



# **Integrated Water Quality Report Monaghan & Louth 2011**

## **Appendices**

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**Integrated Water Quality Report  
Co. Monaghan & Co. Louth**

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## APPENDIX 1. RIVER STATION CODES (with 2011 annual mean values and grid references)

### Louth

Reference	Station ID	2011 annual mean values					Grid Reference (ING)	
		DO % Sat	BOD mg/l O <sub>2</sub>	Ammonia mg/l N	o_PO <sub>4</sub> mg/l P	TON mg/l N	Easting	Northing
L1	RS06B010100	100.8	0.75	0.020	0.01	0.53	315210	309791
L2	RS06B020100	99.3	2.56	0.090	0.05	1.58	306499	314381
L3	RS06C010200	100.0	1.79	0.046	0.07	2.24	300810	309798
L4	RS06C020200	100.0	0.75	0.041	0.04	1.99	302356	310919
L5	RS06D010600	91.2	1.36	0.040	0.04	1.46	292551	289701
L6	RS06D010670	85.8	1.95	0.039	0.05	2.08	295323	290348
L7	RS06D010680	88.8	1.48	0.044	0.05	1.75	296624	290539
L8	RS06D010710	90.8	1.65	0.128	0.05	1.80	297318	290991
L9	RS06D011000	92.8	1.86	0.046	0.06	2.38	306577	291124
L10	RS06D011100	88.0	1.75	0.049	0.07	2.46	307399	292205
L11	RS06F010900	97.3	1.23	0.023	0.04	1.83	301461	301571
L12	RS06F020700	98.3	1.45	0.049	0.02	1.47	308143	310046
L13	RS06G020700	95.8	1.33	0.031	0.03	1.84	295567	297673
L14	RS06G020900	92.5	0.96	0.036	0.03	2.50	298680	295458
L15	RS06G021230	91.5	3.65	0.330	0.06	2.99	306180	295322
L16	RS06T010350	92.5	3.43	0.065	0.16	3.75	312758	280596
L17	RS06W010040	90.5	5.05	0.625	0.05	2.14	300971	284552
L18	RS06W010100	102.0	1.99	0.073	0.08	2.82	304643	285672
L19	RS06W010400	92.0	1.95	0.180	0.06	3.43	305751	288962
L20	RS06W010500	96.8	1.76	0.120	0.13	3.62	305769	289298
L21	RS07M010100	107.0	1.79	0.030	0.09	2.92	301941	280721
L22	RS07M010200	103.0	1.28	0.023	0.04	2.64	300453	276902
L23	RS07M010300	104.3	1.43	0.066	0.04	4.08	303747	275654

### Monaghan

Reference	Station ID	2011 annual mean values					Grid Reference (ING)	
		DO % Sat	BOD mg/l O <sub>2</sub>	Ammonia mg/l N	o_PO <sub>4</sub> mg/l P	TON mg/l N	Easting	Northing
M1	RS03B010100	98.2	0.75	0.012	0.03	0.34	260272	337068
M2	RS03B010130	98.0	0.50	0.018	0.02	0.39	261394	335942
M3	RS03B010600	96.0	1.00	0.031	0.04	0.68	267515	335243
M4	RS03B010800	101.2	2.04	0.039	0.06	1.88	271961	338794
M5	RS03C011100	99.7	0.92	0.040	0.06	0.92	274526	331605
M6	RS03C011200	100.0	0.75	0.036	0.06	1.13	274043	332159
M7	RS03C011400	98.0	0.67	0.043	0.05	1.11	273880	335755
M8	RS03C021300	92.0	1.00	0.061	0.07	0.67	265441	334582
M9	RS03M010100	101.2	0.50	0.006	0.09	0.06	259739	346174
M10	RS03M010400	99.3	0.50	0.013	0.03	0.36	267097	343359
M11	RS03M010500	98.5	0.58	0.011	0.03	0.32	268630	343051
M12	RS03S010500	76.5	0.50	0.004	0.01	0.22	268023	334968
M13	RS03S020500	91.8	1.08	0.033	0.06	0.38	261102	337572
M14	RS06C030050	98.2	0.92	0.078	0.05	1.01	289288	324586
M15	RS06C030170	94.8	1.00	0.060	0.05	1.14	285675	321571

Reference	Station ID	2011 annual mean values					Grid Reference (ING)	
		DO % Sat	BOD mg/l O <sub>2</sub>	Ammonia mg/l N	o_PO <sub>4</sub> mg/l P	TON mg/l N	Easting	Northing
M16	RS06D070070	0.0	0.75	0.020	0.04	1.03	280160	298260
M17	RS06F010200	83.8	0.58	0.014	0.01	0.39	282845	320628
M18	RS06F010300	94.8	0.58	0.035	0.02	0.58	287419	316774
M19	RS06F010650	101.5	1.16	0.019	0.03	0.78	293260	307049
M20	RS06G020100	92.1	1.27	0.053	0.05	1.21	280613	297922
M21	RS06G020500	90.3	0.50	0.015	0.03	0.89	289432	298113
M22	RS06G040100	95.5	1.00	0.032	0.02	0.92	283413	321386
M23	RS06M010096	99.7	0.92	0.012	0.02	1.20	279605	299511
M24	RS06P010100	96.8	0.50	0.011	0.02	1.45	283278	304036
M25	RS06P010300	87.2	0.58	0.035	0.24	3.58	285036	302632
M26	RS06P010500	94.0	0.92	0.037	0.04	1.28	287871	301892
M27	RS06R030400	89.2	0.58	0.017	0.04	2.10	285294	306397
M28	RS36A070600	93.2	0.92	0.028	0.04	0.94	266545	317099
M29	RS36B050300	64.0	1.00	0.065	0.08	0.36	256793	320185
M30	RS36C110700	98.7	0.67	0.011	0.04	1.06	258572	329065
M31	RS36D020036	91.0	0.67	0.017	0.03	0.76	274400	320100
M32	RS36D020100	95.3	1.50	0.049	0.08	0.75	269870	321210
M33	RS36D020150	86.9	2.08	0.063	0.07	0.81	271692	320507
M34	RS36D020300	101.0	0.64	0.024	0.01	0.52	269662	319762
M35	RS36F010100	93.3	0.81	0.035	0.04	0.58	254441	328426
M36	RS36F010200	92.8	0.94	0.036	0.04	0.74	254578	326492
M37	RS36F010500	88.9	1.72	0.088	0.06	0.85	249978	323276
M38	RS36K010100	85.7	0.92	0.028	0.08	0.41	278748	311500
M39	RS36K010400	85.3	0.58	0.037	0.01	0.27	270692	311420
M40	RS36M010200	90.3	0.83	0.038	0.04	1.03	257941	329870
M41	RS36M030900	96.0	0.75	0.048	0.04	0.68	256814	333984
M42	RS36M031200	89.5	0.75	0.086	0.05	0.56	256950	330097
M43	RS36M080200	100.2	0.58	0.044	0.02	0.65	272012	320156



## APPENDIX 2. PHYSICO-CHEMICAL & BIOLOGICAL ASSESSMENTS

River and Code : **AVAGHON LAKE STREAM**

**36/A/07**

Tributary of : 36D02 DROMORE

OS Catchment No: 123

OS Grid Ref of Confluence: H 660 173

Date(s) Surveyed: 16/7/2010

Station Nos.	Biological Quality Ratings (Q Values)							
	1989	1993	1997	1998	2001	2004	2007	2010
0200	-	3	3	3	3	3	-	3
0600	3	3-4	3	3	3	3	3	3

**Assessment:** Slightly elevated o-phosphate on one occasion in 2011, otherwise the physico-chemical data suggests satisfactory conditions at station 0600. However in terms of biological monitoring, the complete lack of pollution sensitive species continues to indicate moderate pollution at both sites on the Avaghon Lake Stream in July 2010. Unsatisfactory ecological conditions have persisted at this river for over twenty years, with agricultural causes suspected.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0200	2nd Br d/s L Avaghon	267819	314158	28	MN
0600	Br u/s Dromore R confl	266555	317142	28	MN

*Site Altitude and Upstream Catchment Characteristics (where available):*

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0200	122	5	100	0	73	0	0	0	16	11	0
0600	79	0	100	0	100	0	0	0	0	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **BALLYMASCANLAN**

**06/B/02**

Tributary of : 06F02 FLURRY

OS Catchment No: 91

OS Grid Ref of Confluence: J 081 100

Date(s) Surveyed: 16/9/2010

Station Nos.	Biological Quality Ratings (Q Values)										
	1990	1991	1994	1997	2000	2003	2006	2007	2008	2009	2010
0100	2-3	-	3/0	4	3/0	2/0	2/0	2/0	2-3/0	3-4	3-4
0200	-	-	-	-	-	-	-	-	3	-	-
0300	4-5	-	-	-	3	-	-	-	-	-	-
0500	1-2	1	3	4	3	-	-	-	-	-	-

**Assessment:** Continued improvement in the Ballymascanlan River was recorded in 2011, with moderate status now achieved. The river was in flood at time of biological sampling but sensitive macroinvertebrates were still present. Oil/diesel odours continue to be an issue here which may be responsible for the slightly elevated ammonia and BOD levels observed on occasion in 2011 (January sampling in particular).

