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**ENVIRONMENT PROTECTION SECTION
CORNWALL AREA**

FINAL DRAFT REPORT

**PESTICIDES MONITORING DATA
REPORT 1997 TO 1999**

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PESTICIDES MONITORING DATA REPORT 1997 TO 1999

1. INTRODUCTION

1.1 Background

Five river sites downstream of intensive bulb growing areas were monitored from April 1997 to March 1999. The aim was to provide background data on concentrations of pesticides, used in the bulb growing industry, at these sites. The sites were:

River Hayle at St Erth Gauging Station (82221813)
River Hayle at Godolphin Bridge (82221863)
Manaccan River at Manaccan Road Bridge (81913842)
Percuil River at Trethem Mill (81910560)
Varfell Stream upstream A30 Road Bridge (82111138)

2. METHODS

2.1 Monthly water samples were taken from April 1997 to March 1999. Samples were analysed for pesticides (Arg SP19) and for sanitary (Arg GQB1).

* Arg - Analytical Request Group.

3. RESULTS

3.1 A summary of the pesticide data is shown in Table 1.

3.2 Table 2 summarises the Environmental Quality Standards (EQS) and the Maximum Allowable Concentrations (MAC) for determinands in Arg's SP19 & GQB1.

3.3 Raw data for Arg's SP19 and GQB1 are shown in Appendices 1 to 5.

4. DISCUSSION

4.1 River Hayle at St Erth Gauging Station (82221813)

From the 24 samples collected and analysed for Arg SP19, pesticides were detected 6 times (SP19 contains 15 pesticide determinands). None of the detections exceeded EQS's or proposed EQS's. The detections are shown in the table below:

Date	Suspended Solids (mg/l)	HCH Gamma (ng/l)	Carbendazim (ng/l)	Vinclozolin (ng/l)	Diuron (ng/l)
EQS		100 ng/l as AA	1000 ng/l as AA		2000 ng/l as AA
MAC			10000 ng/l	1000 ng/l	20000 ng/l
STD		EC DS Directive	Proposed DETR EQS	EC DW Directive	Proposed DETR EQS
06/05/97	<3.00	14.000	-	-	-
15/01/98	10.80	*	-	-	193.000
12/01/99	15.20	-	62.000	-	160.000
01/03/99	11.40	-	-	57.400	84.000

- Not detected.

Data gathered from Arg GQB1 shows that The River Hayle at St. Erth Gauging Station meets the River Ecosystem (RE) Classification 1, 'Water of very good quality suitable for all fish species'.

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4.2 River Hayle at Godolphin Bridge (82221863)

From the 24 samples collected and analysed, only 3 samples contained Arg SP19 substances. None of the detections exceeded EQS's or proposed EQS's. The detections are shown in the table below:

Date	Suspended Solids (mg/l)	Dimethoate (ng/l)	Chloroprotham (ng/l)	Vinclozolin (ng/l)	Diuron (ng/l)
EQS		1000 ng/l as AA	10000 ng/l as AA	100 ng/l	2000 ng/l as AA
MAC			40000 ng/l as total conc.		20000 ng/l
STD		Proposed DETR EQS	Proposed DETR EQS	EC DW Directive	Proposed EA EQS
04/11/97	5.50	126.000	-	-	212.000
12/01/99	74.20	-	260.000	-	70.000
01/03/99	13.2	-	-	26.6	-

EQS's for the above substances are shown in Table 2.

Data gathered from Arg GQB1 shows that The River Hayle at Godolphin Bridge would meet the RE Classification 1 for the parameters analysed.

4.3 Manaccan River at Manaccan Road Bridge (81913842)

From the 22 samples collected and analysed, only 4 samples contained Arg SP19 substances. None of the detections exceeded EQS's or proposed EQS's. The detections are shown in the table below:

Date	Suspended Solids (mg/l)	Atrazine (ng/l)	HCH Gamma (ng/l)	Simazine (ng/l)	Diuron (ng/l)
EQS		2000 ng/l	1000 ng/l as AA	2000 ng/l	2000 ng/l as AA
MAC		10000 ng/l		10000 ng/l	20000 ng/l
STD		Proposed DETR EQS	EC DS Directive	Proposed DETR EQS	Proposed EA EQS
07/05/97	4.80	33.800	-	-	-
17/06/97	6.50	44.000	3.900	-	-
13/08/97	5.90	-	-	-	47.000
25/11/98	11.90	-	-	40.400	-

EQS's for the above substances are shown in Table 2.

