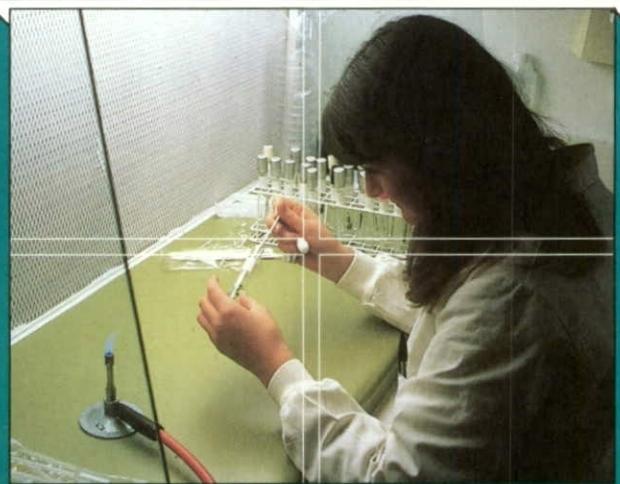
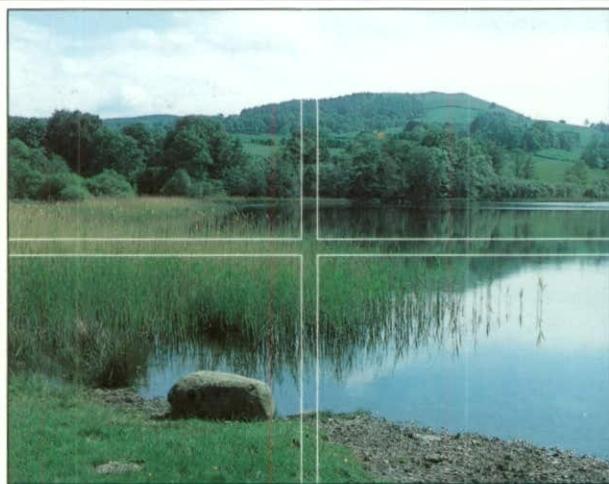


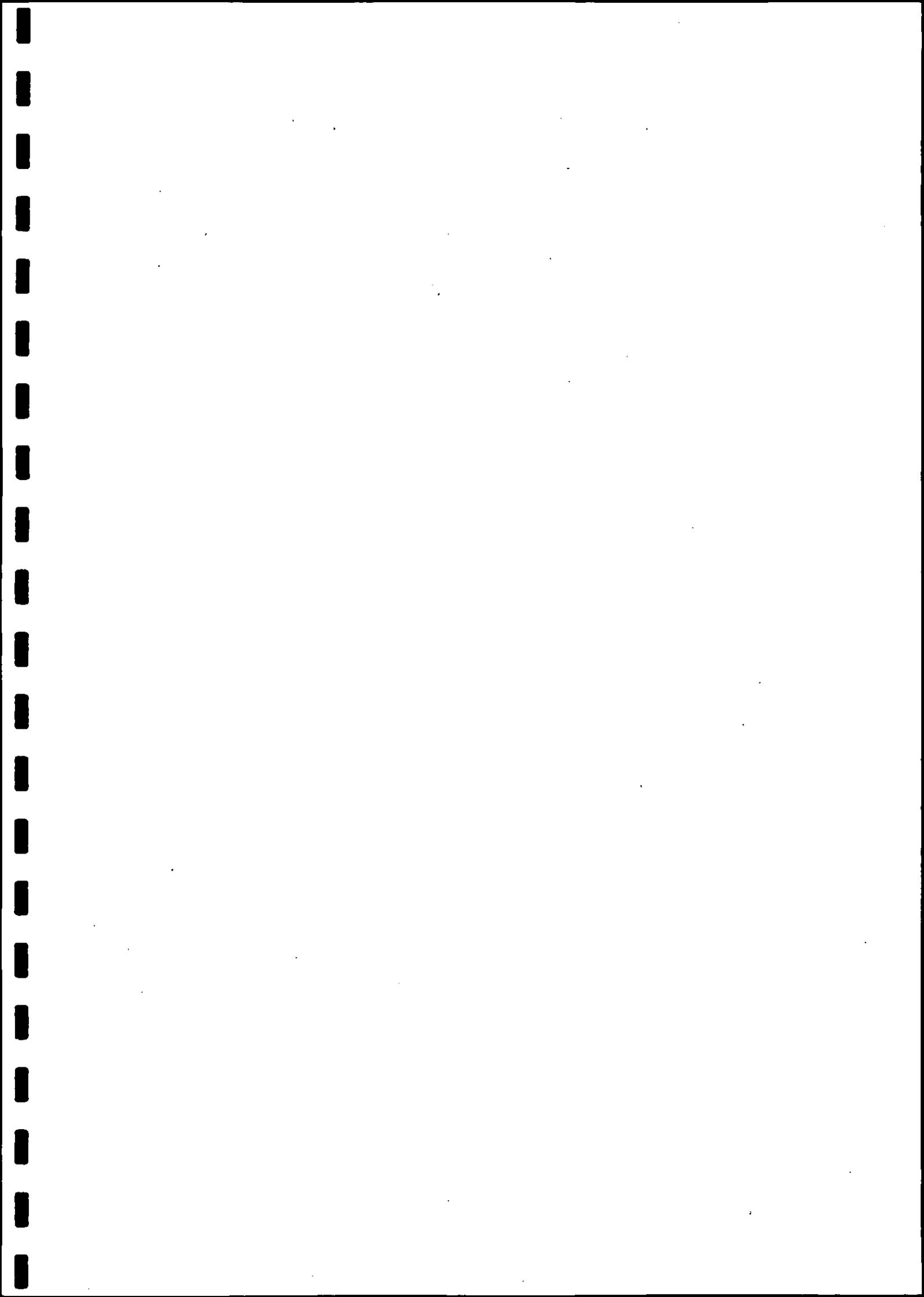


**Institute of  
Freshwater  
Ecology**

# **Quality audit of biological samples for the 1990 River Quality Survey NRA North West Region**

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**Quality Audit of Biological Samples**  
**for the 1990 River Quality Survey**  
**NRA North West Region**

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Project leader: J.F. Wright  
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North West Region  
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## 1. INTRODUCTION

The 1990 River Quality 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 and the Department of Economic Development (DED) undertook the work in Northern Ireland.

Approximately 7750 sites were surveyed, the majority of which were sampled in spring, summer and autumn. Standard collection procedures were used and the sampling strategy was compatible with RIVPACS (River InVertebrate Prediction And Classification System), which has been developed by the Institute of Freshwater Ecology (IFE). Most of the remaining sites were sampled in a single season only, in order to extend the scope of the survey. For a variety of reasons, a few locations were sampled in just two seasons.

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. Sample processing and recording techniques varied from region to region.

In order to undertake this massive programme of fieldwork and sample processing, a large number of new staff 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 an independent quality control exercise was necessary to promote a consistently high level of reliability.

The IFE was contracted to undertake an audit of the sample sorting and identification performance of each NRA region, RPB and the DED. This report collates the results of 61 samples audited for North West Region of the NRA. The IFE was not required to perform any statistical analyses nor interpretation of the results of the audit.

## 2. SAMPLE SELECTION

Nearly all samples from the 1990 River Quality Survey were sent to IFE for storage. They were catalogued on arrival and placed in crates, such that individual samples were readily accessible. A stratified random selection of samples for each sample processor was then made. Selection was undertaken by IFE staff and no selection was made before each sample had been received by IFE. Thus, sample processors had no means of knowing which of their samples would be audited.

The total number of sample processors employed nationally during the survey was considerably higher than that anticipated at the outset. As a consequence, the number of samples audited per processor was limited by the need to keep within the contracted overall total of 700 samples. A minimum of 4 samples was audited per processor, except where individuals processed very few samples or did not process material from each of the 3 seasons.

Sample selection was weighted towards spring samples in order to give early feedback on the blindspots of particular sorters and problems of identification.

### 3. SAMPLE PROCESSING

Biologists processing samples for the 1990 Survey were instructed to sort their samples, ideally within the laboratory, and 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 selection for audit should have included:

- i) 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 and the BMWP families listed
- b) The families contained within the vial were identified and listed
- c) A comparison was made between the NRA listing of families and those identified from the vial by IFE
- d) A comparison was made between the NRA listing of families and those found in the sample by IFE
- e) "Losses" or "gains" from the NRA 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.