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Jonesborough Br	306465	314446	36	LH
0200	Br nr Carrickaneena House	306700	313600	36	
0300	New Br	307128	311816	29	LH
0500	Ballymascanlan Br	308085	310187	29	LH

*Site Altitude and Upstream Catchment Characteristics (where available):*

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	58	0	100	0	40	0	0	60	0	0	0
0200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0300	30	2	85	15	91	5	0	4	0	0	0
0500	6	4	54	46	87	3	0	8	2	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : BIG (LOUTH)****06/B/01**

Tributary of :

OS Catchment No: 90

OS Grid Ref of Confluence: J 168 054

Date(s) Surveyed: 28/9/2011

Biological Quality Ratings (Q Values)

Station Nos.	1971	1973	1978	1980	1982	1984	1986	1990	1991	1994	1997	2000	2003	2006	2009	2011
0100	-	-	5	5	5	5	5	5	-	5	4-5	4-5	4-5	4	4	4-5
0200	5	5	4-5	4-5	4	4	4	3	-	-	-	-	-	-	-	-
0300	1/0	1	1	2	1	1	1-2	2	2	4-5	3-4	4	4	3-4	3	4-5
0400	-	-	-	1-2	1/0	1/0	1/0	3	-	-	-	-	-	-	-	-

**Assessment:** A welcome return to highly satisfactory ecological conditions was noted on the Big River when sampled in September 2011, a situation that was last observed in 1994. General physico-chemical data for 2011 and indeed the previous few years, supports this assessment.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Ballygoly Br	315156	309883	36	LH
0200	Br u/s Riverstown Br	316323	307400	36	LH
0300	Riverstown Br	316519	306642	36	LH
0400	0.5km d/s Riverstown Br	316778	306270	36	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	94	11	98	2	34	3	29	0	0	0	33
0200	33	24	96	4	46	3	27	0	4	0	20
0300	22	25	93	7	46	3	26	0	5	0	20
0400	12	25	92	8	46	3	26	0	6	0	20

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : BLACKWATER (MONAGHAN)****03/B/01**

Tributary of :

OS Catchment No: 68

OS Grid Ref of Confluence: H 922 637

Date(s) Surveyed: 6/7/2010

Biological Quality Ratings (Q Values)

Station Nos.	1971	1973	1977	1981	1983	1985	1989	1993	1996	1998	2001	2004	2007	2010
0100	4-5	4-5	4-5	4-5	3-4	3-4	-	-	-	-	-	-	-	-
0130	-	-	-	-	-	-	3-4	4	4	4	3	3	4	4
0200	3-4	3-4	3-4	4	3-4	3-4	-	-	-	-	-	-	-	-
0300	4	4	3-4	4	4	3-4	3-4	4	4	4	4	4	3-4	3-4
0400	4	4	3-4	4	3-4	3-4	3-4	-	-	-	-	-	-	-
0500	4	4	3-4	4	3-4	3-4	-	-	-	-	-	-	-	-
0510	-	-	-	-	-	-	3	3	3-4	3	3	3-4	3-4	3-4
0600	3	3	2	3	2-3	3	2-3	3	-	-	-	-	-	-
0650	-	-	-	-	-	-	2-3	-	2-3	3	3/0	3	3	3
0700	3	3	3	2-3	2-3	2-3	2-3	3	-	-	-	-	-	-
0800	4	3-4	3-4	3	3	3	3	3	2-3	3	3	3	3	3

**Assessment:** There has been no change in ecological condition in the Blackwater since it was last sampled in 2007. Only the site downstream of Scotstown Br (0130) is achieving satisfactory quality, the remaining downstream sites continue to be of generally unsatisfactory ecological. The complete absence of sensitive macroinvertebrates below Monaghan (0650, 0800) when biological sampling was carried out in 2010 is indicative of considerable ecological disruption, with continued pollution by suspected sewage and industrial discharges. 2011 physico-chemical monitoring data reveals elevated BOD, nitrate and o-phosphate levels on occasion at station 0600 but in particular at station 0800 which is consistent with intermittent pollution.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Br 1 km u/s Scotstown*	260202	337086	28	MN
0130	1.5 km d/s Scotstown Br	261322	335999	28	MN
0200	Br in Ballinode	262918	335813	28	MN
0300	1st Br d/s Ballinode	263898	335742	28	MN
0400	Br at Crosses	265564	335744	28	MN
0500	Br nr Milltown	266388	334653	28	MN
0510	250m d/s Br nr Milltown	266519	334591	28	MN
0600	Br on Monaghan-Aughnacloy Rd	267509	335234	28	MN
0650	Faulkland Br (Upr)	269240	337125	28	MN
0700	Faulkland Br	270284	337840	28	MN
0800	Newmills Br	271921	338773	28	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	77	15	0	100	47	9	7	0	12	0	25
0130	64	50	0	100	41	3	20	1	17	0	17
0200	59	52	0	100	43	3	19	1	17	0	17
0300	57	63	0	100	49	2	16	2	17	0	14
0400	54	71	0	100	55	2	14	2	15	0	12
0500	52	123	27	73	70	3	8	2	9	0	7
0510	51	123	27	73	70	3	8	2	9	0	7
0600	50	124	27	73	71	3	8	2	9	0	7
0650	45	140	28	72	71	3	7	4	8	0	7
0700	43	142	27	73	71	3	7	4	8	0	7
0800	39	143	27	73	72	3	7	4	8	0	7

Alt is in metres Area is km<sup>2</sup> and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **BUNNOE**

**36/B/05**

Tributary of : 36A02 ANNALEE

OS Catchment No: 123

OS Grid Ref of Confluence: H 505 124

Date(s) Surveyed: 11/8/2010

Station Nos.	Biological Quality Ratings (Q Values)												
	1983	1985	1987	1988	1989	1990	1993	1997	1998	2001	2004	2007	2010
0080	-	-	2	3	2-3	-	-	-	-	-	-	-	-
0090	-	-	-	-	-	-	3	3	3-4	3	4	4	3-4
0100	-	2-3	1	3	2	2-3	-	-	-	-	-	-	-
0200	-	-	2	2-3	2-3	-	-	-	-	-	-	-	-
0300	-	1	1-2	2-3	-	-	-	-	-	2-3	-	-	-
0400	1-2	3	1-2	2-3	3	-	3-4	4	-	3	4	3-4	3
0440	-	-	3	-	4	-	3-4	-	-	-	-	-	-
0500	3-4	4	4	-	3-4	-	3-4	3-4	3-4	3	3-4	-	3-4
0600	4-5	4	4-5	-	3-4	-	-	-	-	-	-	-	-
0700	4-5	4-5	4-5	-	3-4	-	4	3-4	3-4	3-4	3-4	4	3-4

**Assessment:** An unwelcome decline in ecological quality at three out of four sites sampled on the Bunnoe was noted in August 2010, and resulted in overall unsatisfactory conditions. Slightly elevated ammonia, BOD & o-phosphate levels were observed on occasion in 2011. This followed the trend in 2010 and indicates intermittent pollution. Agriculture is suspected as the cause of the less than satisfactory state of the river.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0080	Br E of Manse	0	0	0	MN
0090	Rly Br Aghadrumkeen	261631	322968	28	MN
0100	Br SW of Aghadrumkeen	260906	322596	28	MN
0200	Br N of Corduff	0	0	0	MN
0300	Doohat Br	0	0	0	MN
0400	Dianmore Br	255171	318370	27	MN
0440	Br nr Ballinageeragh	0	0	0	MN
0500	Br W of Killynenagh L	252344	316054	27	CN
0600	Br E of Lisboduff	0	0	0	CN
0700	Br u/s Annalee R confl	250376	313112	27	CN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0090	98	8	100	0	98	2	0	0	0	0	0
0100	94	9	100	0	99	1	0	0	0	0	0
0400	89	54	100	0	96	0	0	0	0	1	3
0500	75	65	100	0	93	0	0	0	4	1	3
0700	61	80	100	0	87	0	0	0	10	1	2

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : CARRICKASLANE LOUGH STREAM****06/C/04**

Tributary of : 06F01 FANE

OS Catchment No: 94

OS Grid Ref of Confluence: H 815 214

Date(s) Surveyed: 23/9/2009

**Formerly Carrickaslane Lough Branch of Fane River****Biological Quality Ratings (Q Values)**

Station Nos.	1990	1994	1997	2000	2003	2006	2009
0115	4	4	3-4	4	3	3	3

**Assessment:** Carrickaslane Lough Stream continues to be of unsatisfactory ecological condition, with no change of status observed when biological monitoring was carried out in 2009. This stream is not included in the physico-chemical monitoring programme.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0115	Br u/s Carrickaslane L	280540	324500	28	

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0115	N/A	5	100	0	82	0	8	0	11	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : CASTLETOWN****06/C/01**

Tributary of :

OS Catchment No: 92

OS Grid Ref of Confluence: T 047 083

Date(s) Surveyed: 18/6/2009

**Biological Quality Ratings (Q Values)**

Station Nos.	1971	1974	1978	1982	1986	1990	1994	1997	2000	2003	2006	2009
0050	-	-	-	-	-	-	4	4	4-5	3	3	3
0100	5	-	5	5	5	4-5	-	-	-	-	-	-
0200	4-5	5	5	4-5	4-5	4-5	4	4	4	4	3-4	-
0300	4-5	4	4-5	3-4	4	3-4	-	-	-	-	-	-
0310	-	-	-	-	-	-	3-4	4	4-5	4	3-4	4

**Assessment:** Continuing unsatisfactory conditions were observed at Ballybinaby Br in 2009, as indicated by excessive numbers of pollution tolerant taxa. Slight improvement was noted in the lower reaches at 0310 where the macroinvertebrate fauna indicated good ecological conditions. Physico-chemical monitoring at Ford's Bridge suggests intermittent pollution, with increased nutrient levels observed from time to time in 2011 and previous years.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0050	Ballybinaby Br	295791	311768	28	LH
0100	Br N of Hackballscross	297561	310761	28	LH
0200	Ford's Bridge	300729	309852	36	LH
0300	St John's Br	303001	309682	36	LH
0310	Weir d/s John's Br	303197	309544	36	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0050	54	1	100	0	94	0	0	6	0	0	0
0100	41	9	100	0	92	0	0	6	2	0	0
0200	19	12	96	4	88	0	0	5	7	0	0
0300	5	33	73	27	75	0	0	3	22	0	0
0310	4	33	73	27	75	0	0	3	22	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : CLONTIBRET STREAM**

**03/C/01**

Tributary of : 03B01 BLACKWATER (MONAGHAN)

OS Catchment No: 68

OS Grid Ref of Confluence: H 734 381

Date(s) Surveyed: 1/7/2010

Station Nos.	Biological Quality Ratings (Q Values)								
	1989	1990	1993	1996	1998	2001	2004	2007	2010
0600	3	-	3	3	3	3	3	3	2-3
1100	2-3	3	-	-	-	3	3	-	3
1400	3	-	3-4	4	3	3	3	3	3

**Assessment:** There has been no change in the ecological condition of the Clontibret Stream for over a decade, with moderate pollution noted again when biological monitoring was carried out in July 2010. 2011 physico-chemical data indicates elevated o-phosphates in particular at all stations monitored. This once great brown trout stream continues to come under pressure from suspected agricultural and sewage sources.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0600	Br in Clontibret	275776	328860	28	MN
1100	Br SW of Clerran	274410	331650	0	
1400	Br E of Killyneill X-Roads	273851	335733	28	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0600	119	5	100	0	62	0	4	0	34	0	0
1400	38	60	97	3	90	2	1	0	6	0	1

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : CONAWARY (LOWER)****03/C/02**

Tributary of : 03B01 BLACKWATER (MONAGHAN)

OS Catchment No: 68

OS Grid Ref of Confluence: H 658 348

Date(s) Surveyed: 6/7/2010

Station Nos.	Biological Quality Ratings (Q Values)								
	1989	1990	1993	1996	1998	2001	2004	2007	2010
1100	3	-	3	3	3	3	3	-	3
1200	2	3	3	-	-	-	-	-	-
1300	2-3	-	-	3	3	3	3	3	3

