

EA SOUTH WEST Box 17

1097



1097
ENVIRONMENT
AGENCY

**WATER QUALITY SECTION
CORNWALL AREA**

FINAL DRAFT REPORT

**RIVER TAMAR
EC FRESHWATER FISH
DIRECTIVE FAILURE 1994**

**June 1996
COR/96/005
Author: Phil Luxton
Water Quality Officer**

**Rob Robinson
Area Manager**

40



ENVIRONMENT AGENCY

Information Services Unit

Please return or renew this item by the due date

Due Date

--

RIVER TAMAR EC FRESHWATER FISH DIRECTIVE FAILURE 1994

1. INTRODUCTION

1. Background

The River Tamar upstream of Buses Bridge (R12L001 prior to 1993) (R12L039 1993-April 1994) (R12L001 April 1994-1995) failed for total ammonia in 1994. Routine monitoring sites are shown in Fig 1 and ammonia levels are shown in Appendix 1. Historical data has shown sporadic elevated levels of ammonia at the Buses Bridge monitoring site however task forcing in the area did not identify any one point source.

1.2 Objectives

To determine the cause of the EC Freshwater Fish Directive failure in the River Tamar at the monitoring site R12L001/R12L039 and address the problem.

2. METHODS

- i) Initially a spot sampling programme was set up sampling at regular intervals from late February to mid April 1995.
- ii) Following site visits to the area and discussions with the Fresh Water Investigations Team and Senior Water Quality Officer the following steps were agreed.
- iii) Installation of a Water Quality Monitor to be linked to the Meteor Burst System. This was sited at Buses Bridge R12L001/R12L039 to monitor ammonia levels.
- iv) Carry out catchment inspection of local area taking in all agricultural land and sites.
- v) Respond to Water Quality Monitoring Alarm System.
- vi) Installation of further Water Quality Monitors to pinpoint source of ammonia.
- vii) Carry out spot checks within the area using Photometer readings especially following rainfall.
- viii) Carry out enforcement procedures to remedy problem once source had been identified.



3. RESULTS

Fig 1 Map showing -Routine Monitoring Site
-Monitoring sites (Date installed)
-Woodview Mink Farm Position

Fig 2 Plan showing Woodview Mink Farm detail (Not to scale)

Table 1 Photometer Readings

Figs 3,4,5 Buses Bridge Sept-Nov NH4 + Conductivity

Fig 6 Blatchborough Trib Nov NH4 + Conductivity

Figs 7,8,9, Youlstone Trib Nov-Mar NH4 + Conductivity

4. DISCUSSION

Following initial spot sampling programme and Catchment Inspection a Water Quality Monitor was installed at Buses Bridge. Simultaneous to this action Catchment Inspection found a discharge to be emanating from a site known as Woodview Mink Farm and entering a tributary of the River Tamar at Trentworthy Cross, Youlstone some 4.5 Km upstream of the monitoring point (R12L001/R12L039). On site readings and subsequent analysis of samples highlighted high ammonia content. Statutory samples were taken due to the discharge and a report submitted for instigation of legal action. By comparing the readings from the monitoring points on the Youlstone Tributary and the River Tamar at Buses Bridge the peaks of ammonium and conductivity can be seen to be related. The trend of the peaks indicate that Woodview Mink Farm is the principle source of ammonium causing non-compliance of the E.C. Freshwater Fish Directive at Buses Bridge. Following remedial action by the site owner, using water quality data and onsite photometer readings, it has been confirmed that the point source has been identified. Due to the nature of the site ie. Mink Farming, the discharge has been seasonal and at present animal stocking is low in comparison with the summer months. Remedial action by the owner is continuing along with onsite monitoring and water quality monitoring by the one monitor left installed on the Youlstone Tributary. As remedial action progresses it would appear that the peaks are becoming less frequent however in times of rainfall some discharges do occur. Once total remedial work has been completed it is envisaged that the site drainage will be on completely separate systems and therefore manageable. Whilst the Fresh Water Fish Directive has been breached the impact on the watercourse is thought to have been minimal due to the sporadic nature of the discharge, the nature of the pollutant ie. no high BOD content and the flow levels at time of discharge.

5. **CONCLUSIONS**

- i) Woodview Mink Farm has been identified as being the principle source of ammonium affecting sample point R12L001.
- ii) Ongoing remedial action is resulting in an improvement in Water Quality at R12001.
- iii) Extent of remedial action to be monitored to achieve best possible results.