For a number of different reasons, some samples did not include a vial containing representative examples of the families listed on the NRA data sheet. These samples were avoided for audit, where possible. When selection of such samples was unavoidable (eg where a particular sorter would otherwise have been excluded from the audit exercise), only operations a), d) and e) above were appropriate.

Several directives were issued to IFE relating to the treatment of BMWP taxa. Terrestrial representatives of BMWP scoring families, animals deemed to have been dead at the time of sampling, cast insect skins, pupal exuviae, empty mollusc shells and tail ends of "living" specimens were to be excluded from the listing of families present. 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 (Table 1). For audit samples where a vial of animals was included, the comparison between the NRA listing and the taxa found in the vial by IFE was shown in box A of the report form. Discrepancies could be due to carelessness, misidentifications or errors in completing the NRA data sheet. Families not on the NRA listing but found by IFE in the remainder of the sample were entered in box B of the report form under "additional families". When the families listed as "losses" in section A 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 in the "losses" box of section A and the "gains" box of section B 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" in the tables which summarise the results for each season (Tables 2, 3 and 4).

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 notes section of the report form. Where the NRA data sheet indicated that a family was noted and released at the site, this was recorded in the notes section but not included as a "loss", even though the family was not found in the vial.

For those samples which did not contain a vial of animals, box A of the report form was not applicable (N/a). Families not on the NRA list but present in the sample were listed in box B under "additional families" as before. Families recorded on the NRA list but not found by IFE were indicated on the left hand side of box B. If the vial of animals was retained by the NRA, entries in this box could include the sole representative of a family which was removed by the NRA, a family seen at the site which escaped or was released (without mention being made on the NRA data sheet), inaccurate identification, the wrong family box being ticked on the NRA data sheet or the family being present in the sample but missed by IFE.

Results of the audits of individual samples are presented in Table 5.

#### ACKNOWLEDGEMENTS

Thanks to Mrs Jessica Winder and Mrs Kay Symes for assistance with cataloguing and storage of samples and Mrs Valerie Palmer for typing the manuscript.

TABLE 1. The IFE Report form

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION  RIVER

SEASON  SITE

SORTER  SAMPLE CODE

AQC OF BMWP FAMILIES    A. IN VIAL     B. IN SAMPLE

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE |                                |                                  |

|   |  |   |                                  |
|---|--|---|----------------------------------|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) |                                  |

NET LOSSES     NET GAINS

NOTES

TABLE 2. The 36 spring samples audited for North West Region, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'

| River            | Site              | Sorter | Losses | Gains | Omissions |
|------------------|-------------------|--------|--------|-------|-----------|
| Sutton Brook     | Marshalls Cross   | KJS    | 0      | 1     | 0         |
| Sudell Brook     | Frith Bridge      | ERM    | 0      | 6     | 0         |
| Skirden Beck     | ptc Holden Beck   | ERM    | 0      | 7     | 0         |
| Dow Brook        | Dow Bridge        | BW     | 0      | 0     | 0         |
| Easington Brook  | ptc R. Hodder     | ERM    | 0      | 14    | 0         |
| Ribble           | Ribchester Bridge | ERM    | 1      | 10    | 0         |
| * Ditton Brook   | Halewood Green    | KJS    | 0      | 3     | 0         |
| Douglas          | Squirrel Bridge   | KJS    | 0      | 9     | 0         |
| * Lostock        | U/s Leyland STW   | KJS    | 0      | 7     | 0         |
| Calder           | Gawthorpe Hall    | BW     | 0      | 1     | 0         |
| Hole Brook       | D/s Blackburn STW | BW     | 0      | 0     | 0         |
| * Irk            | U/s Victoria Stn  | SCL    | 0      | 0     | 0         |
| * Mersey         | ptc Chortlton Brk | SCL    | 0      | 2     | 0         |
| * Dane           | Shipbrook Bridge  | KRS    | 0      | 3     | 0         |
| * Wheelock       | U/s R. Dane       | KRS    | 0      | 1     | 0         |
| Borrow Beck      | U/s A685 Bridge   | BJI    | 0      | 2     | 0         |
| Lune             | Tebay             | BJI    | 0      | 4     | 0         |
| Hindburn         | ptc R. Roeburn    | BJI    | 0      | 8     | 0         |
| Naden Brook      | ptc R. Roch       | SCL    | 1      | 5     | 0         |
| Artle Brook      | ptc R. Weaver     | KRS    | 0      | 5     | 0         |
| Red Brook        | Partington Rd Br  | DGH    | 0      | 0     | 0         |
| Bedford Brook    | ptc Moss Brook    | DGH    | 0      | 4     | 0         |
| Etherow          | Botham's Hall     | DGH    | 0      | 3     | 3         |
| Derwent          | A596 Workington   | AJ     | 0      | 5     | 0         |
| Ellen            | Ellen Villa       | AJ     | 0      | 6     | 0         |
| Tarn Beck        | ptc R. Duddon     | JF     | 0      | 6     | 0         |
| Trout Beck       | Troutbeck         | JF     | 0      | 4     | 0         |
| Scandal Beck     | Soulby            | DS     | 1      | 10    | 0         |
| Greatdale Beck   | ptc Mid. Tongue B | DS     | 0      | 6     | 0         |
| Keekle           | U/s Ehen Confl.   | AJ     | 0      | 5     | 0         |
| Esk              | Whahouse Bridge   | JF     | 0      | 1     | 0         |
| Small Water Beck | NY 463 106        | RFP    | 0      | 2     | 0         |
| Mill Beck        | NY 583 670        | RFP    | 0      | 3     | 0         |
| Lyne             | Lynfoot           | DS     | 0      | 4     | 0         |
| Hayber Beck      | NY 753 158        | RFP    | 0      | 7     | 0         |
| Briggle Beck     | NY 557 450        | JKA    | 0      | 5     | 0         |

\* indicates no vial of animals present in samples

TABLE 3. The 16 summer samples audited for North West Region, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'

| River              | Site               | Sorter | Losses | Gains | Omissions |
|--------------------|--------------------|--------|--------|-------|-----------|
| Gowan              | A591 Staveley      | BJI    | 0      | 1     | 0         |
| Trib Westfield Brk | Westfield Brook    | KJS    | 0      | 8     | 0         |
| Lyne               | Cliff Bridge       | DS     | 0      | 8     | 0         |
| Eden               | Warwick bridge     | RFP    | 1      | 3     | 0         |
| Darwen             | Pleasington Fields | KJS    | 1      | 3     | 1         |
| Hall Gill          | ptc R. Kent        | BJI    | 0      | 3     | 1         |
| Belah              | Kaber              | DS     | 1      | 10    | 0         |
| Irthing            | Newby East         | RFP    | 0      | 5     | 0         |
| Walmer Brook       | Odd House Farm     | ERM    | 0      | 1     | 0         |
| Douglas            | Squirrel Bridge    | ERM    | 0      | 3     | 0         |
| Dane               | Forge Mill         | KRS    | 0      | 3     | 0         |
| Tame               | U/s Denton ETW     | SCL    | 0      | 0     | 0         |
| Deep Meadows Beck  | U/s Tidal Doors    | BW     | 0      | 1     | 0         |
| Derwent            | Ouse Bridge        | AJ     | 0      | 4     | 0         |
| Middle Beck        | ptc R. Tonge       | DGH    | 0      | 6     | 0         |
| Grisedale Beck     | Patterdale Hall    | JKA    | 0      | 5     | 0         |

TABLE 4. The 9 autumn samples audited for North West Region, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'.

| River          | Site               | Sorter | Losses | Gains | Omissions |
|----------------|--------------------|--------|--------|-------|-----------|
| Clouds Gill    | ptc Sally Beck     | KJS    | 1      | 8     | 1         |
| Borsdane brook | ptc Brookside Brk  | GTF    | 0      | 5     | 0         |
| Castle Brook   | ptc Lydgate Brk    | GTF    | 0      | 7     | 0         |
| Tinker Brook   | ptc White Ash Brk  | LHW    | 0      | 1     | 0         |
| Chew Brook     | ptc R. Tame        | GTF    | 0      | 7     | 0         |
| Hyndburn       | ptc Hyndburn Brk   | LHW    | 0      | 5     | 0         |
| Whittle Brook  | ptc Union Bank Brk | EMP    | 0      | 4     | 0         |
| Newton Brook   | ptc Sankey Brook   | EMP    | 0      | 2     | 0         |
| Sudell Brook   | Frith Bridge       | EMP    | 0      | 6     | 0         |