Samples collected from April 1997 to March 1998 were not analysed for Arg GQB1. Samples analysed for Arg GQB1 after March 1998 showed that the Manaccan River at Manaccan Road Bridge would meet the RE Classification 1 for the parameters analysed.

4.4 Percuil River at Trethem Mill (81910560)

From the 22 samples collected and analysed, 8 samples contained Arg SP19 substances. None of the detections exceeded EQS's or proposed EQS's. The detections are shown in the table below:

Date	Sus. Solids (mg/l)	Dimetho-ate (ng/l)	Propetam-phos (ng/l)	Atrazine (ng/l)	Diazinon (ng/l)	HCH Gamma (ng/l)	Simazine (ng/l)	Vinclo-zolin (ng/l)	Diuron (ng/l)
EQS		1000 ng/l as AA	10 ng/l as AA	2000 ng/l	10 ng/l as AA	100 ng/l as AA	2000 ng/l		2000 ng/l as AA
MAC			100 ng/l	10000 ng/l	100 ng/l		10000 ng/l	100 ng/l	20000 ng/l
STD		Prop. DETR EQS	Prop. EA EQS	Prop. DETR EQS	Prop. EA EQS	EC DS Dir.	Prop. DETR EQS	EC DWQ Dir.	Prop. EA EQS
02/05/97	3.70	-	-	-	-	4.1700	-	-	-
19/06/97	7.00	-	-	-	-	-	123.000	-	-
04/07/97	-	-	-	52.700	-	-	-	-	-
03/09/97	59.70	-	-	-	-	-	-	-	55.000
16/06/98	<3.00	286.000	-	-	-	-	-	-	-
02/11/98	9.60	-	52.300	-	35.800	-	72.900	55.500	-

EQS's for the above substances are shown in Table 2.

Data gathered from Arg GQB1 shows that the Percuil River at Trethem Mill would meet the RE Classification 1 for the parameters analysed.

4.5 Varfell Stream at Longbrook Bypass (82111138)

From the 22 samples collected, 4 contained Arg SP19 substances. One sample collected on 06/05/97 contained 537.0 ng/l of Chlorfenvinphos which exceeds the proposed DETR maximum allowable concentrations of 100 ng/l. This was the only occasion this substance was detected. Chlorfenvinphos is an insecticide and acaricide, which is used in both soil and foliar applications and as an animal ectoparasiticide.

The table below summarises the Arg SP19 detections:

Date	Suspended Solids (mg/l)	Propetamphos (ng/l)	Chlorfenvinphos (ng/l)	Diazinon (ng/l)	Carbendazim (ng/l)
EQS		10 ng/l as AA	10 ng/l as AA	10 ng/l as AA	1000 ng/l as AA
MAC		100 ng/l	100 ng/l	100 ng/l	10000 ng/l
STD		Proposed EA EQS	Proposed EA EQS	Proposed EA EQS	Proposed DETR EQS
06/05/97	<3.00	-	537.000	-	-
08/06/98	19.40	-	-	-	2400.000
02/10/98	5.10	14.900	-	27.700	-
01/03/99	11.9	-	-	-	64.000

EQS's for the above substances are shown in Table 2.

None of the other substances detected in Arg SP19 in the Varfell Stream exceeded their proposed DETR EQS's.

No samples collected from this site were analysed for Arg GQB1 (sanitary).

5. SUMMARY

5.1 From the 112 samples collected from the five sites and analysed for Arg SP19 only 1 sample contained an Arg SP19 substance which exceeded a proposed Environment Agency EQS.

5.2 Arg GQB1 data collected from 4 sites showed that they all either meet or would meet the RE Classification of 1 for the parameters analysed.