6. **ACTIONS**

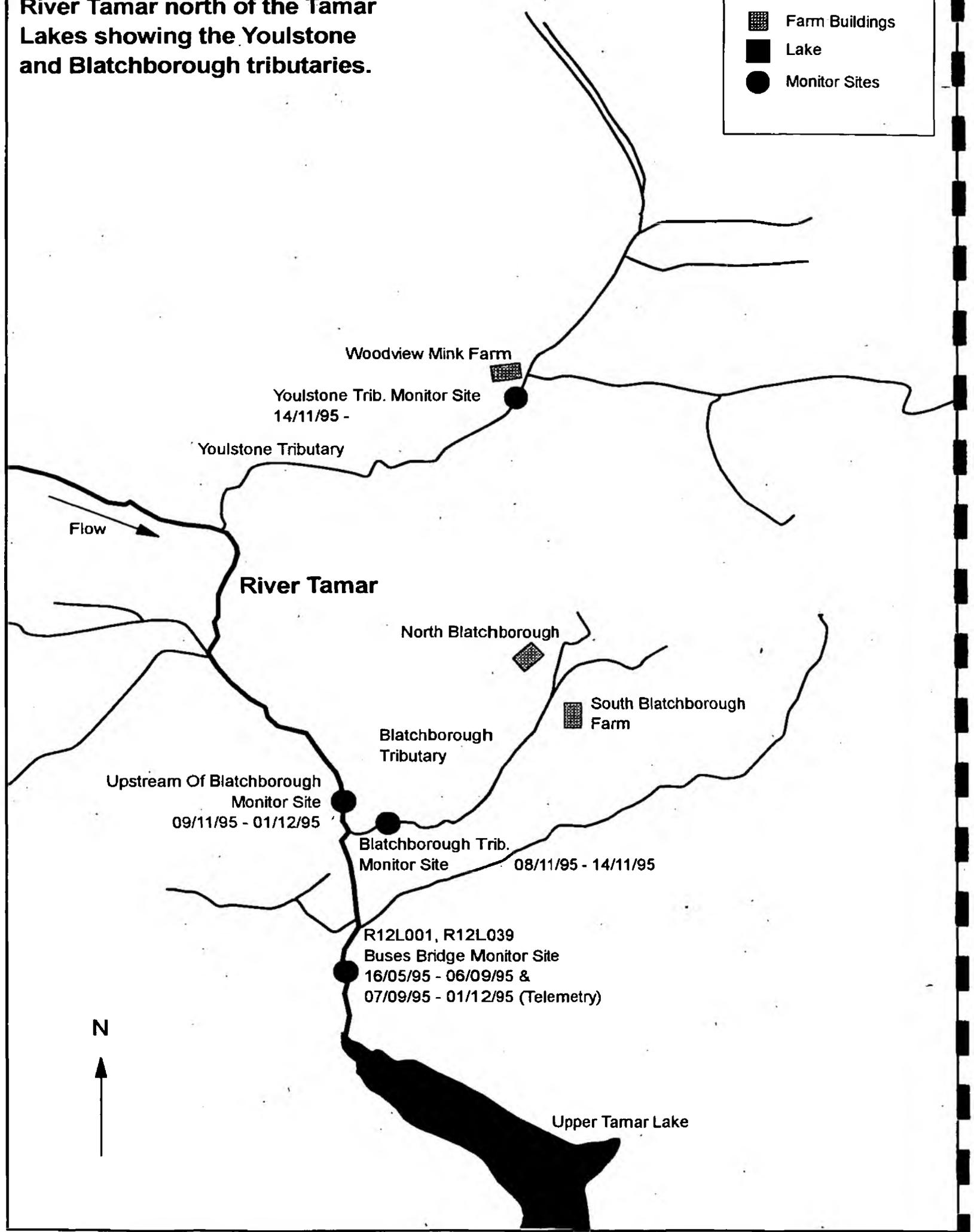
- i) Continued inspections of Woodview Mink Farm to ensure improvement works continue to satisfactory standard. -Water Quality.
- ii) Reinstall Water Quality monitors at Buses Bridge and Youlstone Trib during Autumn 96 to monitor improvements. -Investigations Team.
- iii) Continue onsite photometer readings during site inspections.
- iv) Continue close liaison with site owner with regard to improvement works and Water Quality data. -Water Quality.

Figure 1.

River Tamar north of the Tamar Lakes showing the Youlstone and Blatchborough tributaries.

KEY

-  Farm Buildings
-  Lake
-  Monitor Sites



WOODVIEW MINK FARM

Fig 2.