**TABLE 5**

**Results of individual sample audits**

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION  RIVER   
 SEASON  SITE   
 SORTER  SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

|   |  | LOSSES  | GAINS                            |
|---|--|---|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | None  | None                             |
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Sphaeriidae                    |

NET LOSSES  NET GAINS

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION  RIVER   
 SEASON  SITE   
 SORTER  SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

|   |  | LOSSES  | GAINS   |
|---|--|---|---|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | None  | 1 Hydrobiidae   |
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Lymnaeidae<br>3 Ancylidae<br>4 Sphaeriidae<br>5 Bactidae<br>6 Tipulidae |

NET LOSSES  NET GAINS

NOTES  
 2 Lymnaea peregra 1 only  
 3 Ancylus fluviatilis  
 4 Pisidium sp.  
 5 Bactis rhodani 1 only  
 6 Tipula sp. 1 only  
 Identification error:  
 For Boreobdella verrucata read Theromyzon tessulatum

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                 |
|--------|------------|-------------|-----------------|
| REGION | North West | RIVER       | Skirden Beck    |
| SEASON | Spring     | SITE        | PTC Holden Beck |
| SORTER | ERM        | SAMPLE CODE |                 |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS  |
|----------|--|--|--|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in VIAL by IFE</p>     | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">None</p>                            | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">None</p>  |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in SAMPLE by IFE</p> | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p> | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>1 Lymnaeidae<br/>           2 Ancyliidae<br/>           3 Glossiphoniidae<br/>           4 Hydrophilidae<br/>           5 Rhyacophilidae<br/>           6 Hydroptilidae<br/>           7 Lepidostomatidae</p> |

NET LOSSES        NET GAINS   

NOTES

1 Lymnaea peregra 1 only  
 2 Ancyclus fluviatilis  
 3 Helobdella stagnalis  
 4 Hydraena gracilis 1 only  
 5 Rhyacophila dorsalis  
 6 Hydroptila sp.  
 7 Lepidostoma hirtum

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |            |
|--------|------------|-------------|------------|
| REGION | North West | RIVER       | Dow Brook  |
| SEASON | Spring     | SITE        | Dow Bridge |
| SORTER | BW         | SAMPLE CODE |            |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS   |
|----------|--|--|---|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in VIAL by IFE</p>     | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">None</p>  | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">None</p> |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in SAMPLE by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">(This box only completed when no vial supplied with sample)</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">None</p> |

NET LOSSES        NET GAINS   

NOTES

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                 |
|--------|------------|-------------|-----------------|
| REGION | North West | RIVER       | Easington Brook |
| SEASON | Spring     | SITE        | PTC R. Hodder   |
| SORTER | ERM        | SAMPLE CODE |                 |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES  | GAINS   |
|----------|--|---|---|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p>     | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; height: 40px;">None</p>   | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; height: 40px;">None</p>   |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; height: 100px;">(This box only completed when no vial supplied with sample)</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; height: 100px;">                         1 Hydrobiidae<br/>                         2 Lymnaeidae<br/>                         3 Ancylidae<br/>                         4 Gammaridae<br/>                         5 Nemouridae<br/>                         6 Leuctridae<br/>                         7 Gyrinidae<br/>                         8 Hydrophilidae<br/>                         9 Hydropsychidae<br/><br/>                         Cont. in "notes"                     </p> |

NET LOSSES        NET GAINS   

NOTES

10 Hydroptilidae  
 11 Leptoceridae  
 12 Lepidostomatidae  
 13 Sericostomatidae  
 14 Simuliidae

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                   |
|--------|------------|-------------|-------------------|
| REGION | North West | RIVER       | Ribble            |
| SEASON | Spring     | SITE        | Ribchester Bridge |
| SORTER | ERM        | SAMPLE CODE |                   |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS  |
|----------|--|--|--|
| <b>A</b> | <p><u>VIAL</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in VIAL by IFE</p>     | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>1 Lepidostomatidae</p>  | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>2 Leptoceridae</p>  |
| <b>B</b> | <p><u>SAMPLE</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in SAMPLE by IFE</p> | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p> | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>3 Hydrobiidae<br/>           4 Ancylidae<br/>           5 Taeniopterygidae<br/>           6 Perlodidae<br/>           7 Elmidae<br/>           8 Rhyacophilidae<br/>           9 Psychomyiidae<br/>           10 Hydroptilidae<br/>           11 Simuliidae</p> |

NET LOSSES        NET GAINS   

|              |  |
|--------------|--|
| <b>NOTES</b> | <p>4 Ancylus fluviatilis 1 only<br/>           5 Brachyptera risi 1 only<br/>           6 Isoperla grammatica 1 only<br/>           7 Adults + Larvae<br/>           8 Rhyacophila sp. (pupae)<br/>           9 Psychomyia pusilla 1 only<br/>           10 Hydroptila sp.</p> |
|--------------|--|

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                      |
|--------|------------|-------------|----------------------|
| REGION | North West | RIVER       | Ditton Brook         |
| SEASON | Spring     | SITE        | Cart Br, Halewood Gn |
| SORTER | KJS        | SAMPLE CODE |                      |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS   |
|----------|--|--|---|
| <b>A</b> | <p><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p>     | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>Not applicable</p>  | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>Not applicable</p>   |
| <b>B</b> | <p><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p> <p>None</p> | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>1 Hydrobiidae<br/>                     2 Lymnaeidae<br/>                     3 Asellidae</p> |

NET LOSSES        NET GAINS   

NOTES

1 Potamopyrgus jenkinsi  
 2 Lymnaea peregra  
 3 Asellus aquaticus

Identification errors:  
 For Erpobdella testacea read Trocheta subviridis  
 For Gammarus pulex read Crangonyx pseudogracilis

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |                 |
|--------|------------|--|-------------|-----------------|
| REGION | North West |  | RIVER       | Douglas         |
| SEASON | Spring     |  | SITE        | Squirrel Bridge |
| SORTER | KJS        |  | SAMPLE CODE |                 |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES  | GAINS  |
|----------|--|---|--|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | None  | 1 Glossiphoniidae  |
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Lymnaeidae<br>3 Sphaeriidae<br>4 Oligochaeta<br>5 Asellidae<br>6 Elmidae<br>7 Rhyacophilidae<br>8 Limnephilidae<br>9 Tipulidae |

NET LOSSES        NET GAINS   

- NOTES
- 1 Glossiphonia complanata
  - 2 Lymnaca peregra 1 only
  - 3 Pisidium sp.
  - 5 Asellus aquaticus 1 only
  - 6 Oulimnius sp. (larva) 1 only
  - 7 Rhyacophila dorsalis
  - 8 Halesus sp. 1 only
  - 9 Dicranota sp. 1 only



# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                |
|--------|------------|-------------|----------------|
| REGION | North West | RIVER       | Calder         |
| SEASON | Spring     | SITE        | Gawthorpe Hall |
| SORTER | BW         | SAMPLE CODE |                |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS  |
|----------|--|--|--|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p>     | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">None</p>  | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">None</p>      |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">(This box only completed when no vial supplied with sample)</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">1 Elmidae</p> |

NET LOSSES        NET GAINS   

NOTES    1 Limnius volckmari (larva) 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |                   |
|--------|------------|--|-------------|-------------------|
| REGION | North West |  | RIVER       | Hole Brook        |
| SEASON | Spring     |  | SITE        | D/s Blackburn STW |
| SORTER | BW         |  | SAMPLE CODE |                   |

AQC OF BMWP FAMILIES    A. IN VIAL     B. IN SAMPLE

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |                                  |
|----------|--|---|----------------------------------|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | None                             |

