

GUIDELINES ON STATUTORY RETURNS:

FRESHWATER FISH DIRECTIVE

(78/659/EEC)



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ENVIRONMENT AGENCY WALES

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FRESHWATER FISH DIRECTIVE

EC Directive 78/659/EEC on "The Quality of Fresh Waters Needing Protection or Improvement in order to Support Fish Life."

1. INTRODUCTION

EC Directive 78/659/EEC of 18th July 1978 was set up to protect or improve the quality of freshwaters which are or would be capable of supporting fish life if pollution was reduced. It covers protection of waters for the support of the indigenous species (salmonid and cyprinid), and those species which the "competent authority" judge to be desirable for water management purposes. The Directive does not apply to waters in natural or artificial fish ponds used for intensive fish farming.

The National Rivers Authority is the "competent authority" for the implementation of the Directive in England and Wales. The NRA reports results to DOE who reports the UK results to the EC.

Designation

Member States were required to designate water stretches to which the Directive applies. Subsequent designations can be made at any time. Stretches are designated as either "salmonid" or "cyprinid" waters. For the purpose of the Directive:-

- "salmonid waters" means those which support or may become capable of supporting fish belonging to species such as salmon (Salmo salar), trout (Salmo trutta), grayling (Thymallus thymallus) and whitefish (Coregonus sp.).
- "cyprinid waters" means those which support or may become capable of supporting fish belonging to the Cyprinidae, or other species such as pike (Esox lucius), perch (Perca fluviatilis) and eel (Anguilla anguilla).

In Welsh Region 137 water stretches - a total of 2131.7km - have been designated. Of these, 134 stretches (2097.4km) are designated as salmonid and 3 stretches (34.3km) as cyprinid (see Tables 1a, 1b and 1c).

Compliance Testing

Compliance with the Directive is assessed by comparison with a set of standards as shown in Table 2. Some parameters have been set "I"(imperative) standards and others "G"(guide) standards. Member States should comply with the "I" standards within 5 years of the designation of the stretch. Necessary remedial programmes should be established to reduce pollution to ensure compliance. In addition, Member States should attempt to comply with the "G" standards set. If non-compliance with the "I" standards occurs the Member State must

establish whether it is due to chance, natural causes or pollution. If it is caused by pollution appropriate measures should be taken. If the cause of non-compliance is due to floods or other natural disaster the affected results should not be taken into consideration.

The parameters currently used by DOE to assess compliance are those with "I" standards ie temperature, dissolved oxygen, pH, unionised ammonia, total ammonia, total zinc and total residual chlorine. However, the temperature standard is only applicable where a thermal discharge occurs and no thermal discharges have been identified in Welsh Region. Although total residual chlorine is an "I" value it is not sampled in Welsh Region as it is considered that there is currently no risk of pollution to the designated stretches. All other "I" value parameters are sampled in Welsh Region.

Of the "G" value parameters only nitrite is currently reported to DOE but data for the remaining "G" values may be requested so these should be sampled. However, as with the "I" values, where there is no risk of pollution to the designated stretches sampling may be reduced to zero as in the case of petroleum hydrocarbons and phenolic compounds.

Compliance with the Directive is assessed on a 95-%ile basis which has been interpreted by DOE to mean that if >19 samples have been taken then a strict 95% of samples must comply. If 12-19 samples have been taken then 1 failure is allowed, and if <12 have been taken then no failures are allowed. As sampling is required at least monthly a minimum of 12 samples should be collected, although fewer are collected where reduced sampling has been introduced. A failure of just one parameter causes the stretch to fail overall.

When a stretch fails in accordance with the Directive the DOE are likely to request information on the subsequent performance of that stretch and may require evidence of improvement in water quality, or the reasons why such cannot be achieved.

Sampling

To ensure that the quality of the water in the designated stretches is adequate for compliance with the standards set, sampling should be carried out at, at least, the minimum sampling frequency specified in Table 2 ie effectively monthly. The exact location of the sampling points should be fixed by the NRA on the basis of local environmental conditions. Where records show that the water quality is appreciably higher than that required by the limit standards then the sampling frequency may be reduced. Where there is no risk of pollution or deterioration of the water quality the NRA may decide that sampling may be reduced to zero eg for Total Residual Chlorine in Welsh Region.

In the event of the failure of a stretch where reduced sampling has taken place, the sampling frequency should be returned to monthly as soon as possible.

Derogations

Where Member States are unable to control certain natural phenomena such as exceptional weather or special geographical conditions, including natural enrichment, a derogation for the affected parameter can be sought. This exempts that water stretch from the requirement to comply with the Directive standard for the affected parameter. Derogations applying to each stretch are shown in Tables 1a, 1b and 1c. Geographical derogations, such as acidification due to local geology or mineral enrichment from disused mines, remain until the situation changes. If conditions are found to have improved removal of the derogation will be considered. If derogations are granted for other causes, eg low flows, then this will apply for 1 year only and reapplication will be necessary for future years.

