



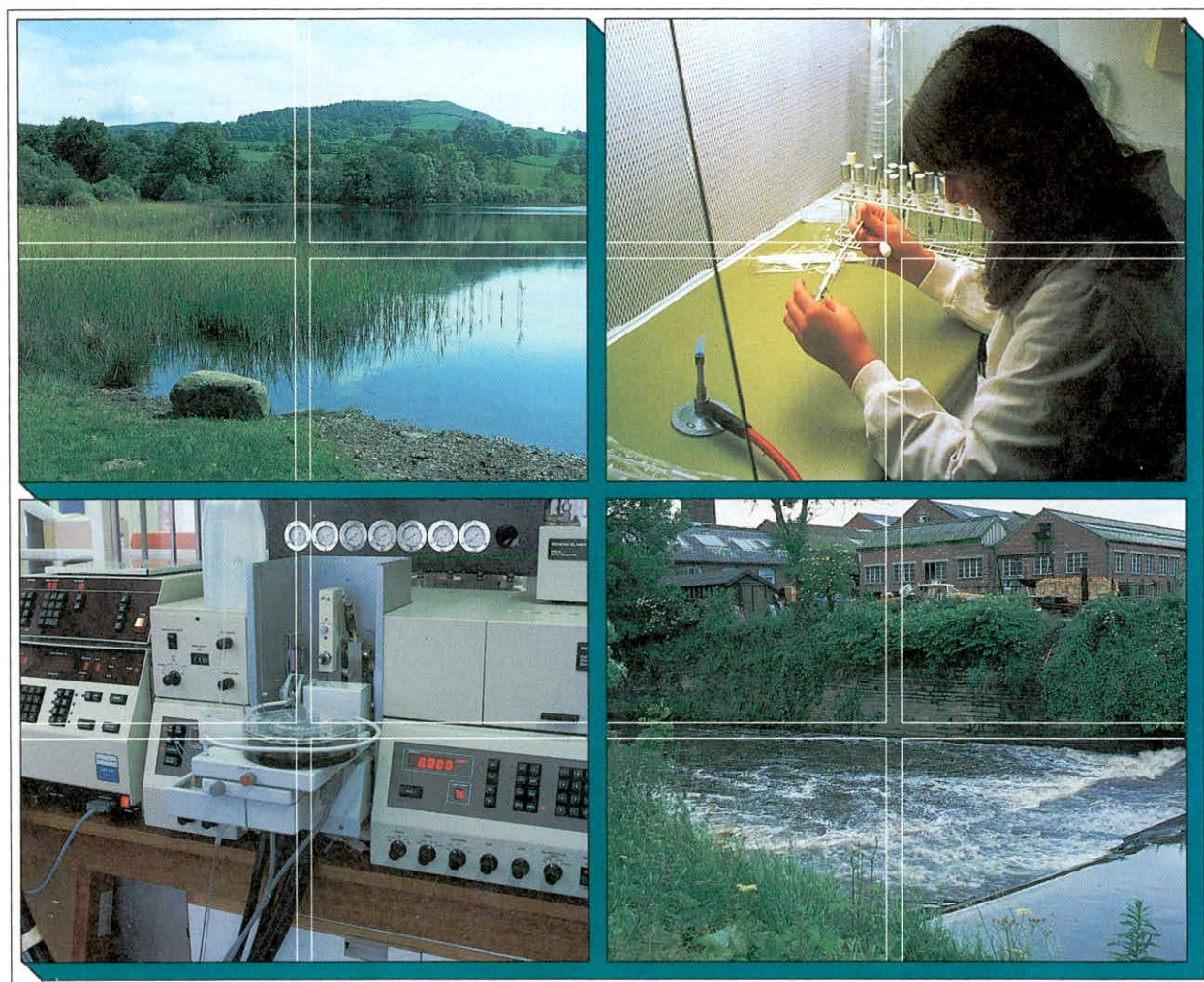
# **An audit of performance in the analysis of biological samples in 1995 NRA Thames Region: Primary Audit**

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## 1. INTRODUCTION

The 1995 General Quality Assessment (GQA) Survey included the sampling of aquatic macro-invertebrates for biological assessment of river quality throughout the United Kingdom. In England and Wales the survey was undertaken by the National Rivers Authority (NRA), the River Purification Boards (RPBs) sampled in Scotland, the Industrial Research and Technology Unit (IRTU) undertook the work in Northern Ireland and the Government Laboratory covered the Isle of Man (IOM).

The majority of sites surveyed were sampled in two seasons, spring and autumn. Standard collection procedures were used and the sampling strategy was compatible with RIVPACS (River InVertebrate Prediction And Classification System), a computer model developed by the Institute of Freshwater Ecology (IFE).

Samples were sorted for the families of macro-invertebrates included in the Biological Monitoring Working Party (BMWP) system. Taxa present were recorded on site data sheets. Although attempts had been made to standardise sample processing and recording techniques, these did vary somewhat from region to region.

In order to undertake this massive programme of fieldwork and sample processing, a large number of staff, many of whom were relatively inexperienced, were employed by the surveying agencies. In view of the number of staff involved and the variability of sample processing techniques, it was recognised that a quality assurance exercise was necessary to minimise and quantify errors. Each laboratory appointed at least one experienced analyst to act as an internal analytical quality control (AQC) checker. For most agencies, these checkers re-sorted about 10% of the laboratory's samples, those samples chosen for re-sorting being selected at random. In addition, IFE was contracted to undertake an independent, external audit of the quality of the laboratory analysis of biological samples for each NRA region, each RPB, IRTU and IOM. This commission was consistent with the audit performed by IFE for the National River Quality Survey in 1990 and for the routine biological monitoring of river sites each year between 1991 and 1994. This audit was originally intended as a measure of the quality of the AQC analyses and is termed the main audit or AQC audit. The data collected for the 1995 GQA Survey was not adjusted for errors identified by either of the quality assurance procedures. Therefore the NRA contracted IFE to subject their samples to a further audit of the primary analysis (the primary audit) to provide an independent assessment of the quality of the Survey data.

This report presents the results of the 60 samples audited for NRA Thames Region and represents a measure of the performance of the primary analyst rather than that of the AQC analyst. The results of the AQC Audit, detailing the performance of the biologists who analysed the 21 AQC'd samples for the Region, are reported separately.

## **2. SAMPLE SELECTION**

Samples for audit were selected internally by each of the agencies being monitored. The number of samples selected for audit varied between the different agencies and the biologists processing these samples had no prior knowledge of which samples were to be audited. Some agencies only sent to IFE samples that had been processed twice. Others adopted a random selection process, whereby some samples had been analysed just once and some had been re-sorted. The manner of sample selection, which biologists would be monitored and the number of audit samples from each season, were left to the discretion of the agency, within the limits of the total number of samples that IFE was contracted to audit.

## **3. SAMPLE PROCESSING**

The normal protocol for NRA, RPB, IRTU and IOM biologists was to sort their samples within the laboratory and to select examples of each scoring taxon within the BMWP system. In most cases, the invertebrates were placed in a vial of preservative (4% formaldehyde solution or 70% industrial alcohol) and the BMWP taxa were listed on a data sheet. The vial of animals and the sorted material were then returned to the sample container and preservative added. Thus, each sample available to IFE for audit should have included:

- i) a data sheet containing a list of the BMWP families found in the sample.
- ii) a vial containing representatives from each family.
- iii) the preserved sample.