NET LOSSES     NET GAINS

NOTES

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |                  |
|--------|------------|--|-------------|------------------|
| REGION | North West |  | RIVER       | Irk              |
| SEASON | Spring     |  | SITE        | U/s Victoria Stn |
| SORTER | SCL        |  | SAMPLE CODE | NRA03 oxj4       |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |   | LOSSES  | GAINS  |
|----------|---|---|--|
| <b>A</b> | <u>VIAL</u><br><br>Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE     | BMWP FAMILIES NOT FOUND BY IFE<br><br>Not applicable  | ADDITIONAL FAMILIES FOUND BY IFE<br><br>Not applicable |
| <b>B</b> | <u>SAMPLE</u><br><br>Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | BMWP FAMILIES NOT FOUND BY IFE<br><br>(This box only completed when no vial supplied with sample)<br><br>None | ADDITIONAL FAMILIES FOUND BY IFE<br><br>None           |

NET LOSSES        NET GAINS   

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |                      |
|--------|------------|-------------|----------------------|
| REGION | North West | RIVER       | Mersey               |
| SEASON | Spring     | SITE        | PTC Chortilton Brook |
| SORTER | SCL        | SAMPLE CODE | 03q0ng               |

AQC OF BMWP FAMILIES    A. IN VIAL     B. IN SAMPLE

|   |  | LOSSES  | GAINS                            |
|---|--|---|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE  | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | Not applicable  | Not applicable                   |
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE  | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample)<br><br>None | 1 Glossiphoniidae<br>2 Baetidae  |

NET LOSSES     NET GAINS

NOTES

|   |
|---|
| 1 Glossiphonia complanata, Helobdella stagnalis<br>2 Baetis rhodani |
|---|

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |                  |
|--------|------------|--|-------------|------------------|
| REGION | North West |  | RIVER       | Dane             |
| SEASON | Spring     |  | SITE        | Shipbrook Bridge |
| SORTER | KRS        |  | SAMPLE CODE | NRA03 mf6c       |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|  |               | LOSSES  | GAINS   |
|--|---------------|---|---|
| <b>A</b>   | <u>VIAL</u>   | BMWP FAMILIES NOT FOUND BY IFE  | ADDITIONAL FAMILIES FOUND BY IFE              |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   |               | Not applicable  | Not applicable                                |
| <b>B</b>   | <u>SAMPLE</u> | BMWP FAMILIES NOT FOUND BY IFE  | ADDITIONAL FAMILIES FOUND BY IFE              |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE |               | (This box only completed when no vial supplied with sample)<br><br>None | 1 Hydrobiidae<br>2 Ancyliidae<br>3 Simuliidae |

NET LOSSES        NET GAINS   

NOTES

1 Potamopyrgus jenkinsi  
 2 Ancyclus fluviatilis  
 3 Simulium (Wilhelmia) sp.

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |            |
|--------|------------|--|-------------|------------|
| REGION | North West |  | RIVER       | Wheelock   |
| SEASON | Spring     |  | SITE        | U/s R.Dane |
| SORTER | KRS        |  | SAMPLE CODE | NRA03 mwm4 |

AQC OF BMWF FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES  | GAINS                            |
|----------|--|---|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMW FAMILIES NOT FOUND BY IFE   | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWF families listed on sample data sheet and<br>ii) BMWF families found in VIAL by IFE   | Not applicable  | Not applicable                   |
| <b>B</b> | <u>SAMPLE</u>  | BMW FAMILIES NOT FOUND BY IFE   | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWF families listed on sample data sheet and<br>ii) BMWF families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample)<br><br>None | 1 Sphaeriidae                    |

NET LOSSES        NET GAINS   

NOTES    1 Pisidium sp. 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL

B. IN SAMPLE

LOSSES

GAINS

| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|---|--|--------------------------------|----------------------------------|
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|---|--|---|----------------------------------|
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Caenidae<br>2 Rhyacophilidae   |

NET LOSSES

NET GAINS

NOTES

1 Caenis rivulorum  
2 Rhyacophila dorsalis 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Lune

SEASON Spring

SITE U/s M6 Bridge, Tebay

SORTER BJI

SAMPLE CODE NRA03 0v3g

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |  |
|----------|--|---|--|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                               |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Hydrobiidae<br>2 Oligochaeta<br>3 Gyridae<br>4 Psychomyiidae |

NET LOSSES 0

NET GAINS 4

NOTES

1 Potamopyrgus jenkinsi 1 only  
 3 Orectochilus villosus (larva) 1 only  
 4 Psychomyia pusilla 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                          |
|--------|------------|-------------|--------------------------|
| REGION | North West | RIVER       | Hindburn                 |
| SEASON | Spring     | SITE        | D/s Bridge ptc R Roeburn |
| SORTER | BJI        | SAMPLE CODE | NRA03 10ko               |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|   |  |   |  |
|---|--|---|--|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Hydrobiidae<br>2 Caenidae<br>3 Nemouridae<br>4 Rhyacophilidae<br>5 Limnephilidae<br>6 Lepidostomatidae<br>7 Sericostomatidae<br>8 Simuliidae |

NET LOSSES        NET GAINS   

- NOTES
- |   |
|---|
| <ol style="list-style-type: none"> <li>1 Potamopyrgus jenkinsi 1 only</li> <li>2 Caenis rivulorum</li> <li>3 Nemoura cambrica/erratica, Amphinemura sulcicollis</li> <li>4 Rhyacophila dorsalis</li> <li>5 Ecclisopteryx guttulata 1 only</li> <li>6 Lepidostoma hirtum</li> <li>7 Sericostoma personatum 1 only</li> <li>8 Simulium (Wilhelmia) sp.</li> </ol> |
|---|

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |            |
|--------|------------|-------------|------------|
| REGION | North West | RIVER       | Naden Bk   |
| SEASON | Spring     | SITE        | ptc R Roch |
| SORTER | SCL        | SAMPLE CODE | NRA03 qw4s |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | 1 Perlodidae                   | None                             |

|   |  |   |  |
|---|--|---|--|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Lymnaeidae<br>3 Ancylidae<br>4 Sphaeriidae<br>5 Leuctridae<br>6 Simuliidae |

NET LOSSES        NET GAINS   

NOTES

- 2 Lymnaea peregra, L. palustris
- 3 Ancylus fluviatilis
- 4 Pisidium sp.
- 5 Leuctra fusca
- 6 Simulium ornatum group

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |              |
|--------|------------|--|-------------|--------------|
| REGION | North West |  | RIVER       | Artle Brook  |
| SEASON | Spring     |  | SITE        | ptc R Weaver |
| SORTER | KRS        |  | SAMPLE CODE | NRA03 s69w   |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |   |
|----------|--|---|---|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Ancyliidae<br>2 Sphaeriidae<br>3 Asellidae<br>4 Ephemerellidae<br>5 Elmidae |

NET LOSSES        NET GAINS   

|       |  |
|-------|--|
| NOTES | 1 Acroloxus lacustris 1 only<br>2 Pisidium sp. 1 only<br>3 Asellus sp. juveniles<br>4 Ephemerella ignita<br>5 Elmis aenea (adult) 1 only |
|-------|--|

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                           |
|--------|------------|-------------|---------------------------|
| REGION | North West | RIVER       | Red Brook                 |
| SEASON | Spring     | SITE        | Partington Rd Br, ptc MSC |
| SORTER | DGH        | SAMPLE CODE | NRA03 pums                |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | Not applicable                 | Not applicable                   |

|          |  |   |                                  |
|----------|--|---|----------------------------------|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE  | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample)<br><br>None | None                             |

NET LOSSES        NET GAINS   

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |               |
|--------|------------|-------------|---------------|
| REGION | North West | RIVER       | Bedford Brook |
| SEASON | Spring     | SITE        | ptc Moss Bk   |
| SORTER | DGH        | SAMPLE CODE | NRA03 nxyk    |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|   |  |   |  |
|---|--|---|--|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                                   |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Hydrobiidae<br>2 Lymnaeidae<br>3 Sphaeriidae<br>4 Hydropsychidae |

NET LOSSES        NET GAINS   

NOTES

- 1 Potamopyrgus jenkinsi
- 2 Lymnaea peregra
- 3 Pisidium sp.
- 4 Hydropsyche pellucidula