**Assessment:** There has been no change in the unsatisfactory ecological condition of the Conawary Stream in over twenty years. In 2011 as in previous years, elevated ammonia, BOD and o-phosphate levels which are indicative of intermittent pollution were observed. Agriculture is the suspected cause of the continuing moderate pollution of this stream.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
1100	White Br	263927	332559	28	MN
1200	2nd Br u/s Blackwater R	265068	334277	28	MN
1300	Br u/s Blackwater R confl	265434	334559	28	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
1100	60	27	80	20	99	0	0	1	0	0	0
1200	56	45	74	26	93	4	0	2	0	0	1
1300	54	45	73	27	93	4	0	2	0	0	1

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : CONAWARY (UPPER)****36/C/11**

Tributary of : Ulster Canal

OS Catchment No:

OS Grid Ref of Confluence:

Date(s) Surveyed: 14/7/2010

Station Nos.	Biological Quality Ratings (Q Values)				
	1998	2001	2004	2007	2010
0500	3	3*	2	3	3

**Assessment:** The dominance of pollution tolerant species continues to indicate unsatisfactory conditions in the Conawary (Upper), with agricultural causes suspected. Physico-chemical monitoring is carried out at station 0700, Br N of Roosky and elevated o-phosphates observed on occasion though overall, observed nutrient levels slightly lower in 2011 than previous few years.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0500	Br West Cornasoo	261029	328367	27	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0500	124	0	100	0	100	0	0	0	0	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : COUNTY WATER****06/C/03**

Tributary of :

OS Catchment No: 94

OS Grid Ref of Confluence: H 847 202

Date(s) Surveyed: 23/9/2009

Station Nos.	Biological Quality Ratings (Q Values)								
	1980	1984	1990	1994	1997	2000	2003	2006	2009
0050	-	-	-	-	-	3*	3	4	4
0080	-	-	-	-	-	3-4*	3	3	-
0100	4-5	3	4-5	3	3	-	-	-	-
0170	-	-	-	-	-	3-4	3*	3-4	3-4
0200	4	3	4	3-4	3	-	-	-	-

**Assessment:** Improvements in ecological quality were maintained at both sites on the County Water in 2009. Although ecological conditions are now good at County Bridge (0050), the lower reaches are still unsatisfactory at Station 0170, as indicated by the dominance of pollution tolerant macroinvertebrate species. Slightly elevated ammonia and o-phosphates observed in 2011 are consistent with intermittent pollution.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0050	County Br	289250	324600	28	MN
0080	Br u/s Tullycollive Br	288450	320950	28	MN
0100	Tullycollive Br	287115	320900	28	MN
0170	Br u/s Wallace's Br	285596	321605	28	MN
0200	Wallace's Br	284958	320419	28	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	105	1	100	0	100	0	0	0	0	0	0
0170	98	8	100	0	96	0	0	0	4	0	0
0200	90	9	100	0	94	0	0	0	6	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : CULLY WATER****06/C/02**

Tributary of : 06K02 KILCURRY

OS Catchment No: 92

OS Grid Ref of Confluence: J 025 109

Date(s) Surveyed: 24/6/2009

Station Nos.	Biological Quality Ratings (Q Values)									
	1978	1982	1986	1990	1994	1997	2000	2003	2006	2009
0100	4-5	5	4-5	4-5	4-5	4-5	4-5	4	4	-
0200	4-5	4-5	4-5	4-5	3-4	4-5	4-5	4-5	4	4

**Assessment:** The macroinvertebrate fauna indicated good ecological conditions on the Cully Water just upstream of the Kilcurry River confluence in June 2009. Apart from a couple of slightly elevated nitrates / o-phosphates, 2011 general physico-chemical data suggests satisfactory conditions.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Dungooly Br	300322	314006	36	LH
0200	Br u/s Kilcurry R confl	302435	310849	36	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	30	0	100	0	100	0	0	0	0	0	0
0200	10	6	66	34	47	0	0	0	53	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.



River and Code : **DEE****06/D/01**

Tributary of : 06G02 GLYDE

OS Catchment No: 96

OS Grid Ref of Confluence: O 086 935

Date(s) Surveyed: 4/10/2011

Station Nos.	Biological Quality Ratings (Q Values)														
	1971	1974	1977	1978	1980	1983	1986	1990	1994	1997	2000	2003	2006	2009	2011
0016	-	-	-	-	-	-	-	4-5	4	4	3-4	4	3-4	3-4	-
0025	-	-	-	-	-	-	-	5	4	4	4	4	4	-	-
0030	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-
0035	-	-	-	-	-	-	-	4-5	3	3	3-4	3	3	3-4	-
0150	-	-	-	-	3-4	4	-	-	-	-	-	-	-	-	-
0200	4	3-4	-	2-3	3-4	4	4	4	3	3	3-4	3-4	3-4	3	-
0300	4-5	4	-	3	4	4	3-4	4-5	-	-	-	-	-	-	-
0360	-	-	-	-	-	-	-	4	3-4	3-4	4	4	4	4	-
0400	-	-	-	-	4	4	3-4	4-5	-	-	-	-	-	-	-
0450	-	-	-	-	-	-	-	-	3-4	3-4	3-4	3-4	4	-	-
0500	-	4-5	-	3	4	4	3-4	4-5	-	-	-	-	-	-	-
0600	4-5	4	3-4	4	4	4-5	3-4	4-5	3-4	3	4	4	4	4	4
0680	-	-	-	-	-	4	4	4	3-4	3-4	4	3-4	-	-	-
0700	-	2	3-4	3-4	3	3-4	3	4	-	-	-	-	-	-	-
0710	-	-	-	-	-	-	-	4	3-4	3-4	3-4	3	3	3	3
0790	-	-	-	-	-	-	-	-	-	-	-	-	3-4	-	-
0800	4	4	3-4	3-4	4	4	3-4	4-5	3	3	3-4	3	-	-	-
0900	-	-	-	-	-	-	3-4	-	-	-	-	-	-	-	-
0910	-	-	-	-	4	4	3-4	4	-	-	-	-	-	-	-
1000	4	4	3-4	3	3-4	3-4	3-4	3-4	3	3	3-4	3	3-4	3-4	3
1100	-	-	-	-	4	4	4	3-4	-	-	-	-	-	-	-

**Assessment:** Biological monitoring of the River Dee was carried out at three sites in 2011. Only Burley Br (0600) continues to be of satisfactory ecological quality with pollution persisting at Station 0710, and strong evidence of sewage pollution at this location below the town of Ardee. 2011 physico-chemical monitoring also suggests moderate pollution of this river with nutrient levels elevated at most of the 6 stations monitored. Station 0710 is worst affected. Recent extensive bank and instream habitat works were noted at Drumcar Br (1000), coupled with new fencing.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0016	Br u/s Ervy Lough	276240	294830	35	CN
0025	Br to N. of Ervy X-Rds	277250	292710	35	MH
0030	Br u/s Newcastle L	278698	291501	35	MH
0035	Tom's Br	279580	289130	35	MH
0150	Wooden Br W of Nobber Br	281907	286754	35	MH
0200	Deegvee Br	283040	285760	35	MH
0300	Ballanagirrisk Br	284466	284456	35	MH
0360	Rockfield Br	287143	285571	35	MH
0400	Yellow Ford Br	288539	286830	35	MH
0450	Hem Br	289630	288065	35	MH
0500	Bogie Br	291066	289447	35	MH
0600	Burley Br	292551	289685	36	MH
0680	Dawson's Br	296593	290520	36	LH
0700	1.5 km d/s Ardee	0	0	0	
0710	150 m d/s Old Rly Br (LHS)	297279	291051	36	LH
0790	New Br u/s Drumgoolestown Br. (d/s).	302862	291051	36	LH
0800	Drumgoolestown Br	303066	290878	36	LH
0900	Charleville Weir	0	0	0	
0910	Cappoge Br	305064	290619	36	LH
1000	Br at Drumcar	306596	291170	36	LH
1100	At Williamstown House	307391	292195	36	LH



**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0016	129	10	100	0	98	0	0	0	0	0	2
0025	-99	14	100	0	99	0	0	0	0	0	1
0030	60	19	100	0	99	0	0	0	0	0	1
0035	51	31	67	33	98	0	0	0	1	0	1
0150	48	70	70	30	97	0	0	0	2	1	0
0200	47	6	0	100	77	0	0	2	21	0	0
0300	43	95	52	48	95	0	0	1	4	0	0
0360	39	110	50	50	92	0	0	0	6	0	0
0400	35	157	64	36	89	0	0	0	10	0	0
0450	31	170	60	40	89	0	0	0	10	0	0
0500	28	173	59	41	89	0	0	0	10	0	0
0600	26	176	58	42	89	0	0	0	10	0	0
0680	23	286	54	46	79	0	0	1	18	0	1
0710	22	287	54	46	79	0	0	1	19	0	1
0800	13	305	56	44	76	0	0	1	22	0	1
0910	10	317	58	42	75	0	0	1	22	0	1
1000	10	376	65	35	72	1	0	1	25	0	1
1100	8	386	66	34	71	1	0	2	26	0	1

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **DROMORE**

**36/D/02**

Tributary of : 36A02 ANNALEE

OS Catchment No: 123

OS Grid Ref of Confluence: H557 122

Date(s) Surveyed: 10/8/2010, 12/7/2010

Station Nos.	Biological Quality Ratings (Q Values)														
	1971	1977	1980	1982	1984	1986	1989	1990	1993	1997	1998	2001	2004	2007	2010
0015	-	-	-	-	-	-	-	-	4	4-5	4	4	4-5	4	4
0016	-	-	-	-	-	-	-	-	-	1	4	-	-	-	-
0036	-	-	-	-	-	-	3-4	-	4	3-4	3-4	3-4	3-4	4	4
0075	-	-	-	-	-	-	-	-	-	3	3	3	4	3-4	3-4
0090	-	-	-	-	-	-	1	3	3-4	3-4	3-4	3	3-4	-	3-4
0100	5	3	3-4	3	2	3-4	2	3	-	-	-	2-3	-	-	-
0150	-	-	2	2	2	3	2	3	3	3-4	3-4	-	3	3-4	3-4
0200	4	4	3-4	3-4	-	3-4	2-3	-	3	2-3	3	3	3-4	-	3
0300	4	2	3-4	3-4	3-4	3-4	3	-	3-4	3	3	3	3	3	3
0400	4	4	3-4	3-4	3-4	3-4	3-4	-	3	-	-	-	-	-	-
0500	-	-	4	4	3-4	3	3	-	3	3	3	3-4	3-4	3	3
0600	-	-	4	3-4	3-4	3	3	-	-	-	-	-	-	-	-
0700	4-5	2-3	3	4	3	3-4	3	-	3	3-4	3	3	3	3	3
0800	-	-	4	4-5	4	4	-	-	-	-	-	-	-	-	-
0900	4-5	4-5	4-5	4-5	4	4	3-4	-	4	4	4-5	4	4	3-4	3-4
0910	-	-	-	-	1	4	3-4	-	-	-	3	-	-	-	-