When these three elements were present, the sequence of operations at IFE was as follows:

- a) The remainder of the sample was sorted, without reference to the data sheet or to the vial of animals, and the BMWP families identified.
- b) The families contained within the vial were identified.
- c) A comparison was made between the listing of families and those found in the sample by IFE.
- d) A comparison was made between the listing of families and those identified from the vial by IFE.
- e) "Losses" or "gains" from the original listing of families were noted. In the case of "gains", each additional family was identified, where possible, to species level, in order to clarify any specific repetitive errors. Single representatives of a "gained" taxon were noted as such.
- f) An error code, selected from a list on the result sheet, was assigned by the IFE auditor for each "loss" or "gain".

Occasionally a sample did not include a vial containing representative examples of the families listed on the data sheet, while some arrived with the vial damaged in transit such that the representative specimens were no longer separated. For these samples, only operations a), c), e) and f) above were appropriate.

Several directives were issued to IFE relating to the treatment of BMWP taxa. Every taxon recorded on the data sheet must be supported by a voucher specimen of that family in the vial (or, for very large specimens, left in the sample). The only exceptions to this rule were the native crayfish, *Austropotamobius pallipes*, the medicinal leech, *Hirudo medicinalis* and the pearl mussel, *Margaritifera margaritifera* (which does not belong to a BMWP family), all of which are protected species. Where possible, IFE gave the benefit of doubt to the analyst in cases of the "loss" of Planariidae, specimens of which have been known to disintegrate in preservative. Animals deemed to have been dead at the time of sampling, cast insect skins, pupal exuviae and empty mollusc shells were to be excluded from the listing of families present. Isolated posterior ends of "living" specimens were not acceptable as records of a taxon. In these cases, thorax plus abdomen was deemed acceptable but abdomen only was deemed unacceptable. Terrestrial representatives of BMWP scoring families were also to be excluded from the audit. For this reason, Clambidae, Chrysomelidae and Curculionidae, which appear in the BMWP list, were excluded for the purposes of the audit since most representatives of these families are, at best, only semi-aquatic. Trichopteran pupae, although not routinely identified by many biologists, were to be included in the listing of families.

#### 4. REPORTING

The results of each sample audit were recorded on a standard report form and sent to the Regional Biologist. Copies of these report forms are presented in the Appendix. For audit samples where a vial of animals was included, the comparison between the listing of families and the taxa found in the vial by IFE was shown in the section of the report form headed "VIAL". Discrepancies could be due to carelessness, misidentifications or errors in completing the data sheet listing the families present. Families not on the listing but found by IFE in the remainder of the sample were entered in the section of the report form headed "SAMPLE" under "Additional BMWP taxa found by IFE". Taxa recorded here represent families missed by the analyst(s) on sorting the sample. When the families listed as "losses" in the first section of the report form were compared with the full list of families recorded in the sample by IFE, some apparent losses from the vial were offset by the presence of those families in the remainder of the sample. These taxa were therefore listed both as "losses" from the vial and as "gains" from the sample and were neither a net loss nor a net gain. In these cases, the families were marked with an asterisk in both boxes. Such errors are noted as "omissions".

Species identifications, state of development (eg adult or larval coleopterans) and the presence of a single representative of a family within the remainder of the sample were recorded in the centre section of the report form under "species name".

IFE was asked to interpret each error to provide a possible cause. An error code, selected from a list of options at the foot of each result sheet, was entered against each taxon in the column headed "Presumed cause of error".

For those samples in which the vial of animals was damaged or missing, the "VIAL" sections of the report form were not applicable (N/a). Families not on the list but present in the sample were entered in the section under "SAMPLE" : "Additional taxa" as before. Families recorded on the list but not found by IFE were indicated in the section above this. If the vial of animals was retained by the sorter, entries in this box could include the sole representative of a family which was removed, a family seen at the site which escaped or was released (without mention being made on the data sheet), inaccurate identification, the wrong family box being ticked on the data sheet or the family being present in the sample but missed by IFE.

The final section of the result sheet summarises the audit, giving details of the numbers of "losses", "gains" and "omissions", together with the net effects on BMWP score and the number of scoring taxa.

## **5. RESULTS**

The results of the Primary audit for Thames Region are summarised by area in Tables 1 and 2. Table 3 displays the statistics of these regional audit results centered around the target of acceptability of no more than two missed taxa per sample. These data are presented for each analyst, for their Area laboratories and for the Region as a whole. Table 4 compares these results for each NRA Region and Area laboratory. Table 5 presents data for Thames Region for the net effects of the Primary audit on the BMWP score and number of taxa. This table is again based on the target of no more than two missed taxa per sample. The figure of 13 for an acceptable underestimate of BMWP score is based on twice the average score of all taxa in the BMWP listing (excluding Clambidae, Chrysomelidae and Curculionidae, which are excluded from the audit). This average score is 6.57. Table 6 compares this BMWP data for each NRA Region and Area laboratory. Table 7 lists the taxa missed in sorting by Thames Region's primary analysts in the 1995 audit. A listing of all such taxa for the entire 1995 audit (Primary and AQC Audits for NRA regions and Main Audit for other organisations) for the whole of the UK is presented in the AQC audit report.

## **6. ACKNOWLEDGEMENTS**

Grateful thanks to John Murray-Bligh of NRA Thames Region, who provided an invaluable service in the development and implementation of improved methodology and in providing helpful advice throughout.



Table 1. The 30 samples audited for the Fobney Mead Laboratory

River	Site	Primary Analyst	Losses	Gains	Omissions
SPRING					
Bydemill Brook	Hannington	004	0	3	0
Coln	Court Farm Bridge	004	2	4	1
Emmas Dyke	Ducklington	010	1	1	0
Shill Brook	Black Bourton	010	0	3	0
Kencot Brook	Alvescot	010	0	5	0
Dudgrove Stream	Gate 7, RAF Fairford	010	0	3	0
Kings Sutton Stream	d/s Kings Sutton STW	014	0	3	0
Farthinghoe Stream	u/s Cherwell	014	0	4	0
Blackwater	u/s Sandhurst STW	015	1	2	0
Fishermans Brook	u/s Padworth Brook	016	0	1	0
Clayhill Brook	u/s Burghfield STW	016	0	1	0
Lydiard Brook	d/s Lydiard Millicent STW	016	0	0	1
Evenlode	d/s Chadlington Stream	017	0	2	0
Chadlington Stream	u/s Evenlode	017	0	2	1
Rissington Ditch	u/s Windrush Loop	018	1	0	1
AUTUMN					
Woodhill Brook	u/s Childrey	001	0	1	0
Sul	Bridge 322, Sulham	001	0	3	0
Lenta Brook	A420 Bridge	001	2	3	0
Lambourn	East Shefford G.S.	004	0	3	0
Loddon	Lands End	010	1	6	1
Lydebank Brook	East Hendred	010	0	1	0
Fishermans Brook	u/s Padworth Stream	016	0	5	0
Pipp Brook	Pixham Lane, Dorking	016	0	4	0
Ray	Swindon	016	2	0	1
Blackwater	d/s Sandhurst STW	017	0	3	0
Windrush	The Fox Inn	017	0	6	0
Blackwater	Lynchford Bridge	017	0	3	0
Oxon Ray	, Islip	018	0	0	0
Emm Brook	Toutley Bridge	018	0	1	0
Pyestock Tributary	Farnborough	018	0	0	0