Submission of Returns

The NRA has to submit the following information:-

Initially (on designation)

- a) the salmonid and cyprinid waters to be designated.
- b) the physical and chemical parameters applicable to the waters designated. Not all parameters mentioned in the Directive are applicable at all sites and are only required to be sampled where there is risk of pollution eg. total residual chlorine, phenolic compounds and petroleum hydrocarbons are not sampled in Welsh Region.

Subsequently

- a) any new designations.
- b) any revisions to designations owing to factors unforeseen at the time of designation. However these revisions must not allow increased pollution.
- c) the results of monitoring as detailed in Section 3 (Monitoring Requirements).

Reporting

Information is reported to DOE every 3 years (prior to 1990 it was reported every 5 years), the next reported year being 1992. The data reported, and the compliance assessed is derived from one year's sampling only. Information is reported to DOE, in the form of entries on two maps, provided by DOE, and accompanying tables as below, by the end of March the following year.

Map 1 - indicating the sampling points, degree of sampling, presence of a derogation and whether each parameter complied with the standards.

Map 2 - showing the stretches coloured according to their designation as salmonid or cyprinid and whether they passed or failed the necessary criteria.

Tables- indicating the stretches which failed to meet the requirements in the Directive, their lengths, the parameters which caused the failure and the reason for each failure.

Copies of the tabular returns to DOE will be circulated to Pollution Control Managers. A copy of the final map produced by DOE will be held by Strategic Planning in St. Mellons. If sufficient copies are available these will be distributed to Pollution Control Managers.

2. SAMPLING POINTS FOR FRESHWATER FISH WATERS

The sample point numbers and their locations for each stretch are shown in Tables 1a, 1b and 1c.

3. MONITORING REQUIREMENTS

Submission of monitoring data: Every 3 years from 1989 (previously every 5 years) by 31 March of the following year. Next reported year will be 1992.

Standards: Table 2 shows the standards for each parameter for salmonid and cyprinid waters.

Frequency of sampling: Monthly. (See "Sampling" on page 2 regarding reduced sampling.) Although data reporting is required only every 3 years sampling must take place every year.

ARG used: EF01 - see Table 3

Determinands reported to DOE:

"I" Value Determinand	Unit
Temperature	C
Dissolved oxygen	mg/l O ₂
pH	
Un-ionised ammonia	mg/l N
Total ammonia	mg/l N
Total zinc *	ug/l
"G" Value Determinand	
Nitrite	mg/l N

* Hardness (dissolved Ca and dissolved Mg) is required to assess compliance.

Although only 7 parameters are reported to DOE all the determinands listed on the ARG should be analysed for as the information may be requested by DOE.

To aid data retrieval a macro JDPECFE has been set up.

Sampling Runs and Data for Freshwater Fish Directive Monitoring should be entered using purpose code ME.

NB. Failure of the quality of water at the sample point causes the entire stretch to fail the requirements of the Directive. As some stretches are very long it may be necessary to review stretch lengths although this would lead to an increase in sampling. Sample points should be harmonised, as far as possible, with River Quality Survey sites.

Table 1a

EC FRESHWATER FISH DIRECTIVE SAMPLING LOCATIONS AND STRETCH DATA FOR RIVERS

River	Stretch	Stretch MGR	Length km	Desig.
Wye	Hereford, Victoria Bridge to Brockweir Bridge	S0507395 S0545062	88.8	Salmonid
Wye	CW Tarenig to Victoria Bridge Hereford	SN842822 S0507395	135.2	Salmonid
Trothy	Llwynderi Bridge nr Llantilio Crossenny, to CW Wye	S0380130 S0512124	21.9	Salmonid
Monnow	Longtown to CW Wye	S0330285 S0510122	44.5	Salmonid
Garren Brook	Three Ashes to CW Wye	S0518225 S0560185	14.2	Salmonid
Lugg	Eaton Bridge to CW Wye	S0508585 S0570372	35.9	Salmonid
Lugg	Monaughty Bridge to Eaton Bridge Leominster	S0237683 S0508585	48.8	Salmonid
Arrow	Kington to CW Lugg	S0300564 S0515565	31.5	Salmonid
Llynfi	CW Afon Dulas to CW Wye	S0150345 S0168378	6.7	Salmonid
Bach Howey	Paincastle to CW Wye	S0170460 S0110426	12.0	Salmonid
Duhonw	Llanddewir Cwm to CW Wye	S0035488 S0064511	4.4	Salmonid
Irfon	Abergwesyn to CW Wye	SN855522 S0032510	31.2	Salmonid
Ithon	Llanbadarn Fynydd to CW Wye	S0098775 S0013565	49.6	Salmonid
Elan	Elan Village to CW Wye	SN926645 SN966652	5.4	Salmonid