**Assessment:** Once again the Dromore remained in generally unsatisfactory ecological condition in 2010. Only the two uppermost sites (0015 and 0036) of the ten stations surveyed were in a satisfactory ecological condition. Signs of nutrient enrichment such as dominance of tolerant macroinvertebrate species, paucity of pollution sensitive macroinvertebrates, excessive weed and/or algal growth, depressed DO and excessive siltation were apparent at all sites surveyed largely due to the effects of sewage and agriculture on the lakes along the rivers course, and the further effects of these lake outflows on the biota of the river itself. Physico-chemical monitoring was carried out at four stations. 2011 data indicates elevated nutrient levels at stations 0100 and 0150 in particular.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0015	Br NE of Corryloan L (RHS)	278600	320800	28	MN
0016	Br NE of Corryloan L (LHS)	278600	320800	28	MN
0036	Br d/s Ballintra Br	274400	320100	28	MN
0075	Br SW of Bartley's Grove	269096	324195	28	MN
0090	Br SE of Edenaferkin	269573	322131	28	MN
0100	Br NE of Derryvalley Ho	269716	322178	28	MN
0150	Br in Ballybay	271686	320500	28	MN
0200	Br d/s L Major	271940	320165	28	MN
0300	Balladian Br	269589	319748	28	MN
0400	Ballycoghill Br	265980	317553	28	MN
0500	Ballynascarva Br	264655	316409	28	MN
0600	New Br N of Clementstown	259750	315155	27	CN
0700	Br W of Clementstown	259132	314766	27	CN
0800	Br N of Ashfield Lodge	257500	313800	27	CN
0900	Killycreeny Br (Mid)	255694	313094	27	CN
0910	Killycreeny Bridge (RHS)	255714	313118	27	CN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0015	98	7	100	0	95	0	0	0	5	0	0
0016	98	7	100	0	95	0	0	0	5	0	0
0036	80	45	100	0	94	0	2	0	4	0	0
0075	98	20	100	0	99	1	0	0	0	0	0
0090	88	30	100	0	98	1	0	0	1	0	0
0100	89	29	100	0	98	1	0	0	1	0	0
0150	79	40	100	0	98	1	0	0	1	0	0
0200	79	50	100	0	93	1	2	0	3	0	0
0300	78	118	100	0	96	1	1	1	2	0	0
0400	78	133	100	0	96	1	1	0	1	1	0
0500	80	166	100	0	95	1	1	0	2	1	0
0600	80	205	100	0	90	1	0	1	2	2	4
0700	76	216	100	0	90	1	0	1	3	2	4
0900	67	222	100	0	89	1	0	1	3	2	3
0910	67	222	100	0	89	1	0	1	3	2	3

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : DRUMSALLAGH STREAM****06/D/07**

Tributary of : 06G02 GLYDE

OS Catchment No: 95

OS Grid Ref of Confluence: N 803 981

Date(s) Surveyed: 30/9/2009

**Formerly: 06G02 Glyde Drumsallagh Branch**

Biological Quality Ratings (Q Values)

Station Nos.	1990	1994	1997	2000	2003	2006	2009
0056	5	3	4-5	4-5	4-5	4	4
0066	4-5	4-5	4-5	4	4	-	-
0070	4-5	4-5	4-5	4-5	4-5	4	4-5

**Assessment:** The macroinvertebrate fauna indicated continuing good ecological conditions on the Drumsallagh Stream in 2009, including a return to high quality in the lower reach at County Bridge (0070). Apart from one elevated o-phosphate, 2011 general physico-chemical data indicates satisfactory water quality. River sampled on three occasions only.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0056	Br W of Drumsallagh	276200	297520	35	CN
0066	Murphy's Br	278130	297220	35	CN
0070	County Br (u/s Magheracloone Branch)	280160	298260	35	MN

River and Code : **FANE****06/F/01**

Tributary of :

OS Catchment No: 94

OS Grid Ref of Confluence: J 064 018

Date(s) Surveyed: 23/9/2009, 25/9/2009

Station Nos.	Biological Quality Ratings (Q Values)													
	1971	1974	1976	1980	1982	1986	1990	1994	1997	2000	2003	2006	2007	2009
0080	-	-	-	-	-	-	4	-	-	-	-	-	-	-
0155	-	-	-	-	-	-	-	2-3	2-3	2-3	2-3	2/0	3	3
0180	-	-	-	-	-	-	-	3	3	3	3	3	-	-
0200	4	-	3-4	4	3-4	3-4	3-4	3	3-4	3	3	3-4	-	3-4
0300	3	-	3-4	3-4	3-4	3-4	3-4	3	3	3	3	3	-	-
0400	-	-	-	3	3	3	3-4	3	3	3-4	3	3	-	3
0500	5	-	5	5	4-5	4	4-5	4	4	4	4	3-4	-	-
0600	-	-	-	5	4-5	4-5	-	-	-	-	-	-	-	-
0650	-	-	-	-	-	-	5	3-4	4	4	3-4	3-4	-	4
0700	5	5	5	5	4	4	5	4	4-5	4-5	4	3-4	-	-
0800	-	-	-	4	4	4	4	-	-	-	-	-	-	-
0900	5	5	5	4	4-5	-	4	3-4	4-5	4-5	4	4	-	4
1000	-	-	-	4-5	4-5	-	-	-	-	-	-	-	-	-

**Assessment:** The Fane river was in a generally unsatisfactory ecological condition when surveyed in 2009. The Carrickaslane Lough branch (0155), and Ballynacarry Br (just downstream of Lough Muckno) displayed poor ecological condition, characterised by the dominance of pollution tolerant macroinvertebrate fauna. Heavy siltation was recorded upstream of Lough Muckno at Derrycreevy Br (0200). The lower reaches of the Fane fared better with satisfactory ecological conditions recorded at Inniskeen and Stephenstown Bridges (0650 & 0900), although increased siltation was observed at 0900. Slightly elevated nitrates at station 0900 in 2011, otherwise physico-chemical data indicates satisfactory water quality at all four stations monitored in 2011.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0080	Br u/s Muckno Mill Lough	284723	322660	0	
0155	South Br Dunfelimy	276630	324080	28	MN
0180	2nd Br u/s Laragh L (Main Rd)	279200	322360	28	MN
0200	Derrycreevy Br	282770	320680	28	MN
0300	Clarebane Br	287357	316783	28	MN
0400	Ballynacarry Br	287460	314120	28	MN
0500	Magoney Br	290853	309669	35	MN
0600	Br at Moyle's Mill	291871	307634	35	MN
0650	Innishkeen Br	293175	307040	36	MN
0700	Castling Br	296636	303711	36	LH
0800	Knock Br	298812	303159	36	LH
0900	Stephenstown Br	301390	301567	36	LH
1000	Lurgangreen Br	306120	301425	36	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0155	112	6	100	0	82	0	5	0	13	0	0
0180	92	11	100	0	80	0	3	0	17	0	0
0200	90	43	100	0	87	0	3	1	8	1	0
0300	90	112	100	0	85	0	2	2	6	4	1
0500	65	5	100	0	77	0	0	0	23	0	0
0600	54	21	95	5	76	0	0	0	24	0	0
0650	47	24	95	5	76	0	0	1	22	0	0
0700	23	43	97	3	82	0	0	1	16	0	1
0800	10	92	99	1	76	0	0	1	20	0	2
0900	6	102	99	1	73	0	0	1	24	0	2
1000	0	129	99	1	67	0	0	1	30	0	2

**River and Code : FINN (MONAGHAN)****36/F/01**

Tributary of : Upper Lough Erne

OS Catchment No: 123

OS Grid Ref of Confluence: H 422 200

Date(s) Surveyed: 15/7/2010

Station Nos.	Biological Quality Ratings (Q Values)													
	1971	1973	1977	1980	1982	1984	1989	1993	1997	1998	2001	2004	2007	2010
0010	-	-	-	-	-	-	3-4	4-5	4-5	4	3	3-4*	4	4
0080	-	-	-	-	-	-	3	4	3	4	4	4	-	3-4
0100	5	5	4-5	4	4-5	4-5	3-4	4	3-4	4	3-4	3-4	3	3-4
0200	5	4-5	4-5	4	4	4	3-4	4	3	3-4	3	4	3-4	3-4
0400	-	-	3-4	3-4	3-4	3-4	3-4	3	3-4	3-4	3	4	-	3-4
0500	3-4	3	1	3	3	3	3	3	3	3	3	3-4	3-4	3-4
0600	-	-	-	-	3	3	3	-	-	-	-	-	-	-

**Assessment:** The macroinvertebrate fauna continued to indicate generally unsatisfactory ecological conditions on the Finn (Monaghan) in 2010. Only the uppermost Station 0010 (SW of Shanroe) showed satisfactory standards out of the six sites sampled. Low dissolved oxygen levels were recorded below the Magherarney confluence (station 0400 - 87%) and again below Clones (station 0500 - 75%). General physico-chemical monitoring carried out at three stations in 2011 and the nutrient levels observed, indicate intermittent pollution most notably at station 0500.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0010	Br at Mill NW of Kilcreen	256057	335418	27	MN
0080	E of Aghafin Lough	252797	329862	27	MN
0100	Stone Br	254401	328407	27	MN
0200	Annamakiff Br	254563	326483	27	MN
0400	Scarvy Br	251806	324610	27	MN
0500	Cumber Br	249939	323331	27	MN
0600	Annie's Br	0	0	0	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0010	80	1	0	100	100	0	0	0	0	0	0
0080	56	1	0	100	94	6	0	0	0	0	0
0100	56	5	0	100	99	1	0	0	1	0	0
0200	48	79	26	74	95	1	1	0	0	0	2
0400	47	103	43	57	97	1	1	0	0	0	1
0500	47	118	41	59	96	1	1	1	0	0	1

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : FLURRY****06/F/02**

Tributary of :

OS Catchment No: 91

OS Grid Ref of Confluence: J 075 097

Date(s) Surveyed: 28/9/2011

Station Nos.	Biological Quality Ratings (Q Values)												
	1978	1980	1982	1984	1986	1990	1994	1997	2000	2003	2006	2009	2011
0100	4-5	4-5	4-5	4	4	3	3-4	3/0	3	3	3	3	3-4
0200	-	4-5	4-5	1/0	4	3-4	-	-	-	-	-	-	-
0300	4-5	4-5	5	4-5	4-5	4-5	4-5	4	3	3	3-4	-	3-4
0400	4	5	5	4	4	4	-	-	-	-	-	-	-
0600	3	2	1-2	2-3	2-3	3	3-4	4	-	-	-	-	-
0700	-	3-4	1-2	3	3	4	3-4	4	3	3	3-4	3-4	4