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |               |
|--------|------------|-------------|---------------|
| REGION | North West | RIVER       | Etherow       |
| SEASON | Spring     | SITE        | Botham's Hall |
| SORTER | DGH        | SAMPLE CODE | NRA03 nfwk    |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

| LOSSES                                       |  | GAINS  |                                |                                  |  |      |
|--|--|--|--------------------------------|----------------------------------|--|------|
| <b>A</b>                                     | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p> | <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%; border-bottom: 1px solid black;">BMWP FAMILIES NOT FOUND BY IFE</th> <th style="width: 60%; border-bottom: 1px solid black;">ADDITIONAL FAMILIES FOUND BY IFE</th> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">                     1 Asellidae*<br/>                     2 Baetidae*<br/>                     3 Dytiscidae*                 </td> <td style="border: 1px solid black; padding: 5px; text-align: center;">None</td> </tr> </table> | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE | 1 Asellidae*<br>2 Baetidae*<br>3 Dytiscidae* | None |
| BMWP FAMILIES NOT FOUND BY IFE               | ADDITIONAL FAMILIES FOUND BY IFE   |  |                                |                                  |  |      |
| 1 Asellidae*<br>2 Baetidae*<br>3 Dytiscidae* | None   |  |                                |                                  |  |      |

| <b>B</b>  | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%; border-bottom: 1px solid black;">BMWP FAMILIES NOT FOUND BY IFE</th> <th style="width: 60%; border-bottom: 1px solid black;">ADDITIONAL FAMILIES FOUND BY IFE</th> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">                     (This box only completed when no vial supplied with sample)                 </td> <td style="border: 1px solid black; padding: 5px;">                     4 Hydrobiidae<br/>                     5 Gammaridae<br/>                     6 Ephemerellidae<br/>                     7 Asellidae*<br/>                     8 Baetidae*<br/>                     9 Dytiscidae*                 </td> </tr> </table> | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE | (This box only completed when no vial supplied with sample) | 4 Hydrobiidae<br>5 Gammaridae<br>6 Ephemerellidae<br>7 Asellidae*<br>8 Baetidae*<br>9 Dytiscidae* |
|---|--|--|--------------------------------|----------------------------------|---|---|
| BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |  |                                |                                  |   |   |
| (This box only completed when no vial supplied with sample) | 4 Hydrobiidae<br>5 Gammaridae<br>6 Ephemerellidae<br>7 Asellidae*<br>8 Baetidae*<br>9 Dytiscidae*  |  |                                |                                  |   |   |

NET LOSSES        NET GAINS   

NOTES

4 Potamopyrgus jenkinsi  
 5 Gammarus sp. 1 only  
 6 Ephemerella ignita

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Derwent

SEASON Spring

SITE A596 Workington

SORTER AJ

SAMPLE CODE NRA03 03s4

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |  |
|----------|--|---|--|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Erpobdellidae<br>2 Leuctridae<br>3 Chloroperlidae<br>4 Hydrophilidae<br>5 Leptoceridae |

NET LOSSES 0

NET GAINS 5

NOTES

- 1 Erpobdella octoculata, Trocheta bykowskii
- 2 Leuctra geniculata, L. fusca
- 3 Chloroperla torrentium 1 only
- 4 Hydraena gracilis (adult) 1 only
- 5 Athripsodes sp. 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Ellen

SEASON Spring

SITE Ellen Villa

SORTER AJ

SAMPLE CODE NRA03 08pw

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|  |             | LOSSES                         | GAINS                            |
|--|-------------|--------------------------------|----------------------------------|
| <b>A</b>   | <u>VIAL</u> | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE |             | None                           | None                             |

|  |               |   |  |
|--|---------------|---|--|
| <b>B</b>   | <u>SAMPLE</u> | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE |               | (This box only completed when no vial supplied with sample) | 1 Planariidae<br>2 Glossiphoniidae<br>3 Nematouridae<br>4 Capniidae<br>5 Perlodidae<br>6 Hydrophilidae |

NET LOSSES 0

NET GAINS 6

- NOTES
- 1 Polycelis nigra/tenuis 1 only
  - 2 Helobdella stagnalis 1 only
  - 3 Amphinemura sulcicollis
  - 4 Capnia bifrons 1 only
  - 5 Isoperla grammatica 1 only
  - 6 Hydraena gracilis (adults)

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |               |
|--------|------------|--|-------------|---------------|
| REGION | North West |  | RIVER       | Tarn Beck     |
| SEASON | Spring     |  | SITE        | ptc R. Duddon |
| SORTER | JF         |  | SAMPLE CODE | NRA03 1cuc    |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |   |
|----------|--|---|---|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | <ol style="list-style-type: none"> <li>1 Planariidae</li> <li>2 Oligochaeta</li> <li>3 Rhyacophilidae</li> <li>4 Limnephilidae</li> <li>5 Leptoceridae</li> <li>6 Sericostomatidae</li> </ol> |

NET LOSSES        NET GAINS   

NOTES

- 1 Polycelis felina 1 only
- 3 Rhyacophila dorsalis 1 only
- 4 Halesus sp.
- 5 Adicella reducta 1 only
- 6 Sericostoma personatum

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |            |
|--------|------------|-------------|------------|
| REGION | North West | RIVER       | Trout Beck |
| SEASON | Spring     | SITE        | Troutbeck  |
| SORTER | JF         | SAMPLE CODE | NRA03 086g |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES  | GAINS   |
|----------|--|---|---|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">None</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">None</p> |

|          |  |  |  |
|----------|--|--|--|
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">(This box only completed when no vial supplied with sample)</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: left;">                         1 Sphaeriidae<br/>                         2 Leptophlebiidae<br/>                         3 Polycentropodidae<br/>                         4 Simuliidae                     </p> |
|----------|--|--|--|

NET LOSSES        NET GAINS   

NOTES

1 *Pisidium* sp.  
 2 *Habrophlebia fusca*  
 3 *Polycentropus flavomaculatus*  
 4 *Prosimulium* sp., *Simulium vernalis/naturale*

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Scandal Beck

SEASON Spring

SITE Soulby

SORTER DS

SAMPLE CODE NRA03 Ofcs

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | 1 Planorbidae                  | None                             |

|   |  |   |  |
|---|--|---|--|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Lymnaeidae<br>3 Ancyliidae<br>4 Sphaeriidae<br>5 Caenidae<br>6 Leuctridae<br>7 Chloroperlidae<br>8 Gyrinidae<br>9 Elmidae<br>10 Hydroptilidae<br>11 Lepidostomatidae |

NET LOSSES 1

NET GAINS 10

| NOTES |                                 |                                    |
|-------|---------------------------------|------------------------------------|
|       | 1 Zonitoides sp. in vial        | 9 Esolus parallelepipedus (adult), |
|       | 2 Lymnaea peregra 1 only        | Elmis aenea (larva)                |
|       | 3 Ancylyus fluviatilis 1 only   | 10 Ithytrichia sp. 1 only          |
|       | 4 Pisidium sp.                  | 11 Lepidostoma hirtum              |
|       | 5 Caenis rivulorum              |                                    |
|       | 6 Leuctra geniculata            |                                    |
|       | 7 Chloroperla torrentium 1 only |                                    |
|       | 8 Orectochilus villosus 1 only  |                                    |

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Greatdale Beck

SEASON Spring

SITE ptc Middle Tongue B.

SORTER DS

SAMPLE CODE NRA03 0h62

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | 1 Dytiscidae                     |

|   |  |   |   |
|---|--|---|---|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Caenidae<br>3 Taeniopterygidae<br>4 Scirtidae<br>5 Sericostomatidae<br>6 Simuliidae |

NET LOSSES 0

NET GAINS 6

NOTES

- 1 Oreodytes sanmarkii (adults)
- 3 Brachyptera risi 1 only
- 4 Elodes sp. (larva) 1 only
- 5 Sericostoma personatum
- 6 Simulium argyreatum/variegatum

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Keekle

SEASON Spring

SITE U/s Ehen Confluence

SORTER AJ

SAMPLE CODE NRA03 02e4

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | 1 Hydrobiidae                    |

|          |  |   |  |
|----------|--|---|--|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                           |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Lymnaeidae<br>3 Sphaeriidae<br>4 Elmidae<br>5 Simuliidae |

NET LOSSES 0

NET GAINS 5

NOTES

- 1 Potamopyrgus jenkinsi
- 2 Lymnaea peregra
- 3 Pisidium sp.
- 4 Elmis aenea (adult) 1 only
- 5 Simulium ornatum group (larva + pupa)

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Esk

SEASON Spring

SITE Whahouse Bridge

SORTER JF

SAMPLE CODE NRA03 00dw

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

|  |             | LOSSES                         | GAINS                            |
|--|-------------|--------------------------------|----------------------------------|
| <b>A</b>   | <u>VIAL</u> | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE |             | None                           | None                             |

|  |               |   |                                  |
|--|---------------|---|----------------------------------|
| <b>B</b>   | <u>SAMPLE</u> | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE |               | (This box only completed when no vial supplied with sample) | 1 Limnephilidae                  |

NET LOSSES 0

NET GAINS 1

NOTES 1 Indet Limnephilid (juvenile). 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Small Water Beck

SEASON Spring

SITE NY 463 106

SORTER RFP

SAMPLE CODE NRA03 0qyg

AQC OF BMWP FAMILIES    A. IN VIAL +

B. IN SAMPLE +

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |                                  |
|----------|--|---|----------------------------------|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Oligochaeta<br>2 Tipulidae     |

NET LOSSES 0

NET GAINS 2

NOTES 1 Eiseniella tetraedra 1 only  
2 Dicranota sp., Tipula sp.