Table 2. The 30 samples audited for the Waltham Cross Laboratory

<b>River</b>	<b>Site</b>	<b>Primary Analyst</b>	<b>Losses</b>	<b>Gains</b>	<b>Omissions</b>
<b>SPRING</b>					
Gade	Gade Water Nurseries	DJL	0	0	0
Colne	Bushey Mill Lane	DJL	0	1	0
Pinn	Kings College Road	DJL	0	0	0
Colne Brook	Wraysbury Bridge Station	DJL	0	1	0
Mimram	Codicote Bottom	JE	0	2	0
Misbourne	u/s Gerards Cross STW	JE	0	2	0
Ingrebourne	Harold Court Road	JFM	1	2	0
Brookhouse Brook	Brookhouse	JFM	1	1	0
Rom/Beam	Cardrome A125	JFM	0	1	0
Bourne Brook	Stapleford Abbots	JFM	0	1	0
Rom/Beam	Dagenham	JFM	0	0	0
Colne/GUC	u/s Batchworth Lock	RJC	0	2	0
Chess	u/s Colne	RJC	0	4	0
Brent	Neasden	RJC	0	0	0
Pinn	u/s Frays River	RJC	0	2	0
<b>AUTUMN</b>					
Rib	Westmill	DJL	0	0	0
Gade	d/s Cassiobury Park	DJL	0	0	0
Yeading East	u/s Western Avenue	DJL	0	2	0
Gade	Gade Water Nurseries	DJL	0	7	0
Gade	u/s GUC	DJL	1	1	0
Alderbourne	u/s Colne Brook	JE	0	3	0
Pool	Winsford Road	JE	0	2	0
Beverley Brook	Richmond Park	JE	0	3	0
Portlane Brook	u/s Feltham Hill Brook	JE	0	2	0
Mimram	Codicote Bottom	JFM	0	2	0
Cobbins Brook	Paternoster Hill	JFM	0	0	0
Brookhouse Brook	Brookhouse	JFM	0	4	0
Tykes Water	u/s Colne	RJC	1	0	1
Colne	u/s Thames	RJC	1	3	0
Silk Stream	Rushgrove Park	(APEM)	1	2	0

Table 3. Statistics of 1995 Primary Audit results for Thames Region

Analyst/Group	n	Mean gains	Standard error	No.samples >2 gains	% samples >2 gains	Highest no. gains	Mean errors (l+g+o)	Standard error
<b>Fobney Mead</b>	<b>30</b>	<b>2.43</b>	<b>0.32</b>	<b>16</b>	<b>53.33</b>	<b>6</b>	<b>2.97</b>	<b>0.35</b>
001	3	2.33	0.67	2	66.67	3	3.00	1.15
004	3	3.33	0.33	3	100.00	4	4.33	1.33
010	6	3.17	0.83	4	66.67	6	3.67	1.02
014	2	3.50	0.50	2	100.00	4	3.50	0.50
015	1	2.00	n/a	0	0.00	2	3.00	n/a
016	6	1.83	0.87	2	33.33	5	2.50	0.72
017	5	3.20	0.73	3	60.00	6	3.40	0.68
018	4	0.25	0.25	0	0.00	1	0.75	0.48
<b>Waltham Cross</b>	<b>30</b>	<b>1.67</b>	<b>0.29</b>	<b>6</b>	<b>20.00</b>	<b>7</b>	<b>1.90</b>	<b>0.29</b>
DJL	9	1.33	0.75	1	11.11	7	1.44	0.75
JE	6	2.33	0.21	2	33.33	3	2.33	0.21
JFM	8	1.38	0.46	1	12.50	4	1.63	0.50
RJC	6	1.83	0.65	2	33.33	4	2.33	0.61
(APEM Ltd)	1	2.00	n/a	0	0.00	2	3.00	n/a
<b>Thames Region</b>	<b>60</b>	<b>2.05</b>	<b>0.22</b>	<b>22</b>	<b>36.67</b>	<b>7</b>	<b>2.43</b>	<b>0.24</b>
<b>Whole of NRA</b>	<b>481</b>	<b>1.88</b>	<b>0.08</b>	<b>150</b>	<b>31.19</b>	<b>8</b>	<b>2.21</b>	<b>0.09</b>

Table 4. Summary of errors found in 1995 Primary Audit for each NRA Laboratory

Region/Lab.	n	Mean gains	Standard error	No.samples >2 gains	% samples >2 gains	Highest no. gains	Mean errors (l+g+o)	Standard error
<b>Anglian</b>	<b>60</b>	<b>2.25</b>	<b>0.20</b>	<b>24</b>	<b>40.00</b>	<b>6</b>	<b>2.63</b>	<b>0.22</b>
Central	20	2.25	0.35	6	30.00	5	3.00	0.42
Eastern	20	2.85	0.39	11	50.00	6	3.05	0.38
Northern	20	1.65	0.27	7	35.00	3	1.85	0.27
<b>N'umb &amp; Yorks</b>	<b>60</b>	<b>1.52</b>	<b>0.20</b>	<b>12</b>	<b>20.00</b>	<b>6</b>	<b>1.68</b>	<b>0.21</b>
South Yorkshire	27	1.44	0.28	5	18.52	6	1.63	0.29
Northumbria	17	1.12	0.26	2	11.76	3	1.29	0.31
Dales	16	2.06	0.50	5	31.25	6	2.19	0.51
<b>North West</b>	<b>60</b>	<b>2.52</b>	<b>0.27</b>	<b>26</b>	<b>43.33</b>	<b>8</b>	<b>2.98</b>	<b>0.30</b>
Northern	18	2.22	0.45	6	33.33	7	2.89	0.57
Central	20	2.35	0.44	8	40.00	7	2.70	0.51
Southern	22	2.91	0.51	12	54.55	8	3.32	0.51
<b>Severn-Trent</b>	<b>61</b>	<b>1.84</b>	<b>0.22</b>	<b>18</b>	<b>29.51</b>	<b>8</b>	<b>1.23</b>	<b>0.27</b>
Upper Severn	16	1.50	0.41	5	31.25	5	1.88	0.60
Lower Severn	13	1.85	0.52	4	30.77	5	2.46	0.63
Upper Trent	13	1.69	0.41	3	23.08	5	1.92	0.42
Lower Trent	19	2.21	0.43	6	31.58	8	2.58	0.50
<b>Southern</b>	<b>60</b>	<b>1.33</b>	<b>0.19</b>	<b>10</b>	<b>16.67</b>	<b>7</b>	<b>1.77</b>	<b>0.21</b>
Western	30	1.20	0.26	5	16.67	6	1.60	0.27
Eastern	30	1.47	0.28	5	16.67	7	1.93	0.33
<b>South Western</b>	<b>60</b>	<b>1.52</b>	<b>0.21</b>	<b>16</b>	<b>26.67</b>	<b>6</b>	<b>1.63</b>	<b>0.23</b>
Devon	16	1.56	0.33	5	31.25	4	1.63	0.35
Cornwall	15	1.27	0.42	3	20.00	5	1.33	0.45
North Wessex	13	0.92	0.29	1	7.69	3	0.92	0.29
South Wessex	16	2.19	0.52	7	43.75	6	2.50	0.58
<b>Thames</b>	<b>60</b>	<b>2.05</b>	<b>0.22</b>	<b>22</b>	<b>36.67</b>	<b>7</b>	<b>2.43</b>	<b>0.24</b>
Fobney Mead	30	2.43	0.32	16	53.33	6	2.97	0.35
Waltham Cross	30	1.67	0.29	6	20.00	7	1.90	0.29
<b>Welsh</b>	<b>60</b>	<b>1.98</b>	<b>0.22</b>	<b>22</b>	<b>36.67</b>	<b>6</b>	<b>2.30</b>	<b>0.23</b>
Northern	20	2.20	0.40	9	45.00	6	2.65	0.39
South Western	20	1.75	0.40	5	25.00	6	2.10	0.41
South Eastern	20	2.00	0.37	8	40.00	5	2.15	0.39
<b>Whole of NRA</b>	<b>481</b>	<b>1.88</b>	<b>0.08</b>	<b>150</b>	<b>31.19</b>	<b>8</b>	<b>2.21</b>	<b>0.09</b>