**Assessment:** A general improvement in ecological conditions was noted in the Flurry in 2011, with the upper sites (0100 and 0300) now at moderate status and the upper site (0700) in good status. 2011 physico-chemical data at station 0700 also suggests satisfactory water quality.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Flurry Br	307242	317697	29	LH
0200	Just W of Ravensdale Ho	307779	316117	29	LH
0300	Curralhir Br	308151	314457	29	LH
0400	Thompson's Br	308686	312556	29	LH
0600	Proleek: Br near old Smithy	308639	311293	29	LH
0700	Ballymascanlan Br	308137	310098	29	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	94	0	100	0	27	0	0	69	4	0	0
0200	77	3	100	0	37	43	0	5	0	0	15
0300	62	8	100	0	20	46	11	2	0	0	22
0400	40	14	99	0	27	29	13	1	0	0	31
0600	21	24	98	2	35	18	17	1	0	0	30
0700	5	25	92	8	38	17	16	1	0	0	28

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **GENTLE OWEN'S LAKE STREAM**

**06/G/04**

Tributary of : 06F01 FANE

OS Catchment No: 94

OS Grid Ref of Confluence: H 829 206

Date(s) Surveyed: 23/9/2009

*Formerly: 06F01 Fane East Branch*

Station Nos.	Biological Quality Ratings (Q Values)											
	1971	1976	1980	1982	1986	1990	1994	1997	2000	2003	2006	2009
0040	-	-	-	-	-	-	3-4	4-5	4	3-4*	4	4
0080	-	-	-	-	-	4	-	-	-	-	-	-
0100	4	3	4	4-5	3-4	3	3-4	3	3	4	3	3-4

**Assessment:** Cattle access continues to be a problem at Creaghanroe (0040), with banks badly destroyed by cattle movement. Despite this, satisfactory ecological conditions remain at this location. A welcome improvement in quality was noted downstream of Muckno Mill Lough (0100), but the site remains in unsatisfactory ecological condition.

Physico-chemical monitoring carried out at station 0100 and overall, the 2011 data suggests that satisfactory conditions prevail.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0040	Br in Creaghanroe	283280	325060	28	MN
0080	Br u/s Muckno Mill Lough	284723	322660	28	MN
0100	Br 1.5km d/s Muckno Mill L	283430	321440	28	MN

River and Code : **GLYDE****06/G/02**

Tributary of :

OS Catchment No: 95

OS Grid Ref of Confluence: O 090 940

Date(s) Surveyed: 5/10/2009, 25/9/2009, 30/9/2009

Biological Quality Ratings (Q Values)

Station Nos.	1971	1977	1978	1979	1981	1983	1985	1990	1994	1997	2000	2003	2006	2009
0100	-	-	3	-	4-5	4	5	4-5	4-5	4-5	4-5	4	4	4
0200	4-5	-	4-5	-	4	4-5	4-5	4-5	-	-	-	-	-	-
0300	-	-	4	-	-	-	-	-	-	-	-	-	-	-
0400	-	-	4	-	4	4	3-4	4	4	3	4	4	4-5	4-5
0500	4	4	-	3-4	4	3-4	3-4	3	3	-	4	4	-	4
0600	4-5	4-5	-	4	4	5	4-5	4-5	4	3-4	4	4	3-4	4
0700	4-5	4	-	-	-	4	4	4	3-4	3-4	3-4	3-4	-	-
0800	-	-	-	-	4	4	3-4	-	-	-	-	-	-	-
0900	-	-	-	4	4	4-5	4-5	5	3-4	3	4	4-5	4	4
1001	4-5	4-5	-	4	4	4	3-4	4	-	-	-	-	-	-
1002	-	-	-	-	1	1	2-3	4	3	4	4	4-5	4	-
1100	-	-	-	-	-	-	3	-	-	-	-	-	-	-
1200	3/0	3-4	-	3-4	3-4	4	3	3-4	3-4	3-4	3-4	3-4	3-4	4
1240	-	-	-	-	-	-	-	3	-	-	-	-	-	-

**Assessment:** Ecological conditions were found to be satisfactory across all stations sampled on the River Glyde in 2009 for the first time since sampling began. There were welcome improvements in the lower reaches at both 0600 and at Castlebellingham (1200). Cattle access remains a problem at Cormey Br (0100), while excessive siltation and heavy macrophyte growth were noted at Aclint Br (0500). Physico-chemical monitoring was carried out at five stations in 2011. Data suggests fairly significant pollutant inputs at station 1230, downstream of Castlebellingham WWTP, with ammonia and BOD levels elevated at times.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Cormey Br	280537	297971	35	MN
0200	Tobermannan Br	282535	296614	35	LH
0300	Ballyhoe Br	285716	295404	35	LH
0400	Lagan Br	287438	296456	35	LH
0500	Aclint Br	289375	298093	35	LH
0600	Br W of Mullacrew	294294	299538	36	LH
0700	Tallanstown Br	295497	297731	36	LH
0800	0.5km d/s Tallanstown Br	295824	297384	36	LH
0900	Mapastown Br	298637	295436	36	LH
1001	Mansfieldstown Br (LHS)	302337	295243	36	LH
1002	Mansfieldstown Br (RHS)	302322	295237	36	LH
1100	200m u/s Castlebellingham Br	305772	294961	36	LH
1200	Castlebellingham Br	305976	295149	36	LH
1240	1.5km d/s Castlebellingham Br	306868	294568	36	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	34	63	73	27	86	3	0	4	6	0	2
0200	30	75	61	39	85	4	0	3	6	0	1
0300	28	119	50	50	85	3	0	2	8	0	1
0400	26	134	49	51	84	3	0	2	9	0	2
0500	24	149	47	53	84	3	0	2	10	0	1
0600	21	268	54	46	83	2	0	2	12	0	1
0700	18	276	55	45	81	2	0	2	14	0	1
0800	17	276	55	45	81	2	0	2	14	0	1
0900	7	318	61	39	73	2	0	2	22	0	1
1001	5	346	64	36	69	2	0	2	26	0	1
1002	5	346	64	36	69	2	0	2	26	0	1
1100	2	357	65	35	68	2	0	2	28	0	1
1200	2	357	65	35	68	2	0	2	28	0	1
1240	2	358	65	35	68	2	0	2	28	0	1

**River and Code : KILCURRY****06/K/02**

Tributary of : 06C01 CASTLETOWN

OS Catchment No: 92

OS Grid Ref of Confluence: J 028 098

Date(s) Surveyed: 24/6/2009

Station Nos.	Biological Quality Ratings (Q Values)									
	1978	1982	1986	1990	1994	1997	2000	2003	2006	2009
0100	-	4-5	4-5	4	3-4	-	-	-	-	-
0200	4	4-5	4-5	4-5	3	4-5	4	4	4	4

**Assessment:** Continuing satisfactory conditions in the Kilcurry River in 2009. This river is not included in the physico-chemical monitoring programme.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Br nr Lurgankeel	302729	311975	29	LH
0200	Br at Mill nr Falmore Hall	302451	310875	29	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	24	1	92	8	46	0	0	0	54	0	0
0200	10	2	80	20	45	0	0	0	55	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**River and Code : KNAPPAGH****36/K/01**

Tributary of : 36A02 ANNALEE

OS Catchment No: 123

OS Grid Ref of Confluence: H 678 099

Date(s) Surveyed: 2/7/2010

Station Nos.	Biological Quality Ratings (Q Values)										
	1977	1981	1985	1989	1993	1997	1998	2001	2004	2007	2010
0200	-	4	3-4	3-4	3	3	3	3*	4	3	3-4
0400	4	4	3-4	3	3-4	3	3	3-4*	3-4*	-	3
0700	-	4-5	4	3	3-4	3-4	3	3-4*	4	3-4	3-4

**Assessment:** The dominance of pollution tolerant species continued to indicate unsatisfactory conditions at all sites on the Knappagh in 2010. Signs of moderate pollution such as paucity of pollution sensitive macroinvertebrates, excessive weed and algal growth, excessive siltation and low DO (77%) were apparent at Lacken bridge (0400), exacerbated by lake effects. As in 2010, elevated o-phosphate levels were observed in 2011 at Cross Roads NE of Bocks L (0100) which indicates intermittent but persistent pollution.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0200	Br u/s Bellatrain L	274468	310701	28	MN
0400	Lacken Br	270618	311430	28	MN
0700	Br u/s Annalee R confl	267974	310045	28	CN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0200	106	44	100	0	86	0	0	1	9	4	0
0400	108	66	100	0	81	2	0	1	12	4	0
0700	86	79	100	0	82	1	0	1	12	4	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.



**River and Code : MAGHERACLOONE STREAM****06/M/01**

Tributary of : 06G02 GLYDE

OS Catchment No: 95

OS Grid Ref of Confluence: N 803 981

Date(s) Surveyed: 30/9/2009

*Formerly Magheracloone Branch of the Glyde River 06G02*

Biological Quality Ratings (Q Values)

Station Nos.	1990	1994	1997	2000	2003	2006	2009
0082	5	3-4	4-5	-	-	-	-
0096	4-5	4-5	4-5	4-5	4	4	4

**Assessment:** Good ecological conditions continued on the Magheracloone Stream in 2009. Physico-chemical data in 2011 indicates good water quality.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0082	Br E of Bench Mark 484'	277450	300010	35	MN
0096	Br N of Lisnakeeny	279550	299580	35	MN

**River and Code : MAGHERARNEY****36/M/01**

Tributary of : 36F01 FINN (MONAGHAN)

OS Catchment No: 123

OS Grid Ref of Confluence: H 556 280

Date(s) Surveyed: 14/7/2010

Biological Quality Ratings (Q Values)

Station Nos.	1973	1977	1980	1982	1986	1987	1989	1993	1997	1998	2001	2004	2007	2010
0100	-	-	3	3	-	3	2-3	-	-	-	-	-	-	-
0150	-	-	-	-	-	3	3	3	3	3	2-3	3	-	3
0200	5	3	2-3	2	2	2-3	2-3	3	3	3	2/0	3	3	3
0250	-	-	-	-	-	-	2-3	-	-	-	-	-	-	-
0300	-	-	-	-	2-3	-	3	-	-	-	-	-	-	-

**Assessment:** Unsatisfactory ecological conditions have persisted in the Magherarney river for over 30 years, a situation which still prevailed at all sites when biological monitoring was carried out in 2010.

Slightly elevated o-phosphates on a few occasions in 2011 suggests that intermittent pollution is continuing to occur.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Br 2 km NE of Smithborough	260611	331794	28	MN
0150	Br E of Smithborough	259808	330603	27	MN
0200	Magherarney Br	257868	329856	27	MN
0250	0.2km u/s Maghera R confl	0	0	27	MN
0300	0.2km d/s Maghera R confl	0	0	27	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	59	16	0	100	97	2	0	0	0	0	0
0150	56	21	6	94	98	2	0	0	0	0	0
0200	52	28	18	82	98	1	0	0	0	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.