WERS IN SOUTH EAST DIVISION

Sampling Point No.	Description	MGR	Derogation
50034	Brockweir Bridge	S05388 0113	Susp. solids (G)
50023	Victoria Bridge Hereford	S05125 3943	Susp. solids (G)
50110	Troy Hse Bridge Monmouth	S05091 1147	Nitrite (G)
50107	Monmouth by-pass Bridge	S05073 1218	-
50130	At CW Wye	S05595 1839	Nitrite (G) & susp. solids (G)
50050	Mordiford Bridge	S05700 3745	Nitrite (G) & susp. solids (G)
50042	Eaton Bridge Leominster	S05073 5850	Susp. solids (G)
50058	At CW Lugg	S05100 5670	Nitrite (G) & susp. solids (G)
50098	At CW Wye	S01782 3890	Nitrite (G)
50016	At CW Wye	S01053 4285	-
50012	A470 Roadbridge	S00616 5085	-
50082	Footbridge at CW Wye	S00332 5147	Nitrite (G)
50090	Pont a'r Ithon	S00193 5730	pH (I) & B005 (G)
50009	Glyn Footbridge	SN9655 6567	pH (I)

River	Stretch	Stretch MGR	Length km	Desig.
Usk	Usk Reservoir to tidal limit	SN838288 ST376950	94	Salmonid
Sirhowy	Gelligroes Mill to Full Moon Bridge	ST178947 ST215915	10.0	Salmonid
Llwyd	Cwmavon to tidal limit	S0270062 ST340920	21	Salmonid
Olway Brook	Llandenny to CW Usk	S0418034 S0390982	11	Salmonid
Gavenny	Mardy Bridge to CW Usk	S0310158 S0303139	3.0	Salmonid
Grwyne	Brooks Meet to CW Usk	S0246198 S0236159	5	Salmonid
Rhian Goll	Pentre to CW Usk	S0184263 S0191200	8	Salmonid
Caerfanell	Talybont WTW to Old Talybont Station	S0106206 S0120230	3.2	Salmonid
Menascin	Pen Twyn to CW Usk	S0064243 S0095254	4	Salmonid
Cynrig	Pontbregarreg to CW Usk	S0049249 S0068265	4	Salmonid
Honddu	Cwmffarch to CW Usk	S0013378 S0045286	13	Salmonid
Tarell	Glan Rhyd to CW the Usk	SN985240 S0035284	9	Salmonid
Yscir	Pont Faen to CW Usk	SN995340 S0005295	6	Salmonid
Bran	Llanfihangel Nant Bran to CW Usk	SN945344 SN985292	8	Salmonid
Cilieni	Pentre Bach to CW Usk	SN910328 SN940295	7	Salmonid

Sampling Point No.	Description	MGR	Derogation
40940	Glangrwyney Bridge	S02406 1607	Nitrite (G)
40840	Full Moon Bridge	ST2190 9135	Susp solids (G)
40110	Llanrhyvon	ST3015 9470	Nitrite (G)
40720	Olway Inn	S03838 0096	Nitrite (G)
40490	Confluence with R. Usk	S03002 1359	-
40937	Gwynne Fawr at A40 Rd Bridge	S02377 1630	-
40926	Rhian Goll	S01918 2008	Nitrite (G)
40917	Old Talybont Station	S01190 2300	-
40913	Nant Menascin	S00907 2539	-
40903	Afon Cynrig	S00675 2660	-
40899	Afon Honddu	S00438 2867	-
40897	Afon Tarrell	S00010 2640	-
40895	Afon Yscir	S00037 3027	-
40893	Nant Bran	SN9873 2920	-
40885	Cilieni	SN9473 2956	-

River	Stretch	Stretch MGR	Length km	Desig.
Senni	Heol Senni to CW the Usk	SN925232 SN920286	8	Salmonid
Crai	Crai Reservoir to CW the Usk	SN885220 SN904290	8	Salmonid
Hydfer	Blaenau Isaf to CW Usk	SN845258 SN862275	4	Salmonid
Rhymney	Bargoed to Ystrad Mynach	ST151995 152940	6.5	Salmonid
Rhymney	Pontlottyn to Bargoed Washery	SO116065 ST153998	8.3	Salmonid
Nant y Aber	Senghenydd to A469 road crossing	ST126920 ST155882	5.3	Salmonid
Nant Bargoed Rhymney	Fochriw to former Ogilvie Colliery minewater	SO106055 SO120030	3.0	Salmonid
Nant Bargoed Rhymney	Nant y Tŷps Nr Deri to R.Rhymney	SO129016 SO150003	5.2	Salmonid
Taff	Radyr Weir to Blackweir	ST131808 ST171780	5.8	Cyprinid
Taff	Llyn-On Reservoir to Quakers Yard	ST012114 ST096960	18.9	Salmonid
Rhondda Fawr	CW Nant Blaenrhondda Tynewydd to Tonypandy Health Centre	SS929986 SS998922	12.9	Salmonid
Cynon	Penderyn borehole to north outfall, Phurnacite	SS965095 ST028005	12.2	Salmonid
Anan	CW M Ffrynant to CWR.Cynon	ST005992 SO022010	2.1	Salmonid
Nant Melyn Dare	Headwaters to CW R.Cynon	SN957031 SO006024	3.6	Salmonid
Taff Bargoed	CW Nant Llwynog to Trelwis drift mine	ST094009 ST103994	1.9	Salmonid