Table 5. Net effects of the Primary Audit on BMWP score and number of scoring taxa

Analyst/Group	n	Mean net effect on BMWP score	% of samples underestimated by score >13	Maximum underestimate of BMWP score	Mean net effect on no. of taxa	% of samples underestimated by >2 taxa	Maximum underestimate of no. of taxa
<b>Fobney Mead</b>	<b>30</b>	<b>11.00</b>	<b>40.00</b>	<b>47</b>	<b>2.10</b>	<b>46.67</b>	<b>6</b>
001	3	9.00	33.33	15	2.00	33.33	3
004	3	12.33	33.33	16	2.67	66.67	3
010	6	15.17	66.67	30	2.83	66.67	5
014	2	17.00	100.00	23	3.50	100.00	4
015	1	7.00	0.00	7	1.00	0.00	1
016	6	6.50	33.33	19	1.50	33.33	5
017	5	16.50	60.00	47	3.20	60.00	6
018	4	-1.00	0.00	3	0.00	0.00	1
<b>Waltham Cross</b>	<b>30</b>	<b>7.37</b>	<b>13.33</b>	<b>42</b>	<b>1.47</b>	<b>16.67</b>	<b>7</b>
DJL	9	7.56	11.11	42	1.22	11.11	7
JE	6	11.00	16.67	18	2.33	33.33	3
JFM	8	5.00	12.50	19	1.13	12.50	4
RJC	6	7.00	16.67	21	1.50	16.67	4
(APEM Ltd)	1	5.00	0.00	5	1.00	0.00	1
<b>Thames Region</b>	<b>60</b>	<b>9.18</b>	<b>26.67</b>	<b>47</b>	<b>1.78</b>	<b>31.67</b>	<b>7</b>
<b>Whole of NRA</b>	<b>481</b>	<b>9.56</b>	<b>28.90</b>	<b>52</b>	<b>1.65</b>	<b>27.86</b>	<b>8</b>

Table 6. Net effects of the Primary Audit on BMWP score and number of scoring taxa for each NRA Area

Analyst/Group	n	Mean net effect on BMWP score	% of samples underestimated by score >13	Maximum underestimate of BMWP score	Mean net effect on no. of taxa	% of samples underestimated by >2 taxa	Maximum underestimate of no. of taxa
<b>Anglian Region</b>	<b>60</b>	<b>10.32</b>	<b>35.00</b>	<b>37</b>	<b>1.98</b>	<b>35.00</b>	<b>6</b>
Central	20	9.45	30.00	24	1.85	25.00	5
Eastern	20	14.35	55.00	37	2.65	55.00	6
Northern	20	7.15	20.00	18	1.45	30.00	3
<b>N &amp; Y Region</b>	<b>60</b>	<b>8.35</b>	<b>16.67</b>	<b>40</b>	<b>1.45</b>	<b>18.33</b>	<b>6</b>
S. Yorkshire	27	7.33	14.81	35	1.37	18.52	6
Northumbria	17	5.41	5.88	20	1.00	5.88	3
Dales	16	13.19	31.25	40	2.06	31.25	6
<b>N.West Region</b>	<b>60</b>	<b>13.03</b>	<b>41.67</b>	<b>49</b>	<b>2.18</b>	<b>40.00</b>	<b>8</b>
Northern	18	12.50	44.44	33	1.83	33.33	5
Central	20	13.00	35.00	39	2.10	40.00	6
Southern	22	13.50	45.45	49	2.55	45.45	8
<b>S-T Region</b>	<b>61</b>	<b>8.69</b>	<b>27.87</b>	<b>41</b>	<b>1.64</b>	<b>27.87</b>	<b>7</b>
Upper Severn	16	8.44	25.00	33	1.31	25.00	4
Lower Severn	13	6.77	23.08	30	1.54	30.77	5
Upper Trent	13	9.23	23.08	41	1.62	23.08	5
Lower Trent	19	9.84	36.84	36	2.00	31.58	7
<b>Southern Region</b>	<b>60</b>	<b>6.62</b>	<b>20.00</b>	<b>52</b>	<b>1.02</b>	<b>15.00</b>	<b>6</b>
Western	30	5.33	13.33	32	0.90	13.33	6
Eastern	30	7.90	40.00	52	1.13	16.67	6
<b>S.W.Region</b>	<b>60</b>	<b>8.43</b>	<b>30.00</b>	<b>35</b>	<b>1.42</b>	<b>23.33</b>	<b>6</b>
Devon	16	9.25	37.50	28	1.50	25.00	4
Cornwall	15	7.87	26.67	35	1.20	30.00	5
N.Wessex	13	4.54	15.38	16	0.85	6.25	3
S.Wessex	16	11.31	37.50	33	2.00	37.50	6
<b>Thames Region</b>	<b>60</b>	<b>9.18</b>	<b>26.67</b>	<b>47</b>	<b>1.78</b>	<b>31.67</b>	<b>7</b>
Fobney Mead	30	11.00	40.00	47	2.10	46.67	6
Waltham Cross	30	7.37	13.33	42	1.47	16.67	7
<b>Welsh Region</b>	<b>60</b>	<b>11.87</b>	<b>33.33</b>	<b>43</b>	<b>1.73</b>	<b>31.67</b>	<b>6</b>
Northern	20	12.45	45.00	43	1.85	35.00	6
S.Western	20	9.45	20.00	37	1.40	20.00	6
S.Eastern	20	13.70	35.00	38	1.95	40.00	5
<b>Whole of NRA</b>	<b>481</b>	<b>9.56</b>	<b>28.90</b>	<b>52</b>	<b>1.65</b>	<b>27.86</b>	<b>8</b>

Table 7. Taxa missed by Thames Region's primary analysts

<b>Family</b>	<b>n</b>	<b>% of Thames Region's missed taxa in Primary Audit</b>	<b>% of missed taxa in Primary Audit for all NRA Regions</b>
Elmidae	10	8.70	4.03
Hydrobiidae (incl. Bithyniidae)	9	7.83	4.98
Hydroptilidae	7	6.09	5.93
Ancylidae (incl. Acroloxidae)	6	5.22	1.66
Erpobdellidae	6	5.22	1.42
Planorbidae	6	5.22	2.85
Sphaeriidae	6	5.22	4.63
Simuliidae	5	4.35	2.73
Valvatidae	5	4.35	2.14
Halplidae	4	3.48	2.02
Lymnaeidae	4	3.48	2.49
Psychomyiidae (incl. Ecnomidae)	4	3.48	2.85
Tipulidae	4	3.48	2.25
Baetidae	3	2.61	2.25
Ephemerellidae	3	2.61	1.54
Limnephilidae	3	2.61	2.61
Caenidae	2	1.74	3.56
Dendrocoelidae	2	1.74	1.07
Hydropsychidae	2	1.74	1.66
Lepidostomatidae	2	1.74	1.07
Piscicolidae	2	1.74	1.90
Planariidae (incl. Dugesiidae)	2	1.74	4.27
Rhyacophilidae (incl. Glossosomatidae)	2	1.74	0.83
Chironomidae	1	0.87	0.59
Coenagriidae	1	0.87	0.71
Glossiphoniidae	1	0.87	1.66
Gyrinidae	1	0.87	1.19
Hydrometridae	1	0.87	0.95
Hydrophilidae (incl. Hydraenidae)	1	0.87	5.46
Leptoceridae	1	0.87	3.68
Leptophlebiidae	1	0.87	1.54
Leuctridae	1	0.87	0.95
Libellulidae	1	0.87	0.36
Physidae	1	0.87	0.83
Platycnemididae	1	0.87	0.24
Polycentropodidae	1	0.87	1.19
Scirtidae	1	0.87	1.42
Sialidae	1	0.87	0.36
Unionidae	1	0.87	0.47