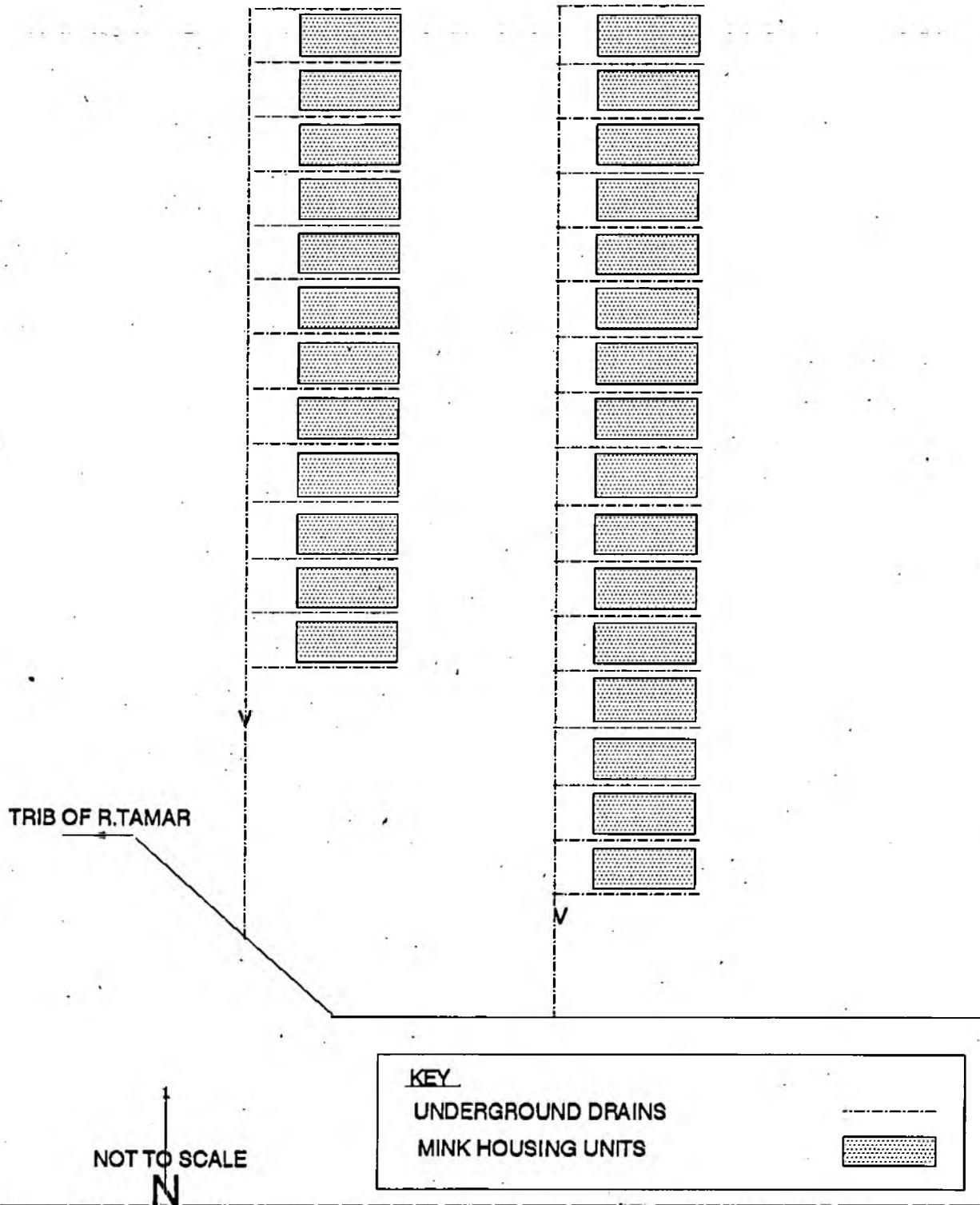


Table 1.

**BUSES BRIDGE-UPPER TAMAR.W.Q.MONITORING.
PHOTOMETER READINGS (INVESTIGATING OFFICER C.WILLIAMS)**

DATE	AMMONIA	PHOSPHATE	TEMP	D.O.	pH	WEATHER
22.2.95	0.01 mg/l	-	-	-	-	--
24.2.95	0.04 mg/l	4 mg/l	-	-	6.87	wet
28.2.95	0.00 mg/l	2 mg/l	-	-	6.90	dry
03.3.95	0.09 mg/l	4 mg/l	6.1	90%	6.49	showers
06.3.95	0.03 mg/l	4 mg/l	6.2	89%	6.97	dry
10.3.95	0.00 mg/l	3 mg/l	9.4	95%	7.18	dry
13.3.95	0.88 mg/l	3 mg/l	7.6	99%	7.02	dry
16.3.95	0.21 mg/l	5 mg/l	6.3	93%	7.18	showers
20.3.95	0.00 mg/l	2 mg/l	6.7	90%	7.18	dry
23.3.95	0.00 mg/l	1 mg/l	9.3	95%	7.23	dry
27.3.95	0.03 mg/l	1 mg/l	8.4	93%	7.2	dry
03.4.95	0.00 mg/l	2 mg/l	9.1	95%	7.37	dry
06.4.95	0.01 mg/l	0 mg/l	11.0	97%	-	dry
10.4.95	1.01 mg/l	4 mg/l	9.9	-	-	dry
13.4.95	0.00 mg/l	1 mg/l	-	-	-	dry

PHOTOMETER READINGS (INVESTIGATING OFFICER P.S.LUXTON.)

PHOTOMETER READINGS BUSES BRIDGE	
DATE	AMMONIA
25.9.95	0.07 mg/l
27.9.95	0.58 mg/l
17.10.95	0.08 mg/l
1.11.95	0.02 mg/l
24.11.95	-
5.12.95	0.00 mg/l

PHOTOMETER READINGS BELOW MINK FARM	
DATE	AMMONIA
25.9.95	8.30 mg/l
27.9.95	1.05 mg/l
17.10.95	3.00 mg/l
1.11.95	-
24.11.95	1.30 mg/l
5.12.95	0.00 mg/l
13.2.95	0.32 mg/l

(C) METEOR COMMUNICATIONS (EUROPE) LTD

SMALLBROOK

NH4(6)

COND(5)