**River and Code : MAGHERY****36/M/03**

Tributary of : 36M01 MAGHERARNEY

OS Catchment No: 123

OS Grid Ref of Confluence: H 574 293

Date(s) Surveyed: 14/7/2010

Station Nos.	Biological Quality Ratings (Q Values)								
	1986	1989	1993	1997	1998	2001	2004	2007	2010
0100	-	3	-	-	-	-	-	-	-
0200	-	3	3-4	3	3	3	3	-	2-3
0600	-	2-3	3-4	-	-	-	3	3-4	2-3
0900	-	-	-	3	3	2-3	3	-	3
1000	-	3	3-4	-	-	-	-	-	-
1200	2-3	2-3	3	3	3	3	3	3	3

**Assessment:** Persistent unsatisfactory ecological conditions are a feature of the Maghera river, and there was no change when biological monitoring was carried out in 2010. The very restricted faunal diversity and the complete absence of sensitive macroinvertebrate species point to something amiss in this shallow stony stream, with agricultural causes suspected.

The 2011 physico-chemical data for stations 0900 and 1200 is in keeping with that of previous years with ammonia and o-phosphate levels elevated occasionally.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Lennaght Br	0	0	27	MN
0200	Br SW of Kilmore L	254990	336826	27	MN
0600	Br WSW of Drumloo L	257160	335850	0	MN
0900	Wats Br	256817	333997	27	MN
1000	Br NW of Maghera	0	0	27	MN
1200	Hagan's Br	256957	330156	27	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0200	101	4	0	100	42	12	22	0	4	0	20
0900	65	10	0	100	69	5	10	0	2	0	14
1200	54	19	0	100	84	3	5	0	1	0	7

Alt is in metres Area is km<sup>2</sup> and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

**MATTOCK**

**Assessment:** Physico-chemical monitoring at three stations (0100, 0200 & 0300). Evidence of slight intermittent pollution at all stations in 2011 with nutrient levels slightly elevated on occasion.

**River and Code : MOUNTAIN WATER****03/M/01**

Tributary of : 03B01 BLACKWATER (MONAGHAN)

OS Catchment No: 68

OS Grid Ref of Confluence: H 678 438

Date(s) Surveyed: 5/7/2010

Station Nos.	Biological Quality Ratings (Q Values)														
	1971	1973	1977	1981	1983	1985	1989	1993	1994	1996	1998	2001	2004	2007	2010
0100	-	5	5	5	5	5	5	4-5	5	4-5	4-5	4-5	4-5	4	4
0200	4-5	5	4-5	4-5	5	5	5	1/0	3-4	4-5	4-5	4-5	4	4	4
0400	4-5	4-5	4	4-5	4-5	4-5	4-5	2/0	3-4	4	4-5	4	3-4	3-4	3-4
0500	4	4	2	3-4	3	3	3	3/0	3	3-4	3	3	3	3	3
0650	-	-	-	4	4-5	3	3	3/0	3	3	3	3	3	-	3-4

**Assessment:** The Mountain Water continues to be of satisfactory quality in its upper reaches (0100 and 0200) but suspected sewage and possibly other discharges continue to result in unsatisfactory conditions in the lower reaches.

o-Phosphate result for the 23/2/11 sample looks suspect as it is inconsistent with other parameter results on this date as well as other o-phosphate data at this station. That apart, the 2011 physico-chemical data suggest satisfactory conditions at all stations with nutrient levels slightly lower than those observed in previous few years (stations 0400 & 0500 in particular).

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Coyle's Br	259662	346197	18	MN
0200	Br NE of Golan	262670	343971	19	MN
0400	1st Br u/s Emyvale	267050	343345	19	MN
0500	Br 1.1 km d/s Emyvale	268171	343321	19	MN
0650	Br N of Glaslough	272001	342192	19	MN

*Site Altitude and Upstream Catchment Characteristics (where available):*

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	152	6	0	100	0	25	58	0	2	0	15
0200	104	18	0	100	4	19	37	0	27	0	13
0400	59	35	0	100	25	10	20	0	38	0	7
0500	45	39	0	100	32	9	17	1	35	0	6
0650	40	59	0	100	55	6	11	0	23	0	4

Alt is in metres Area is km<sup>2</sup> and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **PROULES**

**06/P/01**

Tributary of : 06G02 GLYDE

OS Catchment No: 95

OS Grid Ref of Confluence: N 912 993

Date(s) Surveyed: 29/7/2009, 30/7/2009

Station Nos.	Biological Quality Ratings (Q Values)														
	1971	1974	1976	1978	1980	1982	1984	1990	1991	1994	1997	2000	2003	2006	2009
0100	5	-	5	5	5	4	4-5	5	-	4	4-5	-	-	-	-
0110	-	-	-	-	-	-	-	3	-	-	-	4-5	4-5	4	4
0200	1	1	1-2	2-3	3	4	4	4	-	-	-	-	-	-	-
0300	1	1	1	3	1	3	3-4	1-2	1-2	2-3	2	2-3	2-3	2-3	n/s
0400	2	2	2-3	2-3	2	3-4	3	2	2	2	2	2-3	3	-	-
0500	3	3	3	4	4	4	4-5	3-4	-	-	-	-	-	-	-
0600	4	-	4	3-4	4	4	4	3-4	-	3	3	3-4	3	3-4	3-4

**Assessment:** Biological monitoring indicates that the Proules River continued to be in a satisfactory condition upstream of the sewage discharge at Carrickmacross (0110) in 2009 but remained unsatisfactory downstream (0600). Sampling at 0300 proved impossible due to new housing development.

2011 physico-chemical monitoring carried out at stations 0100, 0300 & 0500. High o-phosphate and nitrate levels at station 0300 (particularly April & June sampling) are indicative of significant pollutant inputs. Effects felt further downstream also.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Dry Br	283385	304013	35	MN
0110	500m d/s Dry Br (d/s St 0100)	283385	304013	35	MN
0200	Ardee Rd Br Carrickmacross	284120	303395	35	MN
0300	Just u/s Lough Naglack	284961	302669	35	MN
0400	Broken Br	285669	302902	35	MN
0500	Ballymackney Br	287803	301952	35	MN
0600	Br at Killanny	289348	301043	35	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	44	8	52	48	85	0	0	0	15	0	0
0110	44	8	52	48	85	0	0	0	15	0	0
0200	34	10	43	57	77	0	0	8	15	0	0
0300	26	17	25	75	75	7	0	9	9	0	0
0400	30	18	24	76	75	7	0	9	9	0	0
0500	29	87	49	51	87	1	0	3	8	0	0
0600	28	91	52	48	87	1	0	3	8	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **SCOTSTOWN**

**03/S/02**

Tributary of : 03B01 BLACKWATER (MONAGHAN)

OS Catchment No: 68

OS Grid Ref of Confluence: H 608 369

Date(s) Surveyed: 5/7/2010

Station Nos.	Biological Quality Ratings (Q Values)							
	1989	1993	1996	1998	2001	2004	2007	2010
0200	5	5	5	4-5	4-5	4-5	4-5	4-5
0400	5	4-5	4-5	4	4-5	4	-	4
0500	4-5	4-5	4-5	4-5	4	4	4	4

**Assessment:** The macroinvertebrate fauna continued to indicate satisfactory ecological conditions at all stations on the Scotstown Stream when biological monitoring was carried out in July 2010.

Physico-chemical monitoring carried out at station 0500 in 2011 and evidence of a pollution incident in October with increased ammonia, BOD & o-phosphate and reduced dissolved oxygen levels observed.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0200	Br S of Knockballyroney	258876	341359	18	MN
0400	Br at Mill S of Dromscor	260043	339693	28	MN
0500	Br u/s Scotstown Br	261106	337600	28	MN

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0200	149	4	0	100	5	0	59	0	4	0	32
0400	92	18	0	100	22	1	47	0	17	0	13
0500	73	32	0	100	35	1	28	0	21	0	15

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **SHAMBLES**

**03/S/01**

Tributary of : 03B01 BLACKWATER (MONAGHAN)

OS Catchment No:

OS Grid Ref of Confluence:

Date(s) Surveyed: 6/7/2010

Station Nos.	Biological Quality Ratings (Q Values)	
	2007	2010
0500	2-3	2-3

**Assessment:** The dominance of pollution tolerant species continues to indicate unsatisfactory conditions in this tributary of the Blackwater (Monaghan). Downstream of Monaghan town (0500) remained considerably polluted in 2010, with sewage and other discharges suspected.

Physico-chemical monitoring carried out on two occasions only in 2011 but previous data (2009 & 2010) suggests fairly significant pollutant inputs at station 0500.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0500	Culvert u/s N2 Roundabout on Armagh Rd	268043	334977	28	MN

River and Code : **TERMONFECKIN**

06/T/01

Tributary of :

OS Catchment No: 97

OS Grid Ref of Confluence: O 156 804

Date(s) Surveyed: 6/10/2011

Station Nos.								Biological Quality Ratings (Q Values)			
	1978	1983	1986	1990	1994	1997	2000	2003	2006	2009	2011
0100	4	-	-	-	-	-	-	-	-	-	-
0200	3	-	-	-	-	-	-	-	-	-	-
0250	-	3-4	3	3	-	-	-	-	-	-	-
0300	4	-	4	3	3	3	-	-	-	-	-
0350	-	3-4	3	3	-	-	3*	3*	3/0	3	3
0400	-	3-4	3	2-3	3	3/0	3-4	3-4	3-4	-	3

**Assessment:** Continuing unsatisfactory conditions recorded in the Termonfeckin stream in 2011. Poor ecological quality was observed at both sites, characterised by the dominance of pollution tolerant macroinvertebrate taxa.