6. CONCLUSIONS

- 6.1 Of the 1680 determinands (112 samples x 15 determinands) analysed only 1 Proposed EQS exceedance was detected. Assessing these results in context of where samples were obtained (in what must be considered high-risk areas) the levels / exceedances recorded is low.

7. RECOMMENDATIONS

- 7.1 Collect sediment samples from the five sites monitored and analyse them for SP19 substances to identify potential accumulation of pesticides in sediments.

Action: Team Leader Environmental Protection Investigations

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Table 1
Summary of Results April 1997 to March 1999

	River Hawke at St Erth C.S.	River Hawke at Godolphin Bridge	Manaccra River at Manaccra Rd Bridge	Varfell Stream at Loubrook Bypass	Percuil River at Tretbem Mill
	82221813	82221861	81913841	82111138	81910564
	Max. Concentrations Found	Max. Concentrations Found	Max. Concentrations Found	Max. Concentrations Found	Max. Concentrations Found
Carbofuran (ug/l)	No detections	No detections	No detections	No detections	No detections
Dimethoate (ug/l)	No detections	126.000 (1 detection)	No detections	No detections	286.000 (1 detection)
EQS MAC STD 1000 ug/l as AA Proposed DoE EQS					
Propetamphos (ug/l)	No detections	No detections	No detections	14.900 (1 detection)	52.300 (1 detection)
EQS MAC STD 10 ug/l as AA Proposed DoE EQS					
Chlorpropham (ug/l)	No detections	260.0 (1 detection)	No detections	No detections	No detections
EQS MAC STD 10000 ug/l as AA 40000 ug/l total conc. Proposed DoE EQS					
Linuron (ug/l)	No detections	No detections	No detections	No detections	No detections
EQS MAC STD 2000 ug/l as AA 20000 ug/l Proposed DoE EQS					
Feothion (ug/l)	No detections	No detections	No detections	No detections	No detections
EQS MAC STD 10 ug/l as AA 250 ug/l Proposed DoE EQS					
Atrazine (ug/l)	No detections	No detections	44.000 (2 detections)	No detections	52.700 (1 detection)
EQS MAC STD 2000 ug/l 10000 ug/l Proposed DoE EQS					
Chlorpyrifos (ug/l)	No detections	No detections	No detections	No detections	No detections
Chlorfenvinphos (ug/l)	No detections	No detections	No detections	537.000 (1 detection)	No detections
EQS MAC STD 10 ug/l as AA 100 ug/l Proposed DoE EQS					
Diazinon (ug/l)	No detections	No detections	No detections	27.700 (1 detection)	35.800 (1 detection)
EQS MAC STD 10 ug/l as AA 100 ug/l Proposed DoE EQS					
HCH Gamma (ug/l)	14.000 (1 detection)	No detections	3.900 (1 detection)	No detections	4.170 (1 detection)
EQS STD 100 ug/l as AA EC DS Directive					
Simazine (ug/l)	No detections	No detections	40.400 (1 detection)	No detections	123.000 (3 detections)
EQS MAC STD 2000 ug/l 10000 ug/l Proposed DoE EQS					
Carbendazim (ug/l)	62.000 (1 detection)	No detections	No detections	2400.000 (2 detections)	No detections
EQS MAC STD 1000 ug/l as AA 10000 ug/l Proposed DoE EQS					
Vinclozolin (ug/l)	57.400 (1 detection)	26.600 (1 detection)	No detections	No detections	55.500 (1 detection)
EQS MAC STD 1000 ug/l EC Drinking Water Directive					
Diuron (ug/l)	193.000 (3 detections)	212.000 (2 detections)	47.000 (1 detection)	No detections	55.000 (1 detection)
EQS MAC STD 2000 ug/l as AA 20000 ug/l Proposed DoE EQS					

24 Samples in Total

25 Samples in Total

22 Samples in Total

22 Samples in Total

22 Samples in Total

EQS Environmental Quality Standard
MAC Maximum allowable concentration
AA Annual Average
STD Standard