Sampling Point No.	Description	NGR	Derogation
40879	Afon Senni	SN9205 2856	-
40874	At Llwyn-y-Neuadd	SN8912 2490	-
40865	Pont ar Hydfer	SN8613 2753	-
18008	Ystrad Mynach	ST1465 9397	-
18010	D/s of Bargoed Rhydney confl.	S01518 0009	-
18016	Carrefour Caerphilly	ST1538 8821	-
68223	Oglivie Deri Lake outlet	S01190 0300	-
18018	Puzzle Hse	S01443 0064	-
17001	Blackweir	ST1708 7808	-
17009	Quakers Yard	ST0965 9651	-
17023	Pentre	SS9667 9593	pH (I) & susp.solids (G)
17032	Cwmbach	S00268 0071	-
17169	U/s confluence with R. Cynon	S00195 0115	-
17165	U/s confluence with R. Cynon	S00050 0260	-
17040	Trelewis Drift Mine	ST1014 9973	-

River	Stretch	Stretch NGR	Length km	Desig.
Taff Fechan	Pontsticil compensation outlet to CW Taff	S0060115 S0040070	6.5	Salmonid
Nant Mychydd	Headwaters to Glanymychydd Fach	ST023891 ST041850	5.2	Salmonid
Thaw	CW Newton Brook to tidal limit	SS994754 ST030671	12.5	Salmonid
Kenson	CW Nant Llancarfan to R.Thaw at Aberthaw	ST050686 ST027672	3.1	Salmonid

Sampling Point	Description	NCR	Derogation
17046	Vaynor	S00452 0975	-
68492	Above Powell Duffryn	ST0410 8492	-
14001	Aberthaw	ST0295 6765	-
14006	Aberthaw	ST0340 67800	-

Table 1b

EC FRESHWATER FISH DIRECTIVE SAMPLING LOCATIONS AND STRETCH DATA FOR RIVERS

River	Stretch	Stretch NGR	Length km	Desig.
Ogmore	Gilfach Goch to tidal limit	SS980890 SS890775	7.1	Salmonid
Ewenny	Troes to CW Nant Crymlyn	SS943789 SS970820	12.1	Salmonid
Garw	Pontycymer to CW Ogmore	SS906915 SS908845	8.9	Salmonid
Afan	Blaengwynfi to tidal limit	SS890966 SS760895	16.7	Salmonid
Neath	Map ref SN905165 to tidal limit	SH905165 SS751979	20.4	Salmonid
Mellte	Mellte Castle to CW Neath	SN936144 SN925095	9.2	Salmonid
Tawe	Blaencar to tidal limit	SN848188 SS675971	33.7	Salmonid
Lower Clydach	From Penlau Farm to Clydach	SN676089 SN689013	9.0	Salmonid
Twrch	Map ref SN794190 to CW Tawe	SN794190 SN772085	12.5	Salmonid
Loughor	Garnswllt Sew. Works to Glynhor Farm	SN621102 SN641153	12.9	Salmonid
Gwili	Cwm Gwili to CW Loughor	SN575107 SN580030	6.4	Salmonid
Amman	Rhosamman to CW Loughor	SN730140 SN622107	11.4	Salmonid
Gwendraeth Fawr	Cwm Mawr to tidal limit	SN530124 SN422055	17.9	Salmonid
Gwendraeth Fach	Porthyrhyd to tidal limit	SN520160 SN410070	16.6	Salmonid
Tywi	Ystradffin to tidal limit	SN786472 SN450205	65.0	Salmonid

ERS IN SOUTH WEST DIVISION

Sampling Point No.	Description	MGR	Derogation
13001	Dipping Bridge Merthyr Mawr	SS8910 7839	Nitrite (G)
13009	Troes Bridge	SS9400 7903	-
13027	Brynmenyn	SS9066 8482	Zinc (I) & copper (G)
11002	Dock intake	SS7606 8975	Copper (G)
10008	At Aberdulais	SS7726 9940	Zinc (I) & copper (G)
10015	U/s of Pontneddfechan	SN9110 0795	Zinc (I) & copper (G)
30001	Morrison Rd Br	SS6740 9790	Copper (G)
72002	Clydach	SN6890 0130	-
30003	Lwr Cwmtwrch, Glam	SN7670 1020	-
72586	Above Garnswellt STW	SN6180 0980	-
30410	At Hendy	SN5810 0350	-
72505	R. Amman at Panty- ffynon Railway Bridge	SN6230 1060	Zinc (I) & copper (G)
31608	Ponthenry Kidwelly	SN4754 0946	Nitrite (G) & zinc (I)
31602	Gwendraeth Fach at Gellideg	SN4190 1030	Susp. Solids (G)
31601	Nantgaredig gauging station	SN4910 2040	-