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |            |
|--------|------------|--|-------------|------------|
| REGION | North West |  | RIVER       | Mill Beck  |
| SEASON | Spring     |  | SITE        | NY 583 670 |
| SORTER | RFP        |  | SAMPLE CODE | NRA03 0nm0 |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|  | LOSSES                                     | GAINS  |
|--|--|--|
| <b>A</b> <u>VIAL</u><br><br>Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | BMWP FAMILIES NOT FOUND BY IFE<br><br>None | ADDITIONAL FAMILIES FOUND BY IFE<br><br>None |

|  |   |   |
|--|---|---|
| <b>B</b> <u>SAMPLE</u><br><br>Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | BMWP FAMILIES NOT FOUND BY IFE<br><br>(This box only completed when no vial supplied with sample) | ADDITIONAL FAMILIES FOUND BY IFE<br><br>1 Sphaeriidae<br>2 Leptophlebiidae<br>3 Hydrophilidae |
|--|---|---|

NET LOSSES                        NET GAINS   

NOTES

1 Pisidium sp.  
 2 Habrophlebia fusca  
 3 Hydraena gracilis (adult) 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Lyne

SEASON Spring

SITE Lynefoot

SORTER DS

SAMPLE CODE NRA03 0t4m

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|  |             | LOSSES                         | GAINS                            |
|--|-------------|--------------------------------|----------------------------------|
| <b>A</b>   | <u>VIAL</u> | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE |             | None                           | None                             |

|  |               |   |   |
|--|---------------|---|---|
| <b>B</b>   | <u>SAMPLE</u> | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE |               | (This box only completed when no vial supplied with sample) | 1 Hydrobiidae<br>2 Leuctridae<br>3 Polycentropodidae<br>4 Limnephilidae |

NET LOSSES 0

NET GAINS 4

NOTES

- 1 Potamopyrgus jenkinsi
- 2 Leuctra hippopus 1 only
- 3 Polycentropus flavomaculatus, Cynus trimaculatus
- 4 Anabolia nervosa 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |             |
|--------|------------|-------------|-------------|
| REGION | North West | RIVER       | Hayber Beck |
| SEASON | Spring     | SITE        | NY 753 158  |
| SORTER | RFP        | SAMPLE CODE | NRA03 0g4k  |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS   |
|----------|--|--|---|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p>     | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p>         | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">1 Simuliidae</p>  |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p> | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">                         2 Sphaeriidae<br/>                         3 Nemouridae<br/>                         4 Perlidae<br/>                         5 Hydrophilidae<br/>                         6 Goeridae<br/>                         7 Lepidostomatidae                     </p> |

NET LOSSES   

NET GAINS   

- NOTES
- 1 Simulium ornatum group
  - 2 Pisidium sp. 1 only
  - 3 Amphinemura sulcicollis
  - 4 Dinocras cephalotes
  - 5 Hydraena gracilis (adult) 1 only
  - 6 Silo pallipes
  - 7 Lepidostoma hirtum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

LOSSES

GAINS

| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|---|--|--------------------------------|----------------------------------|
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|---|--|---|--|
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Planariidae<br>2 Sphaeriidae<br>3 Dytiscidae<br>4 Scirtidae<br>5 Tipulidae |

NET LOSSES

NET GAINS

NOTES

- 1 Polycelis felina 1 only
- 2 Pisidium sp.
- 3 Oreodytes sanmarkii (adult) 1 only
- 4 Elodes sp (larva) 1 only
- 5 Dicranota sp. 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |               |
|--------|------------|-------------|---------------|
| REGION | North West | RIVER       | Gowan         |
| SEASON | Summer     | SITE        | A591 Staveley |
| SORTER | BJI        | SAMPLE CODE | NRA03 15cw    |

AQC OF BMWP FAMILIES    A. IN VIAL    +    B. IN SAMPLE    +

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |                                  |
|----------|--|---|----------------------------------|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Tipulidae                      |

NET LOSSES    0    NET GAINS    1

NOTES    1 Tipula montium group 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                       |
|--------|------------|-------------|-----------------------|
| REGION | North West | RIVER       | Trib. Westfield Brook |
| SEASON | Summer     | SITE        | Westfield Brook       |
| SORTER | KJS        | SAMPLE CODE | NRA03 2ws8            |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|  | LOSSES  | GAINS   |
|--|---|---|
| <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p> </div> | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">None</p> </div> | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">1 Simuliidae</p> </div> |

|  |  |   |
|--|--|---|
| <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> </div> | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">(This box only completed when no vial supplied with sample)</p> </div> | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">2 Hydrobiidae<br/>                     3 Lymnaeidae<br/>                     4 Planorbidae<br/>                     5 Sphaeriidae<br/>                     6 Erpobdellidae<br/>                     7 Scirtidae<br/>                     8 Tipulidae</p> </div> |
|--|--|---|

NET LOSSES        NET GAINS   

NOTES

- 1 Simulium cryophilum group (larva), S. aureum group (pupa) in sample
- 2 Potamopyrgus jenkinsi 1 only
- 3 Lymnaea peregra 1 only
- 4 Hippeutis complanatus 1 only
- 5 Pisidium sp.
- 6 Indet Erpobdellid (juvenile) 1 only
- 7 Elodes sp. (larva) 1 only
- 8 Tipula montium group, Dicranota sp.

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |              |
|--------|------------|-------------|--------------|
| REGION | North West | RIVER       | Lyne         |
| SEASON | Summer     | SITE        | Cliff Bridge |
| SORTER | DS         | SAMPLE CODE | NRA03 0t38   |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|   |  |   |  |
|---|--|---|--|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Ancylidae<br>2 Sphaeriidae<br>3 Erpobdellidae<br>4 Gammaridae<br>5 Hydropsychidae<br>6 Hydroptilidae<br>7 Leptoceridae<br>8 Lepidostomatidae |

NET LOSSES        NET GAINS   

- NOTES
- 1 Ancylus fluviatilis 1 only
  - 2 Pisidium sp. 1 only
  - 3 Indet Erpobdellid (juvenile) 1 only
  - 4 Gammarus pulex
  - 5 Hydropsyche pellucidula
  - 6 Hydroptila sp.
  - 7 Athripsodes bilineatus 1 only
  - 8 Lepidostoma hirtum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | 1 Hydroptilidae                | None                             |

|   |  |   |  |
|---|--|---|--|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                 |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Asellidae<br>3 Lepidostomatidae<br>4 Tipulidae |

NET LOSSES

NET GAINS

NOTES  
 1 Empty Hydroptila case  
 3 Lepidostoma hirtum 1 only  
 4 Antocha vitripennis (pupa) 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |                    |
|--------|------------|-------------|--------------------|
| REGION | North West | RIVER       | Darwen             |
| SEASON | Summer     | SITE        | Pleasington Fields |
| SORTER | KJS        | SAMPLE CODE | NRA03 2ckg         |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES  | GAINS  |
|---|--|---|--|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                           |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | 1 Hydrobiidae*<br>2 Gammaridae                              | None   |
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                           |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 3 Hydrobiidae*<br>4 Physidae<br>5 Planorbidae<br>6 Elmidae |

NET LOSSES        NET GAINS   

NOTES

4 Physa fontinalis 1 only  
5 Armiger crista  
6 Oulimnius tuberculatus (adult) 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  .