## **APPENDIX**

### **Results of individual sample audits**

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 1.3.95

WATER-

PRIMARY

AQC

COURSE: Bydemill Brook

ANALYST: 004

ANALYST:

SITE: Hanington

CODE: PUTR.0238

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydrobiidae (incl. Bithyniidae)

Potamopyrgus jenkinsi

9

Planorbidae

Anisus vortex, Gyraulus albus

9

Erpobdellidae

Trocheta subviridis 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 9

ON NO. OF TAXA 3

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Fobney Mead	DATE: 15.3.95
WATER-	PRIMARY	AQC
COURSE: Coln	ANALYST: 004	ANALYST: 006
		SORT/AQC
SITE: Court Farm Bridge	CODE: PUTR.0152	METHOD: Live/Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

BMWP taxa not found by IFE

Simuliidae	Note on data sheet "Seen on stones".	1
Dendrocoelidae	Note on data sheet "Seen on stones".	1
Hydropsychidae *		1

Additional BMWP taxa found by IFE

None

SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Physidae	Physa fontinalis 1 only	9
Haliplidae	Halipus sp. (larva) 1 only	9
Psychomyiidae (incl. Ecnomidae)	Tinodes waeneri	11
Leptoceridae	Athripsodes albifrons, Mystacides sp.	11
Hydropsychidae *	Hydropsyche siltalai 1 only	1

SUMMARY OF AUDIT

LOSSES 2	GAINS 4	OMISSIONS: 1	NET EFFECTS:
			ON BMWP SCORE 16
			ON NO. OF TAXA 2
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 22.3.95

WATER-  
COURSE: Emmas Dyke

PRIMARY  
ANALYST: 010

AQC  
ANALYST:

SITE: Ducklington

CODE: PWRR.0007

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

#### VIAL

BMWP taxa not found by IFE

Chironomidae

1

Additional BMWP taxa found by IFE

None

#### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Sphaeriidae

Pisidium sp.

9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 1

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 22.3.95

WATER-  
COURSE: Shill Brook

PRIMARY  
ANALYST: 010

AQC  
ANALYST:

SITE: Black Bourton

CODE: PUTR.0080

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Ancylidae (incl. Acroloxidae)	Ancylus fluviatilis, Acroloxus lacustris	9
Sphaeriidae	Pisidium sp.	9
Rhyacophilidae (incl. Glossosomatidae)	Agapetus sp.	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 16

ON NO. OF TAXA 3

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 22.3.95

WATER-  
COURSE: Kencot Brook

PRIMARY  
ANALYST: 010

AQC  
ANALYST: 006

SITE: Alvescot

CODE: PUTR.0247

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Tipulidae	Phylidorea sp., Tipula sp.	11
Lymnaeidae	Lymnaea truncatula 1 only	9
Sphaeriidae	Pisidium sp.	11
Glossiphoniidae	Glossiphonia heteroclita, Helobdella stagnalis	11
Elmidae	Elmis aenea (larva) 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 5

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 19

ON NO. OF TAXA 5

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 4.5.95

WATER-

PRIMARY

AQC

COURSE: Dudgrove Stream

ANALYST: 010

ANALYST:

SITE: Gate 7, RAF Fairford

CODE: PUTR.0048

SORT/AQC

METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Simuliidae	Simulium aureum group 1 only	9
Leuctridae	Leuctra geniculata 1 only	9
Haliplidae	Haliphus lineatocollis (adults)	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 20

ON NO. OF TAXA 3

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 11.5.95

WATER-  
COURSE: Kings Sutton Stream

PRIMARY  
ANALYST: 014

AQC  
ANALYST:

SITE: d/s Kings Sutton STW

CODE: PCHR.0055

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Elmidae	Elmis aenea (larva) 1 only	9
Valvatidae	Valvata piscinalis 1 only	9
Planorbidae	Gyraulus albus 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 11

ON NO. OF TAXA 3

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Fobney Mead	DATE: 11.5.95
WATER- COURSE: Farthinghoe Stream	PRIMARY ANALYST: 014	AQC ANALYST: 006
SITE: u/s Cherwell	CODE: PCHR.0028	SORT/AQC METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Sialidae	Sialis lutaria 1 only	11
Baetidae	Baetis vernus 1 only	9
Ephemerellidae	Ephemerella ignita 1 only	9
Simuliidae	Simulium ornatum group 1 only	9

### SUMMARY OF AUDIT

LOSSES 0    GAINS 4    OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 23  
ON NO. OF TAXA 4

1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 10.5.95

WATER-  
COURSE: Blackwater

PRIMARY  
ANALYST: 015

AQC  
ANALYST: 006

SITE: u/s Sandhurst STW

CODE: PLDR.0006

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

Lymnaeidae

Succineidae in vial

7

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Haliplidae

Haliphus fluviatilis (adults)

11

Elmidae

Elmis aenea (adult) 1 only

9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 7

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Fobney Mead	DATE: 6.3.95
WATER- COURSE: Fishermans Brook	PRIMARY ANALYST: 016	AQC ANALYST: 006
SITE: u/s Padworth Brook	CODE: PKER.0192	SORT/AQC METHOD: Live/Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi	11
---------------------------------	-----------------------	----

SUMMARY OF AUDIT

LOSSES 0	GAINS 1	OMISSIONS: 0	NET EFFECTS:
			ON BMWP SCORE 3
			ON NO. OF TAXA 1
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames  
WATER-  
COURSE: Clayhill Brook  
SITE: u/s Burghfield STW

LABORATORY: Fobney Mead  
PRIMARY  
ANALYST: 016  
CODE: PKER.0098

DATE: 6.3.95  
AQC  
ANALYST:  
SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Ancylidae (incl. Acroloxidae)

Ancylus fluviatilis 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 6

ON NO. OF TAXA 1

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Fobney Mead	DATE: 15.3.95
WATER- COURSE: Lydiard Brook	PRIMARY ANALYST: 016	AQC ANALYST:
SITE: d/s Lydiard Millicent STW	CODE: PUTR.0144	SORT/AQC METHOD: Live

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

<u>BMWP taxa not found by IFE</u>		
Sphaeriidae *		1
<u>Additional BMWP taxa found by IFE</u>		
None		

SAMPLE

<u>BMWP taxa not found by IFE</u> (For samples where vial is broken or absent)		
N/a		
<u>Additional BMWP taxa found by IFE</u>		
Sphaeriidae *	Pisidium sp.	1