Table 2

EQSs FOR SUBSTANCES IN ARGs SP19 & GOB1

Codes : AA = annual average, MAC = maximum allowable concentration, EQS = environmental quality standard.
Source : EQUALS database

ARG	DET CODE	SUBSTANCE	STANDARD	EOS	MAC	COMMENTS
SP19	3086	Carbofuran				Only standard under WHO Drinking Water regulations. Not applicable.
	3087	Dimethoate	Proposed DoE EQS	1.0 µg/l as AA		Same for freshwater & saltwater.
	3107	Propetamphos	Proposed EA EQS	10 ng/l as AA	100 ng/l	Standards tentative due to possible inadequacies with current standard analytical techniques.
	3113	Chlorpropham	Proposed DoE EQS	10 µg/l as AA	40 µg/l total conc	AA standard tentative but will be reviewed as more reliable data becomes available. Same standards as a guideline for saltwater.
	3118	Linuron	Proposed EA EQS	2 µg/l as AA	20 µg/l	Same standards for saltwater. Same standards proposed for 'total urons' as urons have the potential to exert an additive toxic effect when present together. 'Total urons' = diuron + linuron + chlorotoluron + isoproturon.
	3233	Fenthion	Proposed DoE EQS	0.01 µg/l as AA	0.25 µg/l	
	3277	Atrazine	Proposed DoE EQS	2.0 µg/l	10 µg/l	Standards expressed as combined simazine & atrazine (dissolved conc & AA) as the two herbicides have similar toxicities and are expected to have additive toxic effects. This EQS is presently under public consultation.
	3286	Chlopyrifos				Only standard under protection of air quality so not relevant.
	3289	Chlorfenvinphos	Proposed EA EQS	10 ng/l as AA	100 ng/l	Tentative standards.
	3298	Diazinon	Proposed EA EQS	10 ng/l as AA	100 ng/l	Saltwater AA = 15 ng/l MAC = 150 ng/l but tentative as limited data available.
	3313	HCH-Gamma	EC DS Directive	0.1 µg/l AA		Total conc
	3327	Simazine	Proposed DoE EQS	2.0 µg/l	10 µg/l	Standards expressed as combined simazine & atrazine (dissolved conc & AA) as the two herbicides have similar toxicities and are expected to have additive toxic effects. This EQS is presently under public consultation.
	3475	Carbendazim	Proposed DoE EQS	1 µg/l as AA	10 µg/l	Currently under discussion. Only draft values. MAC tentative. Same values for saltwater.
	3701	Vinclozolin	EC Drinking Water Quality Directive		0.1 µg/l	
	3811	Diuron	Proposed EA EQS	2 µg/l as AA	20 µg/l	Same standards for saltwater. Same standards proposed for 'total urons' as urons have the potential to exert an additive toxic effect when present together. 'Total urons' = diuron + linuron + chlorotoluron + isoproturon. Lack of reliable toxicity data for saltwater. AA for saltwater = 2 µg/l based on freshwater EOS but no MAC as data too
GOB1	61	pH	UK National EQS	6 to 9		As total conc and 95 percentile.
	82	DO mg/l	Proposed EA EQS	5 mg/l for sensitive life (eg. Salmonids), 2 mg/l for less-sensitive life (eg. Cyprinids)		As 95 percentile. Median (50 percentiles) recommended salmonids = 9 mg/l, cyprinids 5 mg/l).
	85	BOD5	EC FWF Dir	3.0 mg/l for salmonids, 6 mg/l for cyprinids		As 95 percentiles. Guideline values only and only apply at fisheries stretches designated under the Directive.
	111	Ammonia	Proposed DoE EQS	15 µg N/l as AA		Expressed as unionized ammonia.
			EC FWF Dir	21 µg N/l (mandatory)		Guideline value 4 µg N/l. Both as 95 percentiles of total conc of unionized ammonia.
	117	Nitrate	Proposed EA EQS	250 mg/l as AA		
	118	Nitrite	EC FWF Dir	0.003 mg N/l for salmonids, 0.009 mg N/l for		Guideline values only. Total conc. 95 percentiles
	135	Suspended solids	EC FWF Dir	25 mg/l as AA		Guideline value only. Total conc (unfiltered).