River	Stretch	Stretch MGR	Length km
Gwili	Llanpumpsaint to CW Towy	SN420290 SN435205	15.5
Cothi	Pumpsaint to CW Towy	SN655406 SN505202	35.0
Sawdde	Gellygron Fm. road bridge to CW Towy	SN777241 SN695279	12
Llangadog Bran	Glansevin bridge to CW Towy	SN732289 SN699283	4
Llandovery Bran	Cynhorby bridge to CW Towy	SN806399 SN758330	10.3
Taf	Rhydowen to tidal limit	SN194285 SN270150	28.9
Eastern Cleddau	Llangolman to tidal limit	SN133275 SN060145	22.0
Western Cleddau	Nr. Little Newcastle to tidal limit	SN970280 SN955156	20.0
Solfa	Caerfonog to tidal limit	SN809268 SN809245	4.5
Gwaun	CW Afon Cwmau to tidal limit	SN037340 SN962370	9
Nefern	Pontglazer to tidal limit	SN138366 SN070396	10.8
Teifi	Pontrhydfendigaid to tidal limit	SN730662 SN199430	94.3
Siedi	Ty-maen Farm to CW Teifi	SN388361 SN386391	3.4
Clettwr	Pontshaen road bridge to CW Teifi	SN441450 SN445405	6.3
Grannell	Cribin road bridge CW Teifi	SN530479 SN536462	2.5
Aeron	Llangcitho to tidal limit	SN 620595 SN460625	22.5
Arth	Monachty road bridge to tidal limit	SN512629 SN479640	4.5

Desig.	Sampling Point No.	Description	MGR	Derogation
Salmonid	31619	Abergwili	SN4335 2104	-
Salmonid	31618	Felinmynachdy gauging station	SN5090 2250	-
Salmonid	88003	Bethlehem Rd Bridge	SN7060 2780	-
Salmonid	31614	Llangedog	SN6960 2840	-
Salmonid	31611	Llandovery	SN7710 3440	Zinc (I)
Salmonid	32001	Clog-y-Fran	SN2380 1606	-
Salmonid	32401	Canaston Bridge	SN0720 1530	-
Salmonid	32803	Prendergast	SN9540 1770	-
Salmonid	33330	Footbridge opp. STW	SN8062 2432	-
Salmonid	33601	Cilrhedyn	SN0055 3488	-
Salmonid	84504	Nefern at Lewygwair Manor	SN0700 3930	-
Salmonid	34401	Llechryd Bridge	SN2180 4364	-
Salmonid	83004	Above Derw Mills	SN3890 3870	-
Salmonid	83009	Above Dolbantau Hatchery	SN4440 4050	Zinc (I)
Salmonid	83007	Above Llanwnen	SN5350 4670	Zinc (I)
Salmonid	82501	Lovers Bridge Aberacron	SN4570 6260	Zinc (I)
Salmonid	35031	Aberarth	SN4790 6390	-

River	Stretch	Stretch NGR	Length km
Ystwyth	Llanafan to tidal limit	SN670722 SN579810	18.5
Rheidol	Devils Bridge to tidal limit	SN740770 SN595805	25.1
Clarach	Bow St to tidal limit	SN620835 SN586838	2.4

Desig.	Sampling Point		MGR	Derogation
	No.	Description		
Salmonid	82002	Rhydfelin	SN5880 7880	Zinc (I)
Salmonid	35201	Penybont Llanbedarn	SN5943 8033	Zinc (I)
Salmonid	35707	Langorwen Bridge	SN6038 8380	Zinc (I)