B. IN SAMPLE  .

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | 1 Planariidae*                 | None                             |

|   |  |   |  |
|---|--|---|--|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                                 |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Planariidae*<br>3 Sphaeriidae<br>4 Elmidae<br>5 Hydropsychidae |

NET LOSSES

NET GAINS

NOTES

- 3 Pisidium sp.
- 4 Elmis aenea, Limnius volckmari (larvae)
- 5 Hydropsyche sp. (pupa) 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |            |
|--------|------------|-------------|------------|
| REGION | North West | RIVER       | Belah      |
| SEASON | Summer     | SITE        | Kaber      |
| SORTER | DS         | SAMPLE CODE | NRA03 Offk |

AQC OF BMWP FAMILIES    A. IN VIAL    +    B. IN SAMPLE    +

|          |  | LOSSES                         | GAINS   |
|----------|--|--------------------------------|---|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE                                      |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | 1 Sericostomatidae             | 2 Glossiphoniidae<br>3 Limnephilidae<br>4 Tipulidae<br>5 Chironomidae |

|          |  |   |  |
|----------|--|---|--|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 6 Hydrobiidae<br>7 Lymnaeidae<br>8 Sphaeriidae<br>9 Caenidae<br>10 Hydropsychidae<br>11 Leptoceridae |

NET LOSSES    1

NET GAINS    10

|   |   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |
|---|---|------------------------|---------------------------|---|---------------------------------|-----------------|---------------------------|---------------------|--|-------------------------|--|--------------------------|--|-----------------------|--|
| NOTES                                       | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">2 Helobdella stagnalis</td> <td style="width: 50%;">9 Caenis rivulorum 1 only</td> </tr> <tr> <td>3 Drusus annulatus, Ecclisopteryx guttulata</td> <td>10 Hydropsyche sp (pupa) 1 only</td> </tr> <tr> <td>4 Dicranota sp.</td> <td>11 Athripsodes sp. 1 only</td> </tr> <tr> <td>5 Indet Tanypodinae</td> <td></td> </tr> <tr> <td>6 Potamopyrgus jenkinsi</td> <td></td> </tr> <tr> <td>7 Lymnaea peregra 1 only</td> <td></td> </tr> <tr> <td>8 Pisidium sp. 1 only</td> <td></td> </tr> </table> | 2 Helobdella stagnalis | 9 Caenis rivulorum 1 only | 3 Drusus annulatus, Ecclisopteryx guttulata | 10 Hydropsyche sp (pupa) 1 only | 4 Dicranota sp. | 11 Athripsodes sp. 1 only | 5 Indet Tanypodinae |  | 6 Potamopyrgus jenkinsi |  | 7 Lymnaea peregra 1 only |  | 8 Pisidium sp. 1 only |  |
| 2 Helobdella stagnalis                      | 9 Caenis rivulorum 1 only   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |
| 3 Drusus annulatus, Ecclisopteryx guttulata | 10 Hydropsyche sp (pupa) 1 only   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |
| 4 Dicranota sp.                             | 11 Athripsodes sp. 1 only   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |
| 5 Indet Tanypodinae                         |   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |
| 6 Potamopyrgus jenkinsi                     |   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |
| 7 Lymnaea peregra 1 only                    |   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |
| 8 Pisidium sp. 1 only                       |   |                        |                           |   |                                 |                 |                           |                     |  |                         |  |                          |  |                       |  |

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |            |
|--------|------------|-------------|------------|
| REGION | North West | RIVER       | Irthing    |
| SEASON | Summer     | SITE        | Newby East |
| SORTER | RFP        | SAMPLE CODE | NRA03.0mlw |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|   |  |   |   |
|---|--|---|---|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Glossiphoniidae<br>2 Caenidae<br>3 Haliplidae<br>4 Hydrophilidae<br>5 Psychomyiidae |

NET LOSSES        NET GAINS   

NOTES

- 1 Glossiphonia complanata, Helobdella stagnalis
- 2 Caenis luctuosa/macrura 1 only
- 3 Brychius elevatus (adult) 1 only
- 4 Hydraena gracilis (adults)
- 5 Psychomyia pusilla

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Walmer Brook

SEASON Summer

SITE Odd House Farm

SORTER ERM

SAMPLE CODE NRA03 3n3g

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

|          |  | LOSSES                         | GAINS                            |
|----------|--|--------------------------------|----------------------------------|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|          |  |   |                                  |
|----------|--|---|----------------------------------|
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Hydrobiidae                    |

NET LOSSES 0

NET GAINS 1

NOTES 1 Potamopyrgus jenkinsi

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Douglas

SEASON Summer

SITE Squirrel Bridge

SORTER ERM

SAMPLE CODE NRA03 3k80

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|  |             | LOSSES                         | GAINS                            |
|--|-------------|--------------------------------|----------------------------------|
| <b>A</b>   | <u>VIAL</u> | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE |             | None                           | None                             |

|  |               |   |  |
|--|---------------|---|--|
| <b>B</b>   | <u>SAMPLE</u> | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                   |
| Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE |               | (This box only completed when no vial supplied with sample) | 1 Planariidae<br>2 Lymnaeidae<br>3 Glossiphoniidae |

NET LOSSES 0

NET GAINS 3

NOTES

1 Polycelis felina  
 2 Lymnaea peregra  
 3 Glossiphonia complanata

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|   |  |   |   |
|---|--|---|---|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE          |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Hydrobiidae<br>2 Elmidae<br>3 Tipulidae |

NET LOSSES

NET GAINS

NOTES  
 1 Potamopyrgus jenkinsi 1 only  
 2 Elmis aenea, Limnius volckmari (larvae)  
 3 Antocha vitripennis 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |                |
|--------|------------|-------------|----------------|
| REGION | North West | RIVER       | Tame           |
| SEASON | Summer     | SITE        | U/s Denton ETW |
| SORTER | SCL        | SAMPLE CODE | NRA03 r4e0     |

AQC OF BMWP FAMILIES    A. IN VIAL     B. IN SAMPLE

|          |  | LOSSES   | GAINS  |
|----------|--|--|--|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p>     | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p>                                     | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p> |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">(This box only completed when no vial supplied with sample)</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p> |

NET LOSSES       NET GAINS

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|   |  |   |                                  |
|---|--|---|----------------------------------|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Haliplidae                     |

NET LOSSES

NET GAINS

NOTES

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |             |
|--------|------------|-------------|-------------|
| REGION | North West | RIVER       | Derwent     |
| SEASON | Summer     | SITE        | Ouse Bridge |
| SORTER | AJ         | SAMPLE CODE | NRA03 03h0  |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS  |
|----------|--|--|--|
| <b>A</b> | <p><u>VIAL</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in VIAL by IFE</p>     | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>None</p>  | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>None</p>  |
| <b>B</b> | <p><u>SAMPLE</u></p> <p>Differences between:<br/>           i) BMWP families listed on sample data sheet and<br/>           ii) BMWP families found in SAMPLE by IFE</p> | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p> | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>1 Physidae<br/>           2 Leptoceridae<br/>           3 Sericostomatidae<br/>           4 Tipulidae</p> |

NET LOSSES        NET GAINS   

NOTES

1 *Physa fontinalis*  
 2 *Ceraclea dissimilis* 1 only  
 3 *Sericostoma personatum* 1 only  
 4 *Dicranota* sp.