1 MONTH

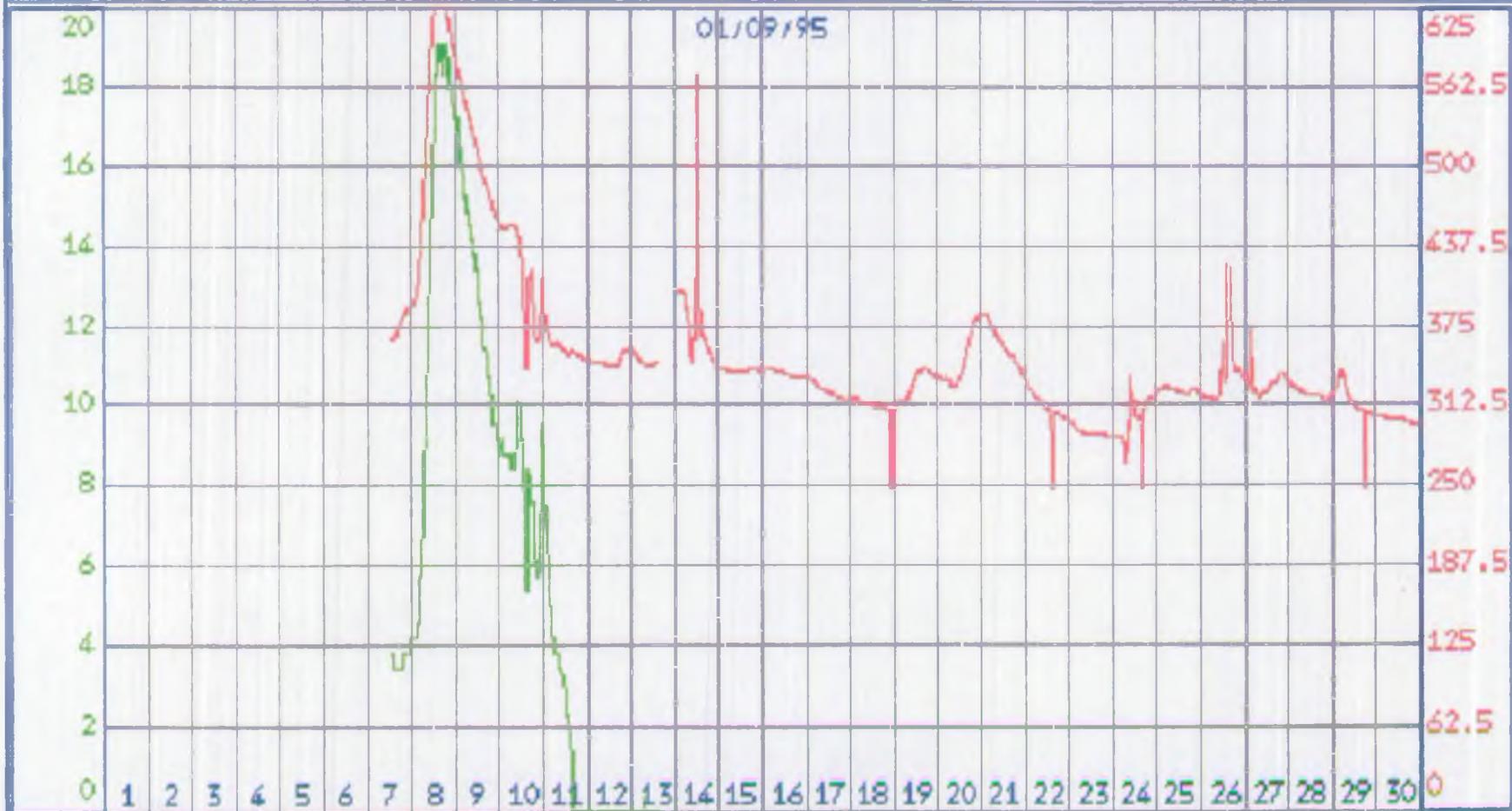


Fig 3. Ammonium(mg/l) & Conductivity(uS) - River Tamar at Buses Bridge 09/95.



(C) METEOR COMMUNICATIONS (EUROPE) LTD SMALLBROOK NH4(6) COND(5) 1 MONTH

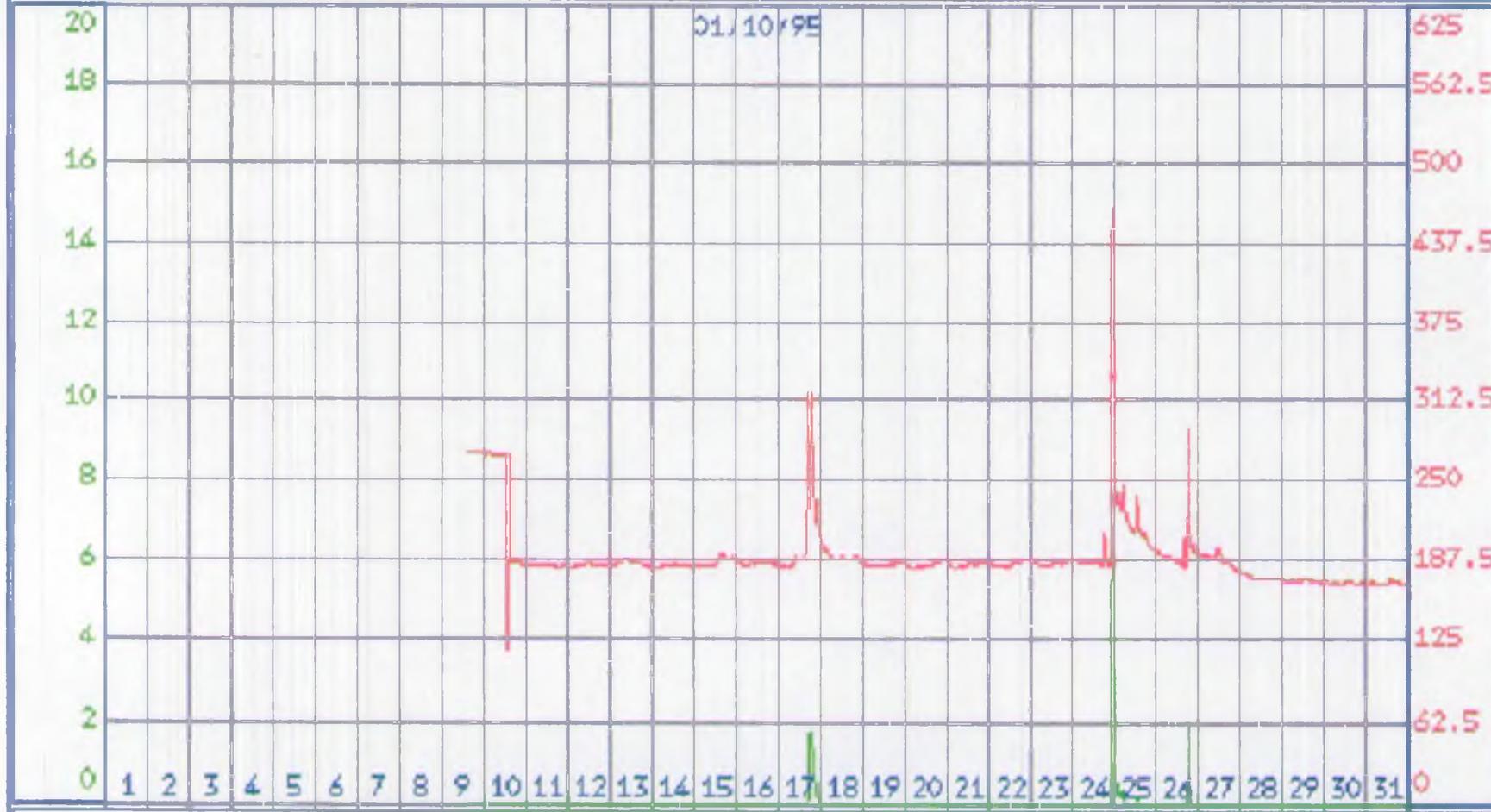


Fig 4. Ammonium(mg/l) & Conductivity(uS) - River Tamar at Buses Bridge 10/95.