Table 1c

EC FRESHWATER FISH DIRECTIVE SAMPLING LOCATIONS AND STRETCH DATA FOR RIVERS IN NORTHERN DIVISION

River	Stretch	Stretch NGR	Length km	Desig.	Sampling Point		NGR	Derogation
					No.	Description		
Dovey	Llechwedd Farm to tidal limit	SH905186 SH715992	32.3	Salmonid	20001	A487 Rd Bridge Machynlleth	SH7440 0193	Zinc (I) & copper (G)
Leri	Werndeg farm to HMOT	SN678884 SN618895	8.8	Salmonid	20009	Dolybont Rd Bridge	SN6247 8811	Zinc (I)
Dysynni	Dolffanog Farm to tidal limit	SH730105 SH582025	18.7	Salmonid	20002	Dysynni-Pont y Garth	SH6357 0707	Copper (G)
Mawddach	Rhaedr Mawddach to Llanelltyd Bridge	SH768288 SH718193	12.8	Salmonid	20003	Forestry Bridge Ganllwyd	SH7297 2337	Zinc (I), copper (G) & pH (I)
Union	Dolddeuli Bridge to tidal limit	SH825235 SH715176	12.9	Salmonid	20004	Rd Bridge Dolgellau	SH7285 1802	Copper (G)
Eden	Maesgwm Farm to CW A Mawddach	SH710286 SH726245	3.2	Salmonid	20064	Pont ar Eden nr. Ganllwyd	SH7273 2484	-
Artro	Cwm yr Afon to tidal limit	SH623302 SH585265	4.8	Salmonid	20063	Llanbedr Rd Bridge	SH5854 2681	pH (I), zinc (I) & copper (G)
(Glaslyn	Llyn Gwymant outlet to Pont Croesor	SH640515 SH593414	12.8	Salmonid	22503	Pont Croesor	SH5930 4136	Zinc (I) & copper (G)
Dwyrdd	Waterfall to Maentwrog Bridge	SH686426 SH660405	2.7	Salmonid	22502	Pont Maentwrog	SH6648 4076	Zinc (I), copper (G) & pH (I)
Dwyfawr	Pennant Valley Bridge to CW A Dwyfach	SH525453 SH461375	11.2	Salmonid	22680	Rd Bridge Llanystumdwy	SH4745 3854	-
Dwyfach	U/s Pantglas to CW A Dwyfawr	SH435467 SH460366	12.9	Salmonid	22682	Bontfechan Llanystumdwy	SH4631 3803	-
Erch	Llwyndyrus-Pwllheli Harbour	SH378408 SH388346	8.7	Salmonid	22683	A497 Rd Bridge Abererch	SH3990 3644	Copper (G) & zinc (I)
Llynfi	Nantlle Lake outlet to tidal limit	SH510528 SH430526	8.3	Salmonid	22681	Pont Llynfi Rd Bridge	SH4348 5262	pH (I), zinc (I) & copper (G)
Gwyfrai	Rhyd Ddu to tidal limit	SH568524 SH455590	15.6	Salmonid	22504	Bontnewydd	SH4828 5986	Zinc (I) & copper (G)
Seiont	Llanberis Pass to tidal limit	SH635560 SH476625	19.4	Salmonid	22514	Seiont Bridge	SH4829 6162	Zinc (I), copper (G) & pH (I)

River	Stretch	Stretch MGR	Length km	Desig.
Ogwen	Llyn Ogwen to tidal limit	SH650605 SH605720	12.8	Salmonid
Conwy	2.4km U/s of Ysbytty Ifan to tidal limit	SH816455 SH790634	18.4	Salmonid
Llugwy	Capel Curig to CW Conwy	SH720578 SH797574	9.7	Salmonid
Lledr	Dolwyddelan to CW Conwy	SH735520 SH796540	6.4	Salmonid
Clwyd	R.Clwydog to tidal limit	SJ090648 SJ032760	22.5	Salmonid
Clwyd	Nent Clwyd Hall to Ruthin Weir	SJ112520 SJ122593	7.5	Salmonid
Elwy	R.Aled to R.Clwyd	SH952715 SJ032766	19.9	Salmonid
Elwy	Llangernyw to CW with R. Aled	SH875670 SH952714	14.0	Salmonid
Aled	Llyn Aled Isaf to confluence with R.Elwy	SH915598 SH951714	15.0	Salmonid
Wheeler	Ddol to CW R.Clwyd	SJ140712 SJ079694	8.3	Salmonid
Clwydog	Bontuchel to CW R.Clwyd	SJ085576 SJ088646	4.3	Salmonid
Dee	Worthenbury Brook to Chester Weir	SJ423494 SJ408659	34.5	Salmonid
Dee	From Bala Lake to Worthenbury Brook	SH930350 SJ423494	87.4	Salmonid
Dee	CW Afon Lliw to outflow of Bala Lake	SH875305 SH930350	7.5	Salmonid
Alyn	CW R.Cegidog to CW R.Dee	SJ315550 SJ400560	13.7	Salmonid
Alyn	CW un-named trib Nr Pen-y-Stryt to Loggerheads	SJ192521 SJ198625	14.0	Salmonid

Sampling Point No.	Description	MGR	Derogation
22505	Cochwillen Bridge	SH6013 6995	Copper (G)
25001	Railway Bridge Cwm Llanarch	SH8017 5948	Zinc (I) & copper (G)
25006	B5106 Rd Bridge Bettws-y-coed	SH7916 5670	Copper (G), pH (I) & zinc (I)
25009	U/s Fairy Glen	SH7966 5416	Zinc (I), copper (G) and pH (I)
7	Pont Dafydd, St Asaph	SJ0442 7482	Nitrite (G)
1197	Pont Hawkin, Ruthin	SJ1207 5816	-
8	Gipsy Lane, St Asaph	SJ0320 7603	Susp. solids (G)
2503	Llanfair Talhaiarn	SH9272 7030	-
2688	Pont yr Aled	SH9552 7045	-
2055	CW R.Clwyd	SJ0812 6939	-
1577	Pont Drefechan	SJ0948 6337	-
3	Ironbridge	SJ4180 6010	Nitrite (G)
2	Overton Bridge	SJ3542 4270	-
11	Pont Mynygl-y-Llyn	SH9296 3506	-
757	D/s Gresford STW	SJ3545 5600	Nitrite (G)
706	Loggerheads	SJ1980 6260	-