APPENDIX 2

River Hayle at Godolphin Bridge (82221863)

EOS MAC STD Date	Carbofuran (µg/l) 1000 µg/l as AA Proposed DoE EOS	Dimethoate µg/l 10 µg/l as AA Proposed DoE EOS	Propetamphos µg/l 10 µg/l as AA 100 µg/l Proposed DoE EOS	Chloropropram µg/l 10 µg/l as AA 40 µg/l total conc. Proposed DoE EOS	Limonon µg/l 2 µg/l as AA 70 µg/l Proposed DoE EOS	Fenthion µg/l 10 µg/l as AA 150 µg/l Proposed DoE EOS	Atrazine µg/l 2000 µg/l 10000 µg/l Proposed DoE EOS
02/04/97	< 0.0600	< 23.1000		< 0.0400	< 0.0400	< 10.5000	
06/05/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
10/06/97	< 0.0600	< 23.5000	< 5.2900	< 0.0400	< 0.0400	< 10.7000	< 31.7000
16/07/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.6000	< 30.0000
29/08/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
19/09/97	< 0.0600	< 24.4000	< 5.0000	< 0.0400	< 0.0400	< 11.1000	< 30.0000
06/10/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
04/11/97	< 0.0600	126.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
27/11/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
15/01/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
05/02/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
02/03/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
08/04/98	< 0.0600	< 23.5000	< 5.6300	< 0.0400	< 0.0400	< 10.7000	< 33.8000
06/05/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
08/06/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
14/07/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
07/08/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
04/09/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
02/10/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
04/11/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
26/11/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
12/01/99	< 0.0600	< 154.0000	< 5.0000	0.2600	< 0.0400	< 10.0000	< 30.0000
02/02/99	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
01/03/99	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000

River Hayle at Godolphin Bridge (82221863)

Date	pH	Temp (°C)	DO (% sat)	DO (mg/l)	BOD (mg/l)	NH4 (mg/l)	T.O.N
02/04/97	7.0500	12.0000	99.5000	10.6800	< 1.0000	< 0.0300	6.4000
06/05/97	7.3500	10.8000	101.5000	11.2000	< 1.0000	< 0.0300	5.3000
10/06/97	7.3500	13.7000	107.5000	11.1100	< 1.0000	< 0.0300	4.3000
16/07/97	7.2500	14.4000	100.3000	10.2000	< 1.0000	< 0.0300	4.1000
29/08/97	7.2000	13.7000	93.3000	9.6400	< 1.0000	< 0.0300	5.2200
19/09/97	6.9500	14.2000	88.2000	9.0100	< 1.0000	0.0350	6.1200
06/10/97	7.2000	14.1000	91.2000	9.3400	< 1.0000	< 0.0300	5.5900
04/11/97	7.0000	12.8000	85.1000	8.9700	1.3000	0.1000	8.5500
27/11/97	7.0500	11.9000	91.4000	9.8300	< 1.0000	0.0360	8.0100
15/01/98	6.9500	10.7000	90.8000	10.0500	< 1.0000	0.1010	7.9800
05/02/98	6.8300	8.5000	101.0000	11.7900	< 1.0000	< 0.0300	7.7500
02/03/98	6.9500	11.2000	100.0000	10.9300	< 1.0000	< 0.0300	6.6900
08/04/98	6.9500	10.5000	100.0000	11.1200	< 1.0000	< 0.0300	6.2600
06/05/98	6.9500	12.3000	96.0000	10.2300	< 1.0000	< 0.0300	7.5300
08/06/98	6.9000	13.2000	95.0000	9.9200	< 1.0000	< 0.0300	5.9600
14/07/98	7.0000	13.6000	99.0000	10.2500	< 1.0000	< 0.0300	3.2700
07/08/98	7.0000	14.3000	100.0000	10.2000	< 1.0000	< 0.0300	5.1200
04/09/98	7.0000	13.8000	89.0000	9.1700	< 1.0000	< 0.0300	4.8400
02/10/98	7.3000	13.7000	102.0000	10.5400	< 1.0000	< 0.0300	4.4900
04/11/98	7.0500	10.9000	91.0000	10.0.00	< 1.0000	< 0.0300	6.6500
26/11/98	6.9000	11.5000	91.0000	9.8800	< 1.0000	0.0370	7.9300
12/01/99	7.0000	9.5000	93.0000	10.5900	1.7000	0.2100	6.7700
02/02/99	6.7000	10.1000	92.0000	10.3300	1.7000	< 0.0300	7.7700
01/03/99	6.9000	10.6000	93.0000	10.3100	1.2000	0.0410	6.3000