(C) METEOR COMMUNICATIONS (EUROPE) LTD

SMALLBROOK NH4(6) COND(5) 1 MONTH

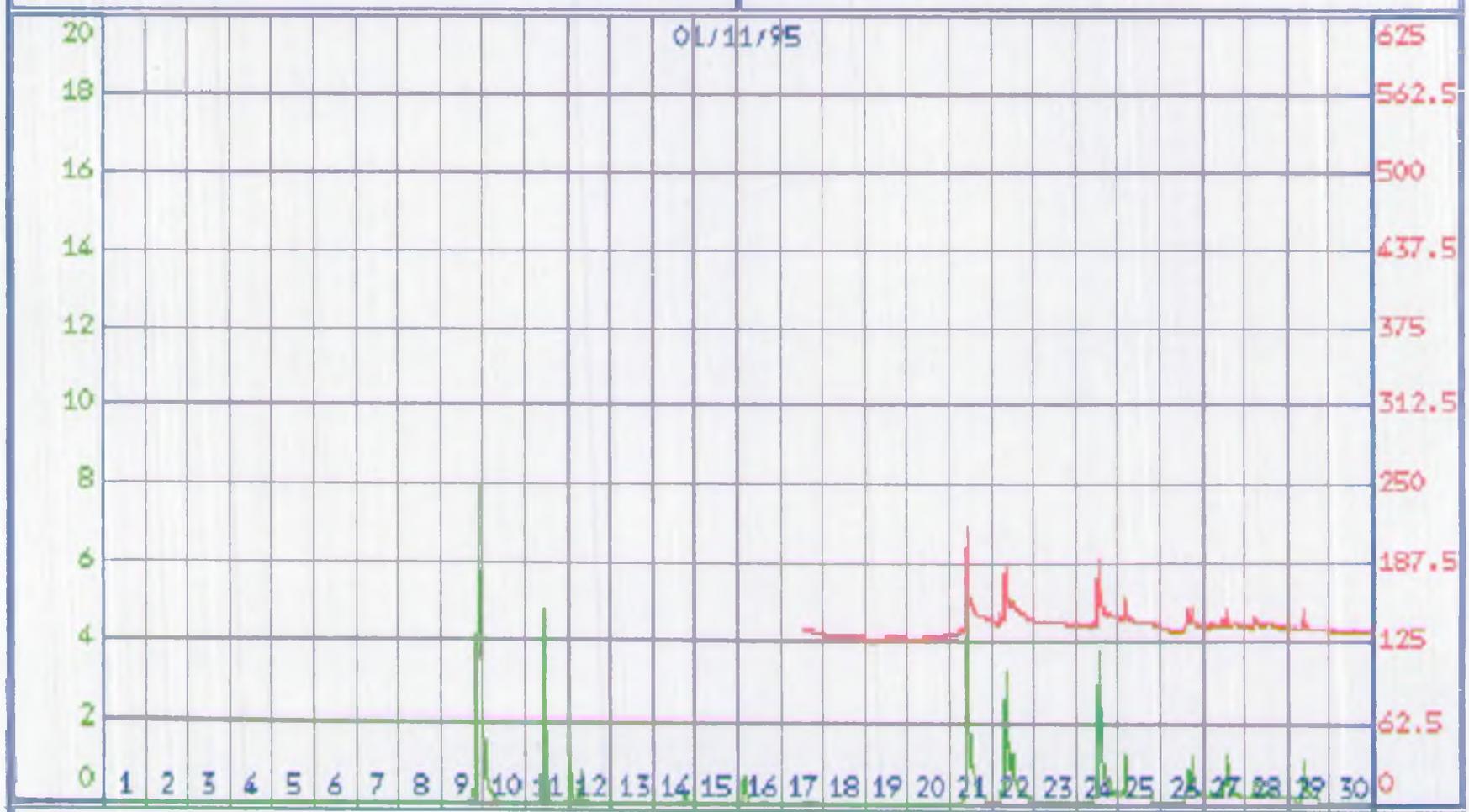
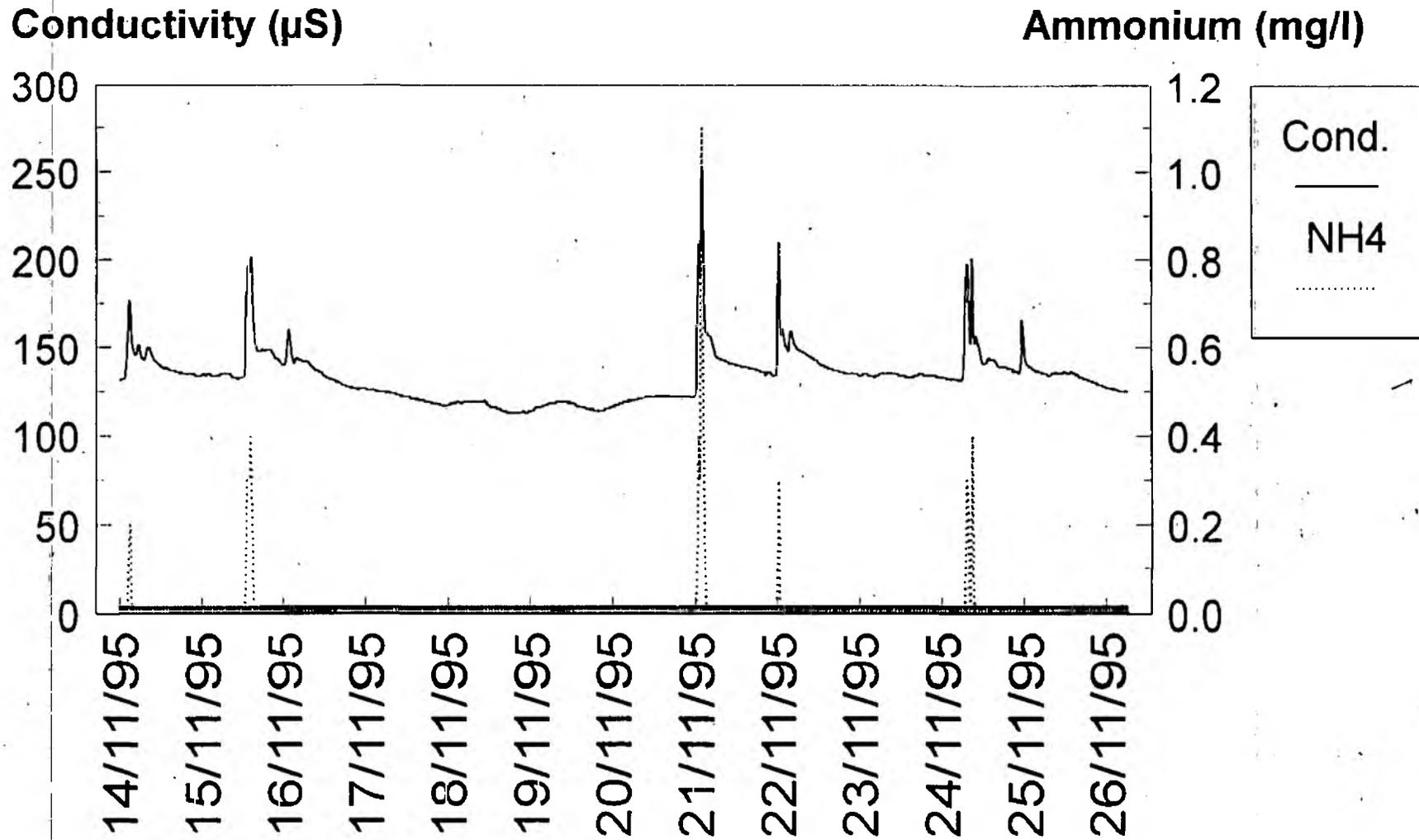