River	Stretch	Stretch	NGR	Length km
Cegidog	CW un-named trib Nr Treuddyn to CW R.Alyn	SJ252565	SJ313550	9.3
Ceriog	R.Teirw to Dee	SJ196359	SJ318395	17.3
Ceriog	Llanarmon DC to Teirw	SJ155325	SJ319392	5.4
Morlas	CW un-named trib Nr Selattyn to CW R.Ceiriog	SJ268344	SJ315380	7.2
Teirw	CW un-named trib Nr Nantyr to CW R.Ceiriog	SJ160370	SJ195355	3.9
Eglwyseg	CW un-named trib Nr Eglwyseg to CW R.Dee	SJ221475	SJ205431	3.9
Alwen	Confluence of Afon Ceirw to R.Dee	SJ025440	SJ060425	5.0
Alwen	CW Afon Brenig to CW Ceirw	SH975525	SJ025440	14.0
Ceirw	Confl. with Afon Nug to confl. with R.Alwen	SH955472	SJ025440	8.5
Medrad	CW un-named trib Nr Llangwm to CW R.Ceirw	SH970450	SH978453	4.3
Trystion	CW un-named trib above Cynwyd to CW R.Dee	SJ090388	SJ052408	4.8
Ceidiog	Llandrillo to CW R.Dee	SJ035370	SJ030379	1.5
Meloch	CW un-named trib Nr Cefn-Ddwysarn to CW R.Dee	SH965385	SH952367	3.4
Hirnant	CW un-named trib Nr Cwm Hirnant to CW R.Dee	SH849308	SH950361	6.9
Tryweryn	Llyn Celyn to Dee	SH880395	SH932358	8.4
Tryweryn	Llyn Tryweryn to Stilling Basin Llyn Celyn	SH791383	SH883398	9.3

Desig.	Sampling Point No.	Description	MGR	Derogation
Salmonid	857	U/s R.Alyn	SJ3128 5560	-
Salmonid	578	Ddol	SJ3155 3920	-
Salmonid	557	U/S Pandy STW	SJ1955 3590	-
Salmonid	615	Pont-y-Blew	SJ3129 3816	-
Salmonid	586	U/s R.Ceiriog	SJ1952 3592	-
Salmonid	629	Pentre Felin	SJ2053 4364	-
Salmonid	4	Glan Alwen Ford	SJ0582 4285	-
Salmonid	325	Pont-yr-Bettws	SJ0295 4646	-
Salmonid	374	Afon Cierw u/s of Afon Alwen	SJ0188 4441	-
Salmonid	360	Nr Ystrad Fawr	SH9750 4520	-
Salmonid	246	B.4401	SJ0564 4102	Zinc (1)
Salmonid	235	D/s Llandrillo STW	SJ0342 3753	-
Salmonid	496	U/s R.Dee	SH9515 3677	-
Salmonid	513	Garth Coch	SH9497 3568	-
Salmonid	294	Pont Tryweryn	SH9293 3628	pH (1)
Salmonid	280	Celyn Falls	SH8383 3984	pH (1)

River	Stretch	Stretch MGR	Length km	Desig.
Mynach	CW with trib. above Frongoch, to CW Tryweryn	SH909414 SH906392	2.7	Salmonid
Gelyn	C W un-named trib above Llyn Celyn to Llyn Celyn	SH829435 SH844416	2.7	Salmonid
Llafar	C W un-named trib above Parc to Bala Lake	SH870345 SH892320	5.6	Salmonid
Twrch	C W un-named trib Nr Tan-y-Bwlch to C W Dee	SH911243 SH880309	8.7	Salmonid
Lliw	C.W un-named trib Nr. Blaen-Lliw to C W Dee	SH801333 SH872305	8.8	Salmonid
Shropshire Union Canal	Llantysilio to St Martins Moor	SJ198430 SJ320354	20.0	Cyprinid
Shropshire Union Canal	Lwr Tilstock Park to Hinton Hall	SJ513370 SJ530442	8.5	Cyprinid

Sampling Point No.	Description	MGR	Derogation
300	CW Tryweryn	SH9056 3922	-
283	U/s Llyn Celyn	SH8448 4196	pH (I)
209	Pont-y-Llafar	SH8932 3244	pH (I)
202	U/s R. Dee	SH8818 3112	pH (I)
196	Pont-y-Lliw	SH8718 3068	pH (I)
2959	St Martins Moor	SJ3145 3572	Susp. solids (G)
2963	Grindley Brook	SJ5238 4295	Susp. solids (G)