SUMMARY OF AUDIT

LOSSES 0	GAINS 0	OMISSIONS: 1	NET EFFECTS:
			ON BMWP SCORE 0
			ON NO. OF TAXA 0
1 No representative of family in vial	5 Specimen dead at time of sampling		9 Taxon missed in sorting
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded		10 Unexplained error
3 Posterior end only in vial	7 Mis-identification		11 Taxon added in internal AQC
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked		12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 23.5.95

WATER-  
COURSE: Evenlode

PRIMARY  
ANALYST: 017

AQC  
ANALYST: 006

SITE: d/s Chadlington Stream

CODE: PEVR.0029

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Hydroptilidae	Hydroptila sp.	9
Unionidae	Anodonta sp. (juvenile) 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 12

ON NO. OF TAXA 2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

WATER-COURSE: Chadlington Stream

SITE: u/s Evenlode

LABORATORY: Fobney Mead

PRIMARY ANALYST: 017

CODE: PEVR.0041

DATE: 23.5.95

AQC ANALYST:

SORT/AQC METHOD: Live

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

<u>BMWP taxa not found by IFE</u>		
Sericostomatidae *	Drusus annulatus	7
<u>Additional BMWP taxa found by IFE</u>		
None		

SAMPLE

<u>BMWP taxa not found by IFE</u> (For samples where vial is broken or absent)		
N/a		
<u>Additional BMWP taxa found by IFE</u>		
Sericostomatidae *	Sericostoma personatum	7
Sphaeriidae	Pisidium sp.	9
Rhyacophilidae (incl. Glossosomatidae)	Rhyacophila dorsalis 1 only	9

SUMMARY OF AUDIT

LOSSES 0	GAINS 2	OMISSIONS: 1	NET EFFECTS:
			ON BMWP SCORE 10
			ON NO. OF TAXA 2
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	
Omission (*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)			

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 22.5.95

WATER-  
COURSE: Rissington Ditch

PRIMARY  
ANALYST: 018

AQC  
ANALYST:

SITE: u/s Windrush Loop

CODE: PWRR.0010

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

#### VIAL

##### BMWP taxa not found by IFE

Caenidae		1
Lymnaeidae *	Succineidae in vial	7

##### Additional BMWP taxa found by IFE

None

#### SAMPLE

##### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

##### Additional BMWP taxa found by IFE

Lymnaeidae *	Lymnaea peregra	7
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### SUMMARY OF AUDIT

LOSSES 1

GAINS 0

OMISSIONS: 1

NET EFFECTS:

ON BMWP SCORE -7

ON NO. OF TAXA -1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 11.9.95

WATER-  
COURSE: Woodhill Brook

PRIMARY  
ANALYST: 001

AQC  
ANALYST: 014

SITE: u/s Childrey

CODE: POCR.0034

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Tipulidae

Pilaria (Pilaria) sp. 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 5

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 20.9.95

WATER-

PRIMARY

AQC

COURSE: Sul

ANALYST: 001

ANALYST:

SITE: Bridge 322, Sulham

CODE: PPSR.0006

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Limnephilidae	Limnephilus extricatus 1 only	9
Erpobdellidae	Erpobdella octoculata	9
Hydrophilidae (incl. Hydraenidae)	Ochthebius minimus (adult) 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 15

ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Fobney Mead	DATE: 31.10.95
WATER-COURSE: Lenta Brook	PRIMARY ANALYST: 001	AQC ANALYST:
SITE: A420 Bridge	CODE: PUTR.0190	SORT/AQC METHOD: Live

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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VIAL

<u>BMWP taxa not found by IFE</u>		
Lymnaeidae		1
Corixidae	Brychius elevatus	8
<u>Additional BMWP taxa found by IFE</u>		
Halplidae	Brychius elevatus (larva)	8

SAMPLE

<u>BMWP taxa not found by IFE</u>	(For samples where vial is broken or absent)	
N/a		
<u>Additional BMWP taxa found by IFE</u>		
Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi	9
Limnephilidae	Indet Limnephilid (juvenile) 1 only	9

SUMMARY OF AUDIT

LOSSES 2	GAINS 3	OMISSIONS: 0	NET EFFECTS:
			ON BMWP SCORE 7
			ON NO. OF TAXA 1
1 No representative of family in vial	5 Specimen dead at time of sampling		9 Taxon missed in sorting
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded		10 Unexplained error
3 Posterior end only in vial	7 Mis-identification		11 Taxon added in internal AQC
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked		12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 20.9.95

WATER-  
COURSE: Lambourn

PRIMARY  
ANALYST: 004

AQC  
ANALYST:

SITE: East Shefford G.S.

CODE: PKER.0063

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Oxyethira sp. 1 only	9
Valvatidae	Valvata cristata 1 only	9
Planorbidae	Bathyomphalus contortus	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 12

ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 21.9.95

WATER-  
COURSE: Loddon

PRIMARY  
ANALYST: 010

AQC  
ANALYST: 014

SITE: u/s Ford, Lands End

CODE: PLDR.0041

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

#### VIAL

##### BMWP taxa not found by IFE

Valvatidae *		1
Phryganeidae	Molanna angustata	7

##### Additional BMWP taxa found by IFE

Molannidae	Molanna angustata	7
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#### SAMPLE

##### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

##### Additional BMWP taxa found by IFE

Coenagriidae	Enallagma cyathigerum	11
Caenidae	Caenis luctuosa/macrura	11
Baetidae	Baetis scambus/fuscatus	9
Platycnemididae	Platycnemis pennipes 1 only	9
Polycentropodidae	Polycentropus flavomaculatus	9
Valvatidae *	Valvata piscinalis	1

### SUMMARY OF AUDIT

LOSSES 1

GAINS 6

OMISSIONS: 1

NET EFFECTS:

ON BMWP SCORE 30

ON NO. OF TAXA 5

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 24.9.95

WATER-

PRIMARY

AQC

COURSE: Lydebank Brook

ANALYST: 010

ANALYST: 014

SITE: Ford Lane, East Hendred

CODE: PTHR.0136

SORT/AQC

METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Elmidae	Elmis aenea (adult) 1 only	11
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### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 5

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 19.9.95

WATER-  
COURSE: Fishermans Brook

PRIMARY  
ANALYST: 016

AQC  
ANALYST:

SITE: u/s Padworth Stream

CODE: PKER.0192

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Elmidae	Oulimnius sp. (larva) 1 only	9
Simuliidae	Simulium aureum gp., S. angustitarse gp.	9
Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi 1 only	9
Sphaeriidae	Pisidium sp.	9
Erpobdellidae	Indet Erpobdellid (juvenile) 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 5

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 19

ON NO. OF TAXA 5

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 25.9.95

WATER-

PRIMARY

AQC

COURSE: Pipp Brook

ANALYST: 016

ANALYST:

SITE: Pixham Lane, Dorking

CODE: PMLR.0232

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydrometridae	Hydrometra stagnorum 1 only	9
Valvatidae	Valvata cristata, V. piscinalis	9
Ancylidae (incl. Acroloxidae)	Ancylus fluviatilis 1 only	9
Chironomidae	Tanypodinae, Chironomini	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 4

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 16

ON NO. OF TAXA 4

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 3.10.95

WATER-

COURSE: Ray

PRIMARY

ANALYST: 016

AQC

ANALYST: 014

SITE: Morris Street, Swindon

CODE: PUTR.0070

SORT/AQC

METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Hirudinidae	Trocheta subviridis (large specimen)	7
Oligochaeta *		1
Chironomidae		1