Fig 5. Ammonium(mg/l) & Conductivity(uS) - River Tamar at Buses Bridge 11/95



River Tamar upstream of Blatchborough Tributary - November 1995.



Youlstone Tributary - November 1995.

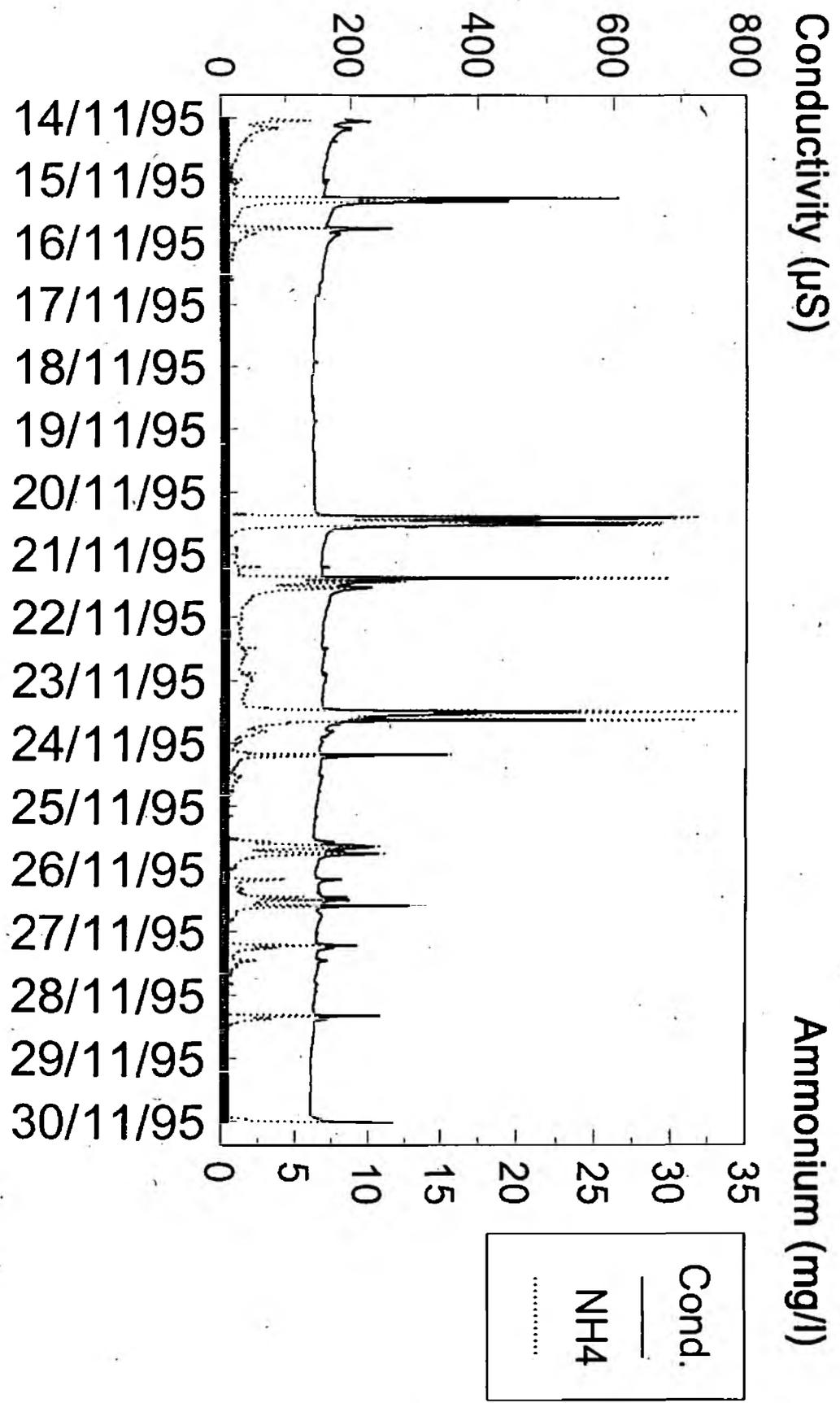
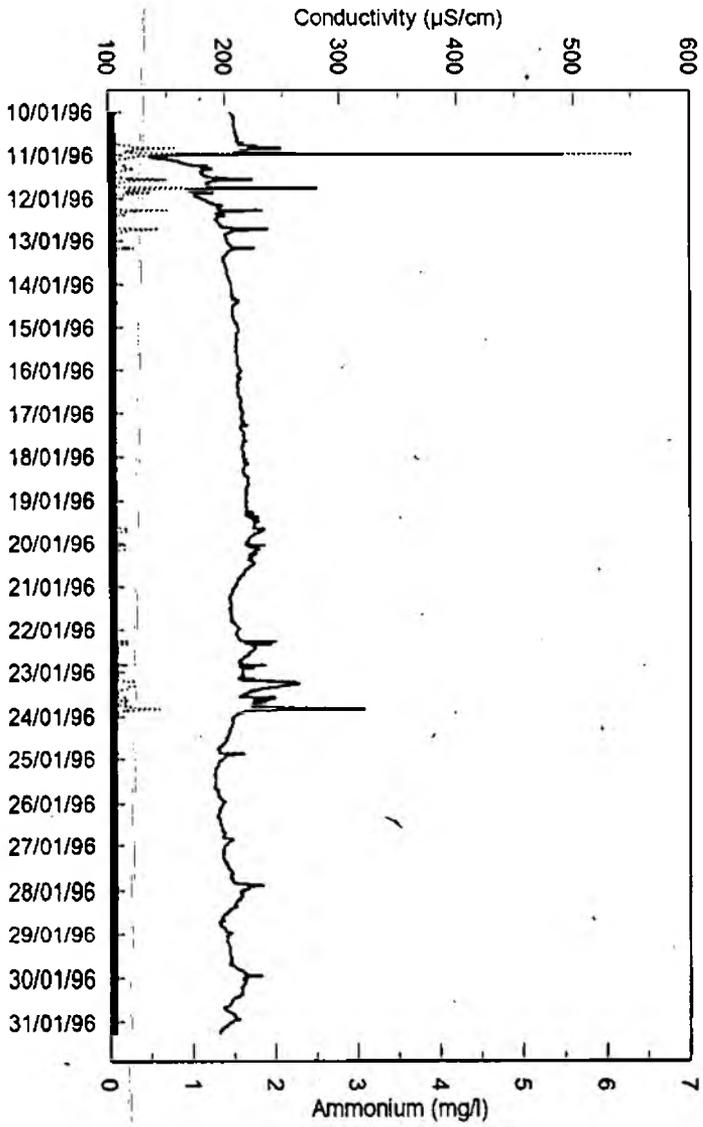