Physico-chemical monitoring carried out at Sandpit Bridge (0350) and 2011 data indicates moderate pollution with o-phosphates and nitrates consistently elevated.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0100	Br S of Kiltallagh Ho	311637	282213	36	LH
0200	Br W of Sandpit Bridge	309334	282213	0	
0250	Sandpit Br	311637	282098	36	LH
0300	Channelrow Br	311580	280960	36	LH
0350	Sandpit Br	311830	282094	36	LH
0400	Br in Termonfeckin	313905	280448	36	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	34	8	100	0	77	0	0	0	23	0	0
0250	36	2	100	0	67	0	0	0	33	0	0
0300	-	6	100	0	75	0	0	0	25	0	0
0350	33	10	100	0	75	0	0	0	25	0	0
0400	15	23	100	0	69	0	0	0	31	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

River and Code : **WHITE (LOUTH)**

06/W/01

Tributary of : 06D01 DEE

OS Catchment No: 96

OS Grid Ref of Confluence: O 062 908

Date(s) Surveyed: 6/10/2011

Station Nos.	Biological Quality Ratings (Q Values)															
	1971	1974	1976	1978	1980	1982	1986	1990	1991	1994	1997	2000	2003	2006	2009	2011
0040	-	-	-	-	-	-	-	4	-	4-5	4-5	3-4	4	4	4	4
0080	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
0100	-	-	-	3-4	4-5	3-4	4-5	4-5	-	4	4	3-4	3-4	-	-	-
0200	4	3	3	3-4	4	4-5	4-5	4	-	-	-	-	-	3-4	4	3
0290	-	-	-	-	-	-	-	3-4	-	3	3	3-4	3-4	-	-	-
0300	-	-	-	2/0	3	4-5	4-5	2-3	-	-	-	-	-	-	-	-
0500	2-3/0	2-3/0	1/0	3/0	3	3/0	1/0	2	2	2-3	2-3	3-4	3-4	3-4	3-4	3

**Assessment:** Biological monitoring indicates that the upper reaches of the White river (0040), upstream of Dunleer, maintained a satisfactory condition in 2011. Disappointingly, ecological condition has slipped to unsatisfactory at Athclare Br (0200). The lower reaches at Coneyburrow Br (0500) remain unsatisfactory. Cattle access should be restricted and fencing is recommended here. Physico-chemical monitoring at four stations (0040, 0100, 0400 & 0500) and 2011 data indicates pollution at all stations with nutrient and BOD levels elevated from time to time. Ammonia and BOD levels were particularly high at station 0040 in September.

Station No.	Stations Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0040	Br u/s White River Br	300889	284557	36	LH
0080	Gibbers Bridge	303172	284927	36	LH
0100	New Br	304628	285661	36	LH
0200	Athclare Br	305896	286586	36	LH
0290	Grangebellew Rd Br Dunleer	305873	287870	36	LH
0300	Main Rd Br Dunleer	305753	288205	36	LH
0500	Coneyburrow Br	305719	289280	36	LH

**Site Altitude and Upstream Catchment Characteristics (where available):**

Site No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0040	98	7	100	0	67	8	0	0	26	0	0
0080	68	10	100	0	58	6	0	0	36	0	0
0100	53	30	100	0	66	4	0	1	29	0	0
0290	28	45	100	0	59	3	0	2	37	0	0
0300	24	45	100	0	59	3	0	2	37	0	0
0500	17	55	100	0	58	2	0	3	37	0	0

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

## APPENDIX 3. INFORMATION ON LABORATORY TESTING FOR RIVER SAMPLES

### Laboratory Analysis

The principal chemical analysis carried out on rivers at the EPA Laboratory in Monaghan are pH, Conductivity, Temperature, Dissolved Oxygen, Biological Oxygen Demand (BOD), Colour, Ammonia, ortho-Phosphate, Chloride, Total Oxidised Nitrogen (TON), Nitrite, Fluoride, Hardness, and Alkalinity. The laboratory holds ISO 17025 accreditation and participates in national and international performance testing. The parameters covered by accreditation may be viewed at [www.inab.ie](http://www.inab.ie). Our current Scope and Accuracy of Analysis is included in this appendix. It gives details of accredited tests along with where relevant:

- Units of measurement
- Limit of Quantitation (LOQ)
- Uncertainty of Measurement (95%)
- Laboratory Method Reference No.

### Analytical Determination of Phosphorus

Orthophosphate is determined in the Monaghan laboratory using a standard colorimetric method whereby the orthophosphate reacts with ammonium molybdate to form a blue complex, the intensity of which is directly proportional to the concentration of orthophosphate. This is also referred to as “molybdate reactive phosphorus” (or MRP). This technique may also measure small amounts of other forms of phosphorus present in the sample. In general, samples are not prefiltered before analysis unless the presence of suspended matter is likely to cause interference in the analysis. Total phosphorus, which is commonly monitored in lakes, is determined using the same analytical technique, after the sample is digested at high temperature using acid and persulphate.

### Forms of Phosphorus

Phosphorus exists in water in either a particulate or dissolved phase. The dissolved phase includes inorganic phosphorus and organic phosphorus. Phosphorus in natural waters is usually found in the form of phosphates ( $\text{PO}_4^{3-}$ ). Phosphates can be in inorganic form (including orthophosphates and polyphosphates), or organic form (organically-bound phosphates). Orthophosphate is sometimes referred to as “reactive phosphorus” and is the form of phosphorus used by plants. Polyphosphates are strong complexing agents for some metal ions. They are unstable in water and will eventually convert to orthophosphate. Organic phosphates are phosphates that are bound to plant or animal tissue and formed primarily by biological processes.

### Analytical Determination of Nitrate

Nitrate is determined in the Monaghan laboratory by measuring for Total Oxidised Nitrogen (TON). Total Oxidised Nitrogen is the sum of nitrate and nitrite. However, as nitrite in river water is typically a very small percentage of the TON concentration, the TON value can be taken as the nitrate concentration.

Analytically, nitrate is reduced to nitrite by a hydrazine-copper reagent. The nitrite ion is then converted into a red azo-dye by sulphanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride. The intensity of the colour formed is proportional to the concentration of TON.

Nitrate may be determined directly by other means (e.g. Ion Chromatography).

### Analytical Determination of Ammonia

There are a number of techniques available, the most common of which are colorimetric tests. These tests measure the total amount of ammonia present, i.e. they cannot discriminate between ionised and unionised ammonia.

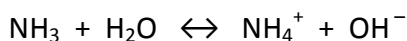
### *Ammonia in River Waters*

Ammonia is very important to plant, animal and human life. It is a source of nitrogen, a nutrient to plants, and when deposited from the atmosphere onto land it can enrich the nitrogen content of habitats. It occurs naturally in the environment at low levels.

The most widespread environmental problems arise when ammonia is deposited from the atmosphere onto plants, soil and water. Though not normally the limiting factor, it can cause eutrophication of surface waters. When deposited in large quantities, ammonia can cause soil, streams and lakes to become acidic, affecting plants and aquatic biodiversity. High concentrations of ammonia in the air can also damage plants such as lichen, moss and heather, important components of balanced habitats. Ammonia can also contribute to poor air quality by reacting with the atmosphere to form fine particles.

### *Forms of Ammonia*

Ammonia occurs naturally in water bodies arising from the microbiological decomposition of nitrogenous compounds in organic matter. Ammonia exists in water as either Unionised Ammonia (NH<sub>3</sub>) or as Ionised Ammonia (NH<sub>4</sub><sup>+</sup>) according to the following equilibrium:



The balance between the two depends on temperature and more critically on pH. As the pH increases, the amount of NH<sub>3</sub> (unionised ammonia) also increases. At low pH the amount of unionised ammonia also is generally very low. Unionised ammonia is highly toxic to fish even at relatively low levels.

## Scope and Accuracy of Analysis

The laboratory is accredited by the Irish National Accreditation Board for a range of tests on water and wastewater samples. The laboratory's Scope of Accreditation is available on request.

The following information is provided to assist in the interpretation of this test report. For Specification limits refer to those values set out in Integrated Pollution Control licences, Local Authority licences and other legislative requirements.

The table below lists the parameters currently accredited by the INAB.

The table also gives the units of measurement, the Limit of Quantitation (LOQ), the Maximum Uncertainty of the analysis and our Laboratory Method Reference No. for each parameter.

Parameter	Units of Measurement	Limit of Quantitation	Maximum Uncertainty (95%, K=2)	Laboratory Method Reference No.
BOD	mg/l O <sub>2</sub>	1.5	± 8%	B.2
pH	pH units	--	± 0.1 *	B.7
Conductivity	µS/cm	9	± 1%	B.4
Hardness	mg/l CaCO <sub>3</sub>	9	± 2%	B.6
Alkalinity	mg/l CaCO <sub>3</sub>	12	± 2%	B.9
Chemical Oxygen Demand	mg/l O <sub>2</sub>	10	± 4%	B.3
Fluoride	mg/l F	0.15	± 5%	B.10
Sulphate	mg/l SO <sub>4</sub>	2	± 2%	B.10
Suspended Solids (47mm Gelman A/E glass fibre filters)	mg/l	5	± 4%	B.8
Total Dissolved Solids	mg/l	23	± 5%	B.11
Residue on Evaporation	mg/l	23	± 5%	B.11
Colour	mg/l Pt/Co	5	± 5%	B.12
Total Suspended Solids (47mm, 0.45µm membrane filters)	mg/l	5	± 6%	B.13
Turbidity	NTU	0.5	± 5%	B.14
Ammonia	mg/l N	0.03	± 6%	B.17
Total Oxidised Nitrogen	mg/l N	0.08	± 7%	B.17
Nitrite	mg/l N	0.002	± 4%	B.17
o-Phosphate	mg/l P	0.02	± 6%	B.17
Chloride	mg/l Cl	1	± 2%	B.17
Chloroform	µg/l	0.6	± 9%	B.15
Benzene	µg/l	0.6	± 20%	B.15
Bromodichloromethane	µg/l	0.7	± 10%	B.15
Dibromochloromethane	µg/l	0.6	± 4%	B.15
1,2-dichloroethane	µg/l	0.6	± 23%	B.15
Tetrachloroethene	µg/l	0.7	± 20%	B.15
Trichloroethene	µg/l	0.2	± 23%	B.15
Bromoform	µg/l	0.6	± 22%	B.15
pH- Rohasys	pH units	--	± 0.1 *	B.18
Conductivity- Rohasys	µS/cm	8	± 12%	B.19
Total Phosphorus	mg/l	0.007	± 11%	B.20

**Note:** For most tests, the Analytical Performance testing was carried out at low, mid-range and the upper end of the analytical range and the Uncertainty values were initially calculated from this data (based on precision and bias). This data is available from the laboratory on request.