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |             |             |
|--------|------------|-------------|-------------|
| REGION | North West | RIVER       | Middle Beck |
| SEASON | Summer     | SITE        | ptc R.Tonge |
| SORTER | DGH        | SAMPLE CODE | NRA03 lwck  |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |   | LOSSES   | GAINS   |
|----------|---|--|---|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p>      | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">None</p>  | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">1 Planorbidae<br/>2 Ancyliidae</p>   |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE.</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">(This box only completed when no vial supplied with sample)</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">3 Dendrocoelidae<br/>4 Erpobdellidae<br/>5 Gammaridae<br/>6 Rhyacophilidae</p> |

NET LOSSES        NET GAINS   

- NOTES
- 1 Anisus vortex 1 only
  - 2 Ancylyus fluviatilis
  - 3 Dendrocoelum lacteum 1 only
  - 4 Trocheta subviridis 1 only
  - 5 Gammarus pulex 1 only
  - 6 Rhyacophila dorsalis 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Grisedale Beck

SEASON Summer

SITE Patterdale Hall

SORTER JKA

SAMPLE CODE NRA03 Opb4

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|          |  | LOSSES  | GAINS   |
|----------|--|---|---|
| <b>A</b> | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | None  | None  |
| <b>B</b> | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|          | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Planariidae<br>2 Ancyliidae<br>3 Hydrophilidae<br>4 Odontoceridae<br>5 Leptoceridae |

NET LOSSES 0

NET GAINS 5

NOTES

1 Planaria torva? 1 only  
 2 Ancylyus fluviatilis 1 only  
 3 Hydraena gracilis  
 4 Odontocerum albicorne 1 only  
 5 Adicella reducta 1 only

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION North West

RIVER Clouds Gill

SEASON Autumn

SITE ptc Sally Beck

SORTER KJS

SAMPLE CODE NRA03 Oxes

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

|  | LOSSES   | GAINS   |
|--|--|---|
| <p><b>A</b></p> <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p>1 Perlidae<br/>2 Polycentropodidae*</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p>3 Perlodidae</p> |

|  |  |   |
|--|--|---|
| <p><b>B</b></p> <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p> | <p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p>4 Lymnaeidae<br/>5 Ancyliidae<br/>6 Sphaeriidae<br/>7 Haliplidae<br/>8 Hydrophilidae<br/>9 Scirtidae<br/>10 Philopotamidae<br/>11 Polycentropodidae*</p> |
|--|--|---|

NET LOSSES 1

NET GAINS 8

- NOTES
- 3 Perlodes microcephala
  - 4 Lymnaea palustris 1 only
  - 5 Ancyclus fluviatilis
  - 6 Pisidium sp.
  - 7 Haliplus sp. (larvae)
  - 8 Hydraena gracilis (adults)
  - 9 Elodes sp. (larva) 1 only
  - 10 Wormaldia sp. 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |                  |
|--------|------------|-------------|------------------|
| REGION | North West | RIVER       | Borsdane Brook   |
| SEASON | Autumn     | SITE        | ptc Brookside Bk |
| SORTER | GTF        | SAMPLE CODE | NRA03 nm8c       |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

|   |  |   |   |
|---|--|---|---|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Planariidae<br>2 Sphaeriidae<br>3 Glossiphoniidae<br>4 Haliplidae<br>5 Hydropsychidae |

NET LOSSES        NET GAINS   

NOTES

- 1 Dugesia polychroa/lugubris
- 2 Pisidium sp.
- 3 Indet Glossiphoniid 1 only
- 4 Haliplus sp. (larva) 1 only
- 5 Hydropsyche angustipennis

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |                   |
|--------|------------|-------------|-------------------|
| REGION | North West | RIVER       | Castle Brook      |
| SEASON | Autumn     | SITE        | ptc Lydgate Brook |
| SORTER | GTF        | SAMPLE CODE | NRA03 qkk4        |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES  | GAINS  |
|---|--|---|--|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | None  | 1 Hydropsychidae   |
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE   |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Sphaeriidae<br>3 Leptophlebiidae<br>4 Perlodidae<br>5 Elmidae<br>6 Polycentropodidae<br>7 Chironomidae |

NET LOSSES        NET GAINS   

NOTES

- 1 Hydropsyche instabilis
- 2 Pisidium sp. 1 only
- 4 Isoperla grammatica
- 5 Elmis aenea (larvae)
- 6 Plectrocnemia conspersa
- 7 Prodiamesa olivacca

# 1990 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

|        |            |  |             |                     |
|--------|------------|--|-------------|---------------------|
| REGION | North West |  | RIVER       | Tinker Brook        |
| SEASON | Autumn     |  | SITE        | ptc White Ash Brook |
| SORTER | LHW        |  | SAMPLE CODE | NRA03 2kfs          |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|          |  | LOSSES   | GAINS  |
|----------|--|--|--|
| <b>A</b> | <p style="text-align: center;"><u>VIAL</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in VIAL by IFE</p>     | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">None</p>                            | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">None</p>          |
| <b>B</b> | <p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:<br/>                     i) BMWP families listed on sample data sheet and<br/>                     ii) BMWP families found in SAMPLE by IFE</p> | <p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p> | <p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">1 Hydrobiidae</p> |

NET LOSSES        NET GAINS   

NOTES    1 Potamopyrgus jenkinsi

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |   |             |   |
|--------|---|-------------|---|
| REGION | <input type="text" value="North West"/> | RIVER       | <input type="text" value="Chew Brook"/> |
| SEASON | <input type="text" value="Autumn"/>     | SITE        | <input type="text" value="ptc R.Tame"/> |
| SORTER | <input type="text" value="GTF"/>        | SAMPLE CODE | <input type="text" value="NRA03 r7ec"/> |

AQC OF BMWP FAMILIES    A. IN VIAL     B. IN SAMPLE

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | 1 Simuliidae                     |

|   |  |   |   |
|---|--|---|---|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Hydrobiidae<br>3 Planorbidae<br>4 Oligochaeta<br>5 Gammaridae<br>6 Perlodidae<br>7 Hydropsychidae |

NET LOSSES     NET GAINS

- NOTES
- 1 Simulium ornatum group (larvae + pupa)
  - 2 Potamopyrgus jenkinsi
  - 3 Armiger crista, Gyraulus albus
  - 4 Stylaria lacustris (Naididae)
  - 5 Gammarus pulex
  - 6 Isoperla grammatica 1 only
  - 7 Hydropsyche angustipennis 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

LOSSES

GAINS

| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|---|--|--------------------------------|----------------------------------|
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | None                             |

| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE  |
|---|--|---|---|
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 1 Hydrobiidae<br>2 Ancylidae<br>3 Sphaeriidae<br>4 Limnephilidae<br>5 Tipulidae |

NET LOSSES

NET GAINS

|       |  |
|-------|--|
| NOTES | 1 Potamopyrgus jenkinsi<br>2 Ancylus fluviatilis<br>3 Pisidium sp. 1 only<br>4 Indet Limnephilid (juvenile) 1 only<br>5 Tipula sp. (juvenile) 1 only |
|-------|--|

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

|        |            |             |                      |
|--------|------------|-------------|----------------------|
| REGION | North West | RIVER       | Whittle Brook        |
| SEASON | Autumn     | SITE        | ptc Union Bank Brook |
| SORTER | EMP        | SAMPLE CODE | NRA03 3xcw           |

AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

|   |  | LOSSES  | GAINS  |
|---|--|---|--|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE             |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE   | None  | 1 Asellidae                                  |
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE             |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Hydrobiidae<br>3 Physidae<br>4 Sphaeriidae |

NET LOSSES        NET GAINS   

NOTES

- 1 Asellus aquaticus
- 2 Potamopyrgus jenkinsi
- 3 Physa sp. (juvenile) 1 only
- 4 Pisidium sp.

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL  B. IN SAMPLE

LOSSES

GAINS

|   |  |                                |                                  |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | 1 Oligochaeta                    |

|   |  |   |                                  |
|---|--|---|----------------------------------|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 2 Planariidae                    |

NET LOSSES

NET GAINS

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION **North West**

RIVER **Sudell Brook**

SEASON **Autumn**

SITE **Frith Bridge**

SORTER **EMP**

SAMPLE CODE **NRA03 3q10**

AQC OF BMWP FAMILIES A. IN VIAL

B. IN SAMPLE

|   |  | LOSSES                         | GAINS                            |
|---|--|--------------------------------|----------------------------------|
| A | <u>VIAL</u>  | BMWP FAMILIES NOT FOUND BY IFE | ADDITIONAL FAMILIES FOUND BY IFE |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in VIAL by IFE | None                           | 1 Baetidae<br>2 Coenagriidae     |

|   |  |   |   |
|---|--|---|---|
| B | <u>SAMPLE</u>  | BMWP FAMILIES NOT FOUND BY IFE                              | ADDITIONAL FAMILIES FOUND BY IFE                                  |
|   | Differences between:<br>i) BMWP families listed on sample data sheet and<br>ii) BMWP families found in SAMPLE by IFE | (This box only completed when no vial supplied with sample) | 3 Planorbidae<br>4 Sphaeriidae<br>5 Dytiscidae<br>6 Hydrophilidae |

NET LOSSES

NET GAINS

NOTES

- 1 Indet Baetid (juvenile) 1 only
- 2 Ischnura elegans
- 3 Gyraulus albus
- 4 Pisidium sp.
- 5 Ilybius sp. (larva) 1 only
- 6 Indet Hydrophilid (larva) 1 only