Fig 7

January 1996



Cond.
NH4

Youlstone Tributary - 12/95 & 01/96.

December 1995

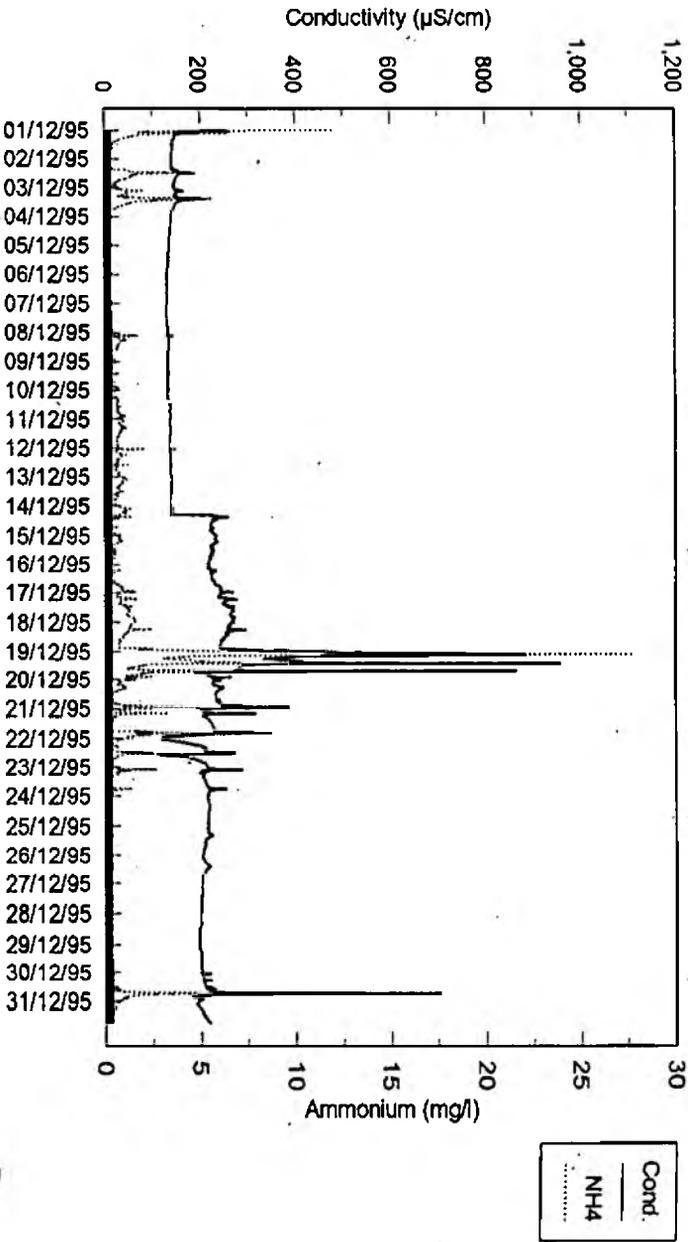
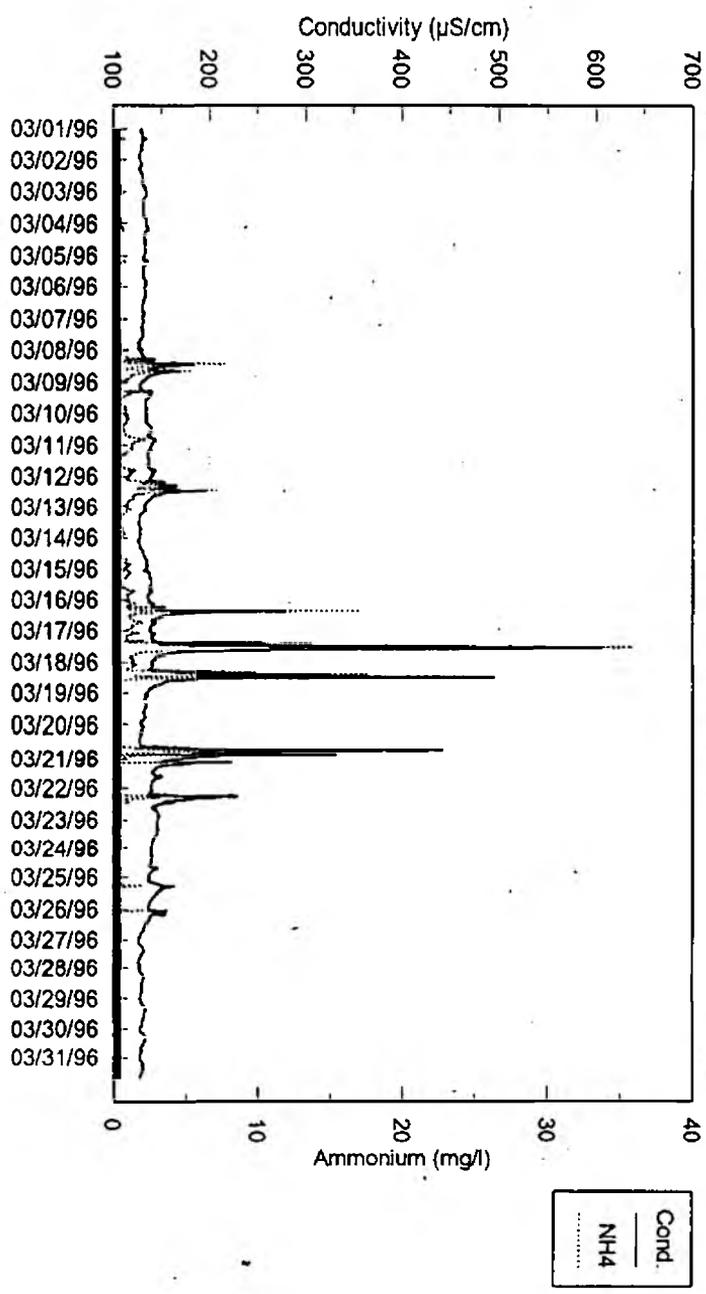