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Oligochaeta *	Lumbriculidae 1 only	1
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### SUMMARY OF AUDIT

LOSSES 2

GAINS 0

OMISSIONS: 1

NET EFFECTS:

ON BMWP SCORE -5

ON NO. OF TAXA -2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 18.9.95

WATER-

PRIMARY

AQC

COURSE: Blackwater

ANALYST: 017

ANALYST:

SITE: d/s Sandhurst STW

CODE: PLDR.0012

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Hydroptila sp. 1 only	9
Dendrocoelidae	Dendrocoelum lacteum 1 only	9
Lymnaeidae	Lymnaea peregra 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 14

ON NO. OF TAXA 3

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 21.9.95

WATER-  
COURSE: Windrush

PRIMARY  
ANALYST: 017

AQC  
ANALYST:

SITE: The Fox Inn

CODE: PWRR.0025

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Beraeidae	Beraeodes minutus	6
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### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Erpobdellidae	Erpobdella octoculata 1 only	9
Ephemerellidae	Ephemerella ignita 1 only	9
Lepidostomatidae	Lepidostoma hirtum	9
Caenidae	Caenis luctuosa/macrura 1 only	9
Limnephilidae	Indet Limnephilid (pupa) 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 6

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 47

ON NO. OF TAXA 6

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Fobney Mead	DATE: 4.10.95
WATER- COURSE: Blackwater	PRIMARY ANALYST: 017	AQC ANALYST: 014
SITE: Lynchford Bridge	CODE: PLDR.0011	SORT/AQC METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Planariidae (incl. Dugesiidae)	Polycelis nigra/tenuis 1 only	9
Elmidae	Elmis aenea, Riolus subviolaceus (larvae)	9
Ancylidae (incl. Acroloxidae)	Acroloxus lacustris 1 only	9

### SUMMARY OF AUDIT

LOSSES 0    GAINS 3    OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 16  
ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 21.9.95

WATER-  
COURSE: Oxon Ray

PRIMARY  
ANALYST: 018

AQC  
ANALYST: 014

SITE: B4027 Bridge, Islip

CODE: PCHR.0040

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Fobney Mead	DATE: 18.10.95
WATER-COURSE: Emm Brook	PRIMARY ANALYST: 018	AQC ANALYST: 014
SITE: Toutley Bridge	CODE: PLDR.0118	SORT/AQC METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi	9
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### SUMMARY OF AUDIT

LOSSES 0      GAINS 1      OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 3

ON NO. OF TAXA 1

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Fobney Mead

DATE: 20.11.95

WATER-  
COURSE: Pyestock Tributary

PRIMARY  
ANALYST: 018

AQC  
ANALYST:

SITE: Iveley Road, Farnborough

CODE: PLDR.0058

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 8.3.95

WATER-

PRIMARY

AQC

COURSE: Gade

ANALYST: DJL

ANALYST:

SITE: Gade Water Nurseries

CODE: PCNR.0168

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 16.3.95

WATER-  
COURSE: Colne

PRIMARY  
ANALYST: DJL

AQC  
ANALYST: JE

SITE: Bushey Mill Lane

CODE: PCNR.0026

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Psychomyiidae (incl. Ecnomidae)

Tinodes waeneri

11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 8

ON NO. OF TAXA 1

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 15.5.95

WATER-

PRIMARY

AQC

COURSE: Pinn

ANALYST: DJL

ANALYST:

SITE: Kings College Road

CODE: PCNR.0080

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 15.5.95

WATER-  
COURSE: Colne Brook

PRIMARY  
ANALYST: DJL

AQC  
ANALYST: JE

SITE: Wraysbury Bridge Station

CODE: PCNR.0140

SORT/AQC  
METHOD: Live/Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Ancylidae (incl. Acroloxidae)	Ancylus fluviatilis 1 only	11
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### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 6

ON NO. OF TAXA 1

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 28.3.95

WATER-  
COURSE: Mimram

PRIMARY  
ANALYST: JE

AQC  
ANALYST: DJL

SITE: Codicote Bottom

CODE: PLER.0089

SORT/AQC  
METHOD: Live/Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Scirtidae	Elodes sp. (larva) 1 only	9
Piscicolidae	Piscicola geometra 1 only	11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 9

ON NO. OF TAXA 2

1 No representative of family in vial  
2 Alternative terrestrial specimen in vial  
3 Posterior end only in vial  
4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling  
6 Taxon in vial but not recorded  
7 Mis-identification  
8 Typographical error - wrong box ticked

9 Taxon missed in sorting  
10 Unexplained error  
11 Taxon added in internal AQC  
12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 18.4.95

WATER-  
COURSE: Misbourne

PRIMARY  
ANALYST: JE

AQC  
ANALYST:

SITE: u/s Gerards Cross STW

CODE: PCNR.0070

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Piscicolidae	Piscicola geometra 1 only	9
Lymnaeidae	Lymnaea peregra 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 7

ON NO. OF TAXA 2

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 7.3.95

WATER-  
COURSE: Ingrebourne

PRIMARY  
ANALYST: JFM

AQC  
ANALYST:

SITE: Harold Court Road

CODE: PRGR.0021

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

#### VIAL

##### BMWP taxa not found by IFE

Glossiphoniidae

1

##### Additional BMWP taxa found by IFE

None

#### SAMPLE

##### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

##### Additional BMWP taxa found by IFE

Hydrobiidae (incl. Bithyniidae)

Potamopyrgus jenkinsi

9

Planorbidae

Bathyomphalus contortus

9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 3

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 4.4.95

WATER-  
COURSE: Brookhouse Brook

PRIMARY  
ANALYST: JFM

AQC  
ANALYST:

SITE: Brookhouse

CODE: PRGR.0005

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

Glossiphoniidae

Note on data sheet "seen in field"

1

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Sphaeriidae

Pisidium sp. 1 only

9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 10.5.95

WATER-

PRIMARY

AQC

COURSE: Rom/Beam

ANALYST: JFM

ANALYST: DJL

SITE: Cardrome A125

CODE: PRGR.0080

SORT/AQC

METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Baetidae

Baetis rhodani 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 4

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 10.5.95

WATER-  
COURSE: Bourne Brook

PRIMARY  
ANALYST: JFM

AQC  
ANALYST:

SITE: Stapleford Abbots

CODE: PRGR.0090

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Planorbidae

Planorbis planorbis 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 3

ON NO. OF TAXA 1

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 10.5.95

WATER-  
COURSE: Rom/Beam

PRIMARY  
ANALYST: JFM

AQC  
ANALYST:

SITE: Dagenham

CODE: PRGR.9994

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 3.4.95

WATER-  
COURSE: Colne/GUC

PRIMARY  
ANALYST: RJC

AQC  
ANALYST:

SITE: u/s Batchworth Lock

CODE: PCNR.0042

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Glossiphoniidae	Helobdella stagnalis	6
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### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Lymnaeidae	Lymnaea peregra 1 only	9
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### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 6

ON NO. OF TAXA 2

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 3.4.95

WATER-  
COURSE: Chess

PRIMARY  
ANALYST: RJC

AQC  
ANALYST:

SITE: u/s Colne

CODE: PCNR.0013

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Tipulidae	Dicranota sp. 1 only	9
Hydrobiidae (incl. Bithyniidae)	Bithynia tentaculata, Potamopyrgus jenkinsi	9
Lepidostomatidae	Indet Lepidostomatids (juveniles)	9
Erpobdellidae	Erpobdella octoculata	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 4