Table 2

STANDARDS RELATING TO THE FRESHWATER FISH DIRECTIVE

Parameter	Salmonid Waters		Cyprinid Waters		Minimum Sampling Frequency	Compliance	Comments
	"G"	"I"	"G"	"I"			
Temperature (C)					Monthly (for un-ionised ammonia calculation)		Only applicable if thermal discharge is present. See Directive if further details are required. NB. Required for calculation of un-ionised ammonia.
Dissolved Oxygen (mg/l)	50% > 9 100% > 7	50% > 9	50% > 8 100% > 5	50% > 7	Monthly Should be representative of low O2 on day of sampling. If a large daily variation is suspected at least 2 samples should be taken on the day.	As indicated in "G" and "I" columns.	When oxygen levels drop below 6mg/l (salmonid) or 4mg/l (cyprinid) the cause - either chance, natural phenomenon or pollution - must be established. The NRA must show that the development of the fish population will not be harmed.
pH		6 - 9 (a)		6 - 9 (a)	Monthly	95% samples (b)	
Un-ionised Ammonia (mg/l NH3)	<0.005 <0.004 as N	<0.025 <0.021 as N	<0.005 <0.004 as N	<0.025 <0.021 as N	Monthly	95% samples (b)	Calculated from total ammonia, pH, temperature and total dissolved solids (optional).
Total Ammonia (mg/l NH4)	<0.04 <0.031 as N	<1 (c) <0.778 as N	<0.2 <0.156 as N	<1 (c) <0.778 as N	Monthly	95% samples (b)	
Total Zinc (mg/l)	Hardness(mg/l CaCO3) 0 - 50 50 - 100 100 - 250 > 250	0.03 0.2 0.3 0.5		0.3 0.7 1.0 2.0	Monthly	95% samples (b)	5%-ile hardness to be used to assess zinc compliance
Total Residual Chlorine (mg/l HOCl)		<0.005		<0.005	Monthly	95% samples (b)	I-values correspond to pH 6. Higher concentrations of total chlorine can be accepted if the pH is higher.
Nitrite (mg/l NO2)	<0.01 <0.003 as N		<0.03 <0.009 as N			95% samples (b)	
Suspended Solids (mg/l)	<25		<25			Mean value	

Table 2 (contd)

STANDARDS RELATING TO THE FRESHWATER FISH DIRECTIVE

Parameter	Salmonid Waters		Cyprinid Waters		Minimum Sampling Frequency	Compliance	Comments
	"C"	"I"	"C"	"I"			
BOD5 (mg/l O2)	<3		<6			95% samples (b)	
Total Phosphorus (mg/L)	<0.2 as PO4		<0.4 as PO4				The Directive also specifies a formula to be used for lakes of depth 18 - 300m. See Directive if necessary.
Dissolved Hardness (mg/ CaCO3)	<0.005		<0.005			95% samples (b)	5%ile hardness to be used to assess copper compliance.
Copper (mg/L)	<0.022		<0.022				
	<0.04		<0.04				
	<0.112		<0.112				
Phenolic Compounds (mg/l C6H5OH)	(d)		(d)				Examination by taste only required when presence suspected.
Petroleum Hydrocarbons	(e)		(e)		Monthly		Visual examination monthly but by taste only when presence suspected.

- (a) Within the 6 - 9 limits artificial pH variations must not be >0.5 pH unit above or below the unaffected values. The variations must not be large enough to increase the harmfulness of other substances present in the water.
- (b) Directive states that 95% of samples must comply. DOE guidance states that if the number of samples taken is >19 then a strict 95% should be applied. If 12 - 19 samples are taken then 1 failure is allowed. If <12 samples are taken then no failures are allowed.
- (c) In certain geographical and climatic conditions eg cases of reduced nitrification or low water temperatures, or where the NRA can prove no harm will be done to the balanced development of the fish population values greater than 1 mg/l may be allowed.
- (d) Phenolic compounds must not be present in high enough concentrations to affect fish flavour.
- (e) Petroleum hydrocarbons should not be present in high enough concentrations to:-
1. produce a visible film on water or coat on bed
 2. produce hydrocarbon flavour to fish
 3. produce harmful effects in fish

Table 3

ARG EF01

Listed below are the contents of ARG EF01 with the reasons for inclusion of each of the determinands:

Determinand	Units	Det.Code	Reason for Inclusion
pH		0061	"I" value - reported to DOE & used for assessment of compliance with Directive
Temperature	C	0076	"I" value - reported to DOE & used for assessment of compliance with Directive
X Dissolved O2	%	0081	
Dissolved O2	mg/l	0082	"I" value - reported to DOE & used for assessment of compliance with Directive
BOD5	mg/l	0088	"G" value
Total Ammonia	mg/l N	0111	"I" value - reported to DOE & used for assessment of compliance with Directive
Total Oxidised Nitrogen	mg/l N	0116	General nutrient data
Nitrate	mg/l N	0117	General nutrient data
Nitrite	mg/l N	0118	"G" value - reported to DOE but not used for assessment of compliance with Directive
Unionised Ammonia	mg/l N	0119	"I" value - reported to DOE & used for assessment of compliance with Directive
Total Suspended Solids (105C)	mg/l	0135	EIFAC
Hardness	mg/l CaCO3	0158	Required as zinc & copper standards vary with hardness
Total Phosphate	mg/l P	0192	General nutrient data
Dissolved Calcium	mg/l	0235	Required for calculation of hardness
Dissolved Magnesium	mg/l	0239	Required for calculation of hardness
Dissolved Copper	ug/l	7213	"G" value
Total Zinc	ug/l	7245	"I" value - reported to DOE & used for assessment of compliance with Directive