FIG. 8

March 1996



Youlstone Tributary - 01/96 & 02/96

February 1996

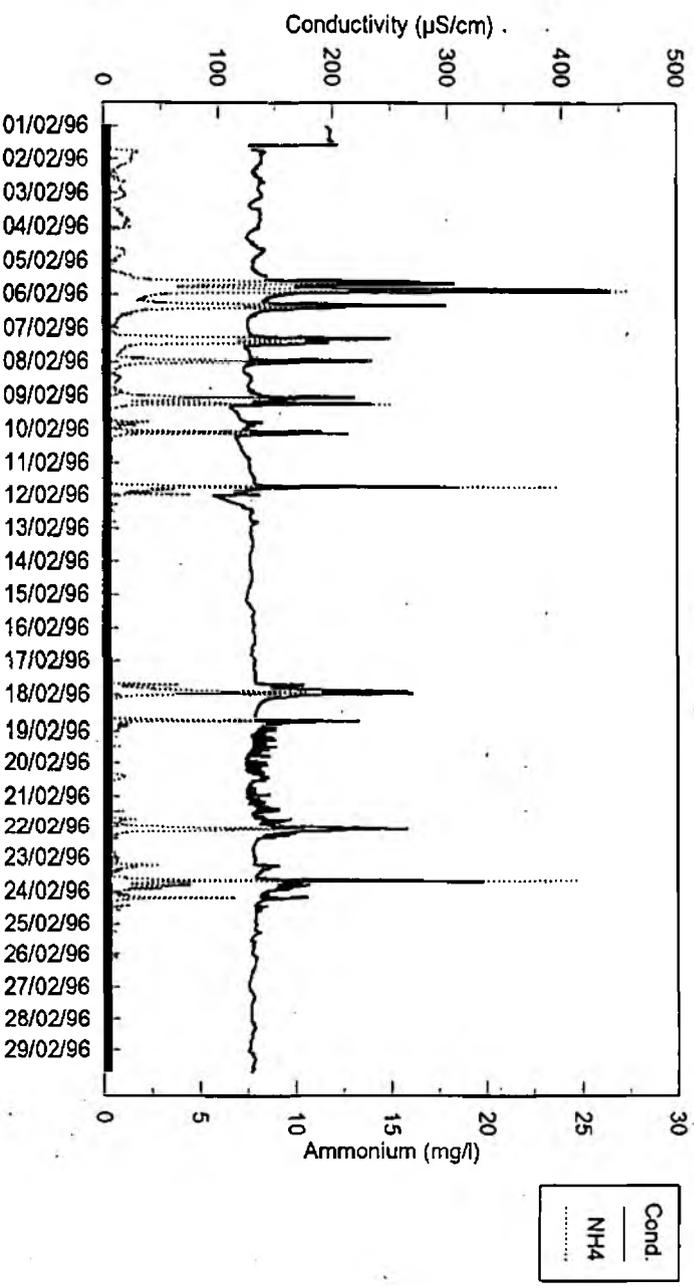


Fig 9