.95	2.87	6.79	5.65	4.39	2.19	8.30	8.33	4.28	3.19	1.86	3.65	3.03	8.81	9.45	3.04	5.95	1.14	5.10
Aug.	5.21	3.89	2.22	1.25	2.31	3.50	1.77	3.01	4.31	2.71	3.04	1.71	2.23	6.51	5.85	3.21	2.79	11.86	3.74
Sept.	3.28	1.66	1.66	4.11	0.62	0.43	2.42	5.53	0.80	1.59	5.32	6.29	2.77	4.79	2.31	5.06	2.46	2.75	2.99
Oct.	3.37	2.21	2.61	1.82	0.80	4.08	2.40	1.61	2.70	2.08	2.3	7.79	1.45	1.73	3.25	1.28	5.19	2.67	2.74
Nov.	2.31	1.05	5.51	4.13	3.56	2.63	5.56	2.74	1.89	1.25	1.9	7.76	2.91	2.99	3.66	3.19	1.65	3.85	3.25
Dec.	7.10	1.10	1.33	1.56	2.59	1.10	0.00	1.73	0.93	2.51	3.2	0.37	2.198	2.86	2.16	2.99	4.71	4.41	2.38
total for year	52.95	25.84	34.16	41.14	29.14	33.40	39.71	40.59	37.12	31.23	37.97	42.83	33.82	48.12	43.45	34.47	38.37	46.01	36.53

Comments:

Rainfall data is reported because it may help explain pesticide and nutrient levels in town creek. High levels of precipitation can increase run-off and the amount of nitrogen, phosphorus and pesticides entering the stream.

Rainfall (inches) Recorded prior to Sampling

2007	January	February	March	April	May	June	July	August	September	October	November	December
24 Hours	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.90
48 Hours	1.10	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
72 Hours	0.00	1.50	0.47	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96 Hours	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.00	0.00	0.00
Totals	1.10	1.50	0.47	0.55	0.20	0.24	0.56	0.00	0.00	0.00	0.00	1.20

Comments:

Rainfall data is reported because it may help explain pesticide and nutrient levels in town creek. High levels of precipitation can increase run-off and the amount of nitrogen, phosphorus and pesticides entering the stream.