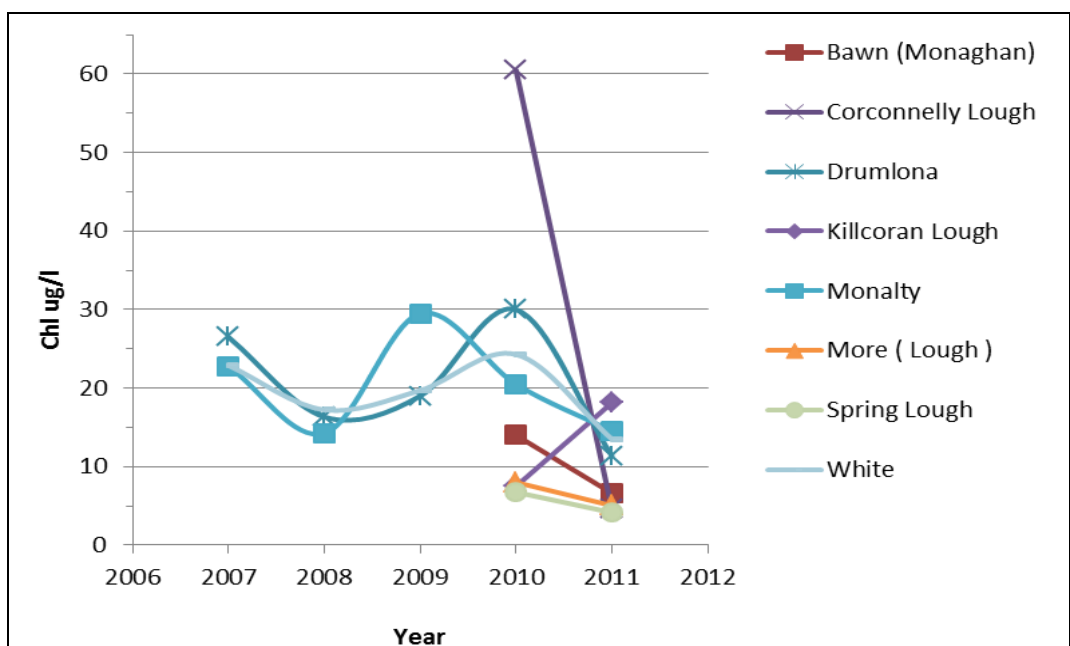
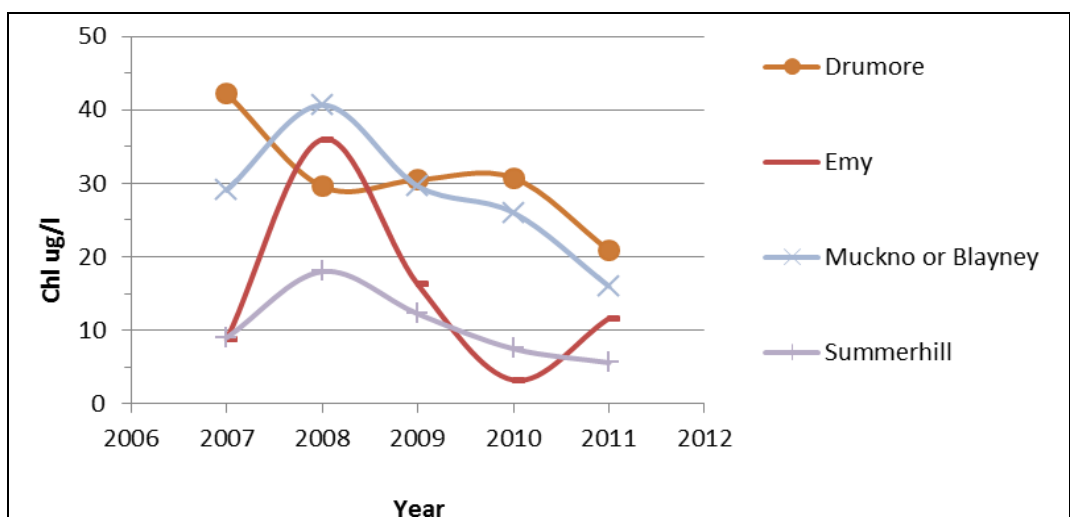
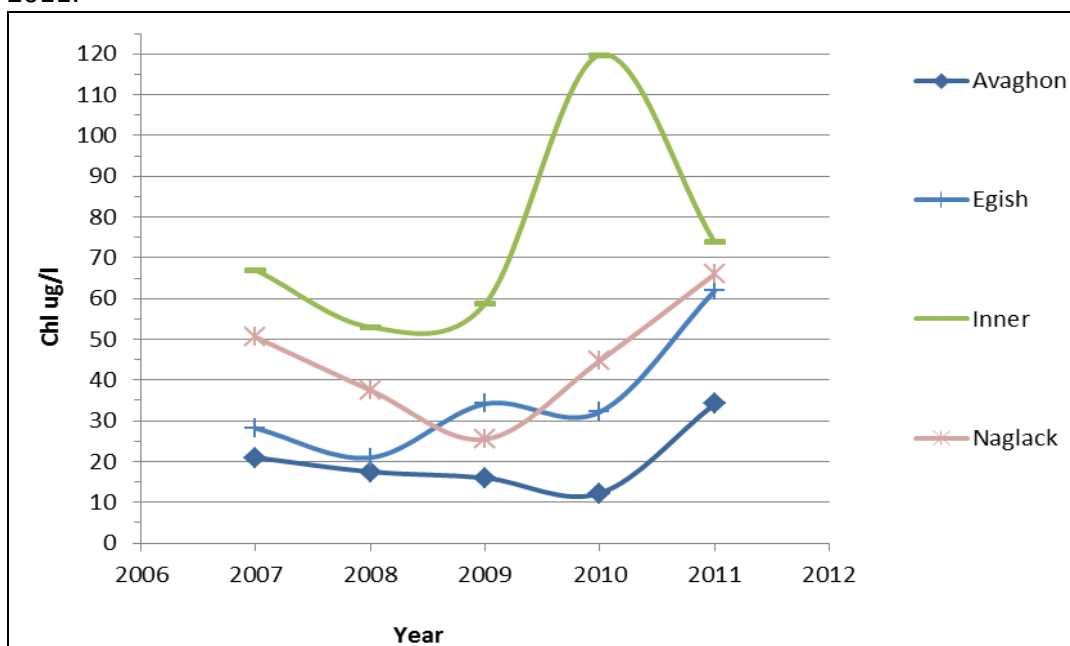
Following the initial Performance testing the Uncertainty of measurement will be reviewed on an annual basis using results obtained from in-house duplicate results (precision) and in-house QC results (bias). When reviewing the data if there are significant changes, then the Uncertainty values for the tests in question will be updated accordingly.

\* In the table above the % Expanded Uncertainty is quoted for each test with the exception of pH, which is quoted in pH units ie. pH result ± 0.2

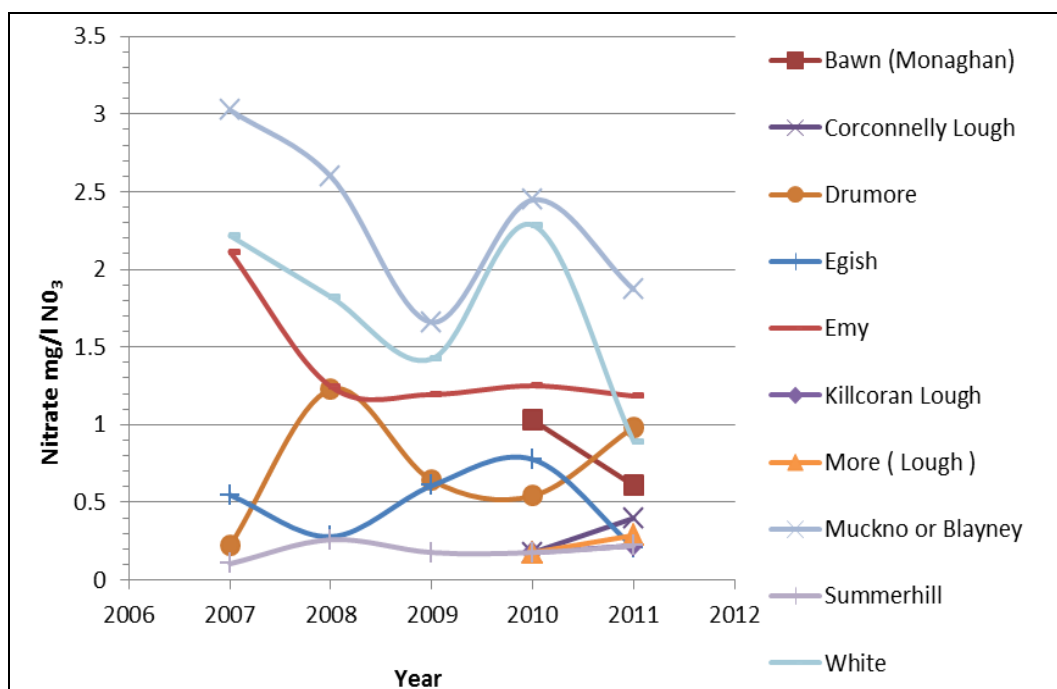
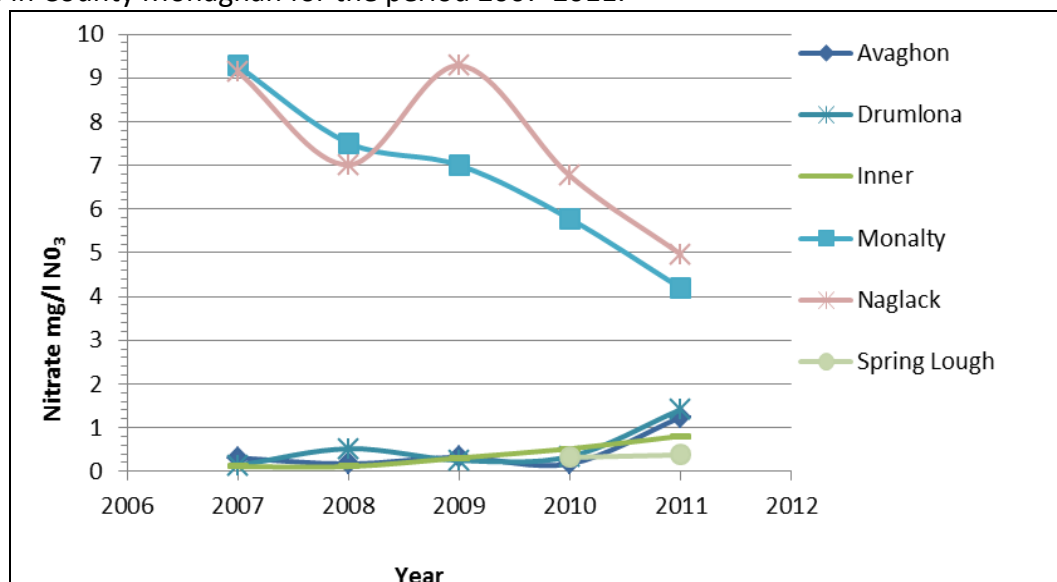


## APPENDIX 4. TRENDS IN CHLOROPHYLL, NITRATE & TOTAL PHOSPHORUS IN LAKES

**Appendix 4a.** Trends in annual average chlorophyll in WFD monitored lakes in County Monaghan for the period 2007-2011.



**Appendix 4b.** Trends in annual average nitrates (mg/l NO<sub>3</sub>) using TON as a surrogate in WFD monitored lakes in County Monaghan for the period 2007-2011.



**Appendix 4c.** Trends in annual average total phosphorus in WFD monitored lakes in County Monaghan for the period 2007-2011.