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 21

ON NO. OF TAXA 4

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 5.4.95

WATER-  
COURSE: Brent

PRIMARY  
ANALYST: RJC

AQC  
ANALYST:

SITE: Neasden

CODE: PBRR.0013

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 2.5.95

WATER-  
COURSE: Pinn

PRIMARY  
ANALYST: RJC

AQC  
ANALYST:

SITE: u/s Frays River

CODE: PCNR.0075

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Ancylidae (incl. Acroloxidae)	Ancylus fluviatilis 1 only	9
Simuliidae	Simulium ornatum group 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 11

ON NO. OF TAXA 2

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 15.9.95

WATER-  
COURSE: Rib

PRIMARY  
ANALYST: DJL

AQC  
ANALYST:

SITE: Westmill

CODE: PLER.0126

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 18.9.95

WATER-

PRIMARY

AQC

COURSE: Gade

ANALYST: DJL

ANALYST:

SITE: d/s Cassiobury Park, Watford

CODE: PCNR.0153

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 18.9.95

WATER-  
COURSE: Yeading East

PRIMARY  
ANALYST: DJL

AQC  
ANALYST:

SITE: u/s Western Avenue (Priors Farm) CODE: PCRR.0063

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Planariidae (incl. Dugesiiidae)	Polycelis nigra/tenuis 1 only	9
Elmidae	Elmis aenea (larva) 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 10

ON NO. OF TAXA 2

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 18.10.95

WATER-  
COURSE: Gade

PRIMARY  
ANALYST: DJL

AQC  
ANALYST:

SITE: Gade Water Nurseries

CODE: PCNR.0168

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Libellulidae	Sympetrum? sp. (juvenile) 1 only	9
Ephemerellidae	Ephemerella ignita	9
Psychomyiidae (incl. Ecnomidae)	Tinodes waeneri 1 only	9
Dendrocoelidae	Dendrocoelum lacteum 1 only	9
Valvatidae	Valvata piscinalis	9
Hydrobiidae (incl. Bithyniidae)	Bithynia tentaculata	9
Elmidae	Elmis aenea (adult + larva)	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 7

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 42

ON NO. OF TAXA 7

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 23.11.95

WATER-  
COURSE: Gade

PRIMARY  
ANALYST: DJL

AQC  
ANALYST: JE

SITE: u/s GUC

CODE: PCNR.0055

SORT/AQC  
METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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#### VIAL

##### BMWP taxa not found by IFE

Hydroptilidae	Tiny Limnephilid in vial	7
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##### Additional BMWP taxa found by IFE

None

#### SAMPLE

##### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

##### Additional BMWP taxa found by IFE

Psychomyiidae (incl. Ecnomidae)	Lype phaeopa/reducta 1 only	11
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### SUMMARY OF AUDIT

LOSSES 1

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 2

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 18.9.95

WATER-

PRIMARY

AQC

COURSE: Alderbourne

ANALYST: JE

ANALYST:

SITE: u/s Colne Brook

CODE: PCNR.0001

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Erpobdellidae	Erpobdella octoculata 1 only	9
Leptophlebiidae	Paraleptophlebia submarginata 1 only	9
Hydropsychidae	Hydropsyche angustipennis 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 18

ON NO. OF TAXA 3

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 20.9.95

WATER-  
COURSE: Pool

PRIMARY  
ANALYST: JE

AQC  
ANALYST:

SITE: Winsford Road

CODE: PRVR.0035

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Simuliidae	Simulium ornatum group	9
Valvatidae	Valvata cristata	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 8

ON NO. OF TAXA 2

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 27.9.95

WATER-  
COURSE: Beverley Brook

PRIMARY  
ANALYST: JE

AQC  
ANALYST:

SITE: Richmond Park

CODE: PBVR.0007

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Lymnaeidae	Lymnaea sp. (juvenile)	6
Glossiphoniidae	Glossiphonia complanata	6

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Elmidae	Elmis aenea (larva) 1 only	9
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### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 11

ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 1.11.95

WATER-

PRIMARY

AQC

COURSE: Portlane Brook

ANALYST: JE

ANALYST:

SITE: u/s Feltham Hill Brook

CODE: PTHR.0348

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Polycentropodidae

Neureclipsis bimaculata

6

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae

Hydroptila sp. (pupa) 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 13

ON NO. OF TAXA 2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 12.9.95

WATER-

PRIMARY

AQC

COURSE: Mimram

ANALYST: JFM

ANALYST:

SITE: Codicote Bottom

CODE: PLER.0089

SORT/AQC

METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Hydroptila sp. 1 only	9
Halilidae	Halil sp. (larva) 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 11

ON NO. OF TAXA 2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 13.9.95

WATER-  
COURSE: Cobbins Brook

PRIMARY  
ANALYST: JFM

AQC  
ANALYST: JE

SITE: Paternoster Hill

CODE: PLER.0022

SORT/AQC  
METHOD: Live/Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames	LABORATORY: Waltham Cross	DATE: 30.10.95
WATER-COURSE: Brookhouse Brook	PRIMARY ANALYST: JFM	AQC ANALYST: DJL
SITE: Brookhouse	CODE: PRGR.0005	SORT/AQC METHOD: Live/Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Hydroptila sp. 1 only	11
Elmidae	Oulimnius sp. (larva) 1 only	9
Hydropsychidae	Hydropsyche angustipennis 1 only	9
Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi	11

### SUMMARY OF AUDIT

LOSSES 0    GAINS 4    OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 19  
ON NO. OF TAXA 4

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 11.9.95

WATER-  
COURSE: Tykes Water

PRIMARY  
ANALYST: RJC

AQC  
ANALYST:

SITE: u/s Colne

CODE: PCNR.0086

SORT/AQC  
METHOD: Live

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Caenidae *		4
Gerridae	Note on data sheet "lost from sample in lab"	1

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Caenidae *	Caenis luctuosa/macrura	4
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### SUMMARY OF AUDIT

LOSSES 1

GAINS 0

OMISSIONS: 1

NET EFFECTS:

ON BMWP SCORE -5

ON NO. OF TAXA -1

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 21.9.95

WATER-

PRIMARY

AQC

COURSE: Colne

ANALYST: RJC

ANALYST: DJL

SITE: u/s Thames, Staines

CODE: PCNR.0025

SORT/AQC

METHOD: Live/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Scirtidae	AQC checker suggests mis-identification of Collembola	7
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#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Hydroptila sp. 1 only	11
Gyrinidae	Orectochilus villosus (larva) 1 only	11
Planorbidae	Anisus vortex 1 only	11

### SUMMARY OF AUDIT

LOSSES 1

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 9

ON NO. OF TAXA 2

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Thames

LABORATORY: Waltham Cross

DATE: 4.9.95

WATER-  
COURSE: Silk Stream

PRIMARY  
ANALYST: (APEM)

AQC  
ANALYST:

SITE: Rushgrove Park

CODE: PBRR.0043

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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#### VIAL

##### BMWP taxa not found by IFE

Planariidae (incl. Dugesiidae)	7
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##### Additional BMWP taxa found by IFE

Dendrocoelidae	Dendrocoelum lacteum	7
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#### SAMPLE

##### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

##### Additional BMWP taxa found by IFE

Tipulidae	Tipula oleracea 1 only	9
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### SUMMARY OF AUDIT

LOSSES 1

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 5

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)