AA Annual Average
MAC Maximum Allowable Concentration
EOS Environmental Quality Standard

APPENDIX 3

Manacac River at Manacac Road Bridge (81913842)

EQS MAC STD Date	Carbofuran µg/l	Dimethoate ng/l 1000 ng/l as AA	Propetamphos ng/l 10 ng/l as AA	Chlorpropham µg/l 10 µg/l as AA 40 µg/l total conc.	Linuron µg/l 2 µg/l as AA 20 µg/l	Fenthion ng/l 10 ng/l as AA 250 ng/l	Atrazine ng/l 2000 ng/l 10000 ng/l	Proposed DoE EQS	Proposed DoE EQS	Proposed DoE EQS	Proposed DoE EQS	Proposed DoE EQS	Proposed DoE EQS
10/04/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
07/05/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	33.8000	<	<	<	<	<	
17/06/97	< 0.0600	< 22.0000	< 5.3200	< 0.0400	< 0.0400	< 10.0000	44.0000	<	<	<	<	<	
14/07/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
05/08/97													
13/08/97	< 0.0600	< 21.3000		< 0.0400	< 0.0400	< 10.6000	<	<	<	<	<	<	
01/09/97		< 22.0000				< 10.0000	<	<	<	<	<	<	
22/10/97	< 0.0600	< 22.0000	< 5.3600	< 0.0400	< 0.0400	< 10.0000	< 31.2000	<	<	<	<	<	
12/11/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
28/11/97	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
01/04/98	< 0.0600	< 24.7000	< 5.0000	< 0.0400	< 0.0400	< 11.0000	< 30.0000	<	<	<	<	<	
12/05/98		< 5.0000				< 10.0000	< 30.0000	<	<	<	<	<	
10/06/98	< 0.0600	< 21.0000	< 5.6000	< 0.0400	< 0.0400	< 10.0000	< 31.7000	<	<	<	<	<	
17/07/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
06/08/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
18/09/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
05/10/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
06/11/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
23/11/98	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
15/01/99	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
11/02/99	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	
11/03/99	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000	<	<	<	<	<	

Manacac River at Manacac Road Bridge (81913842)

Date	pH	Temp (°C)	DO (% sat)	DO (mg/l)	BOD (mg/l)	NH4 (mg/l)	T O N (mg/l)
10/04/97							
07/05/97							
17/06/97							
14/07/97							
13/08/97							
01/09/97							
22/10/97							
12/11/97							
28/11/97							
03/04/98	8.0500	10.1000	97.5000	10.9400	1.8000	0.1160	5.6000
12/05/98	8.2000	13.4000	100.0000	10.4000	< 1.0000	< 0.0300	8.6400
10/06/98	8.1000	13.5000	95.0000	9.8600	1.6000	0.0410	5.9100
17/07/98	8.1000	14.8000	95.0000	9.5800	1.2000	0.0380	5.8800
06/08/98	8.1500	13.2000	100.0000	10.4300	1.2000	< 0.0300	8.0100
18/09/98	8.2000	14.9000	92.0000	9.2600	< 1.0000	0.0310	7.2100
05/10/98	8.1500	11.3000	96.0000	10.4700	1.3000	0.0300	7.0200
06/11/98	7.9500	10.1000	97.0000	10.8900	1.6000	0.0350	7.9800
23/11/98	7.9500	9.0000	97.0000	11.1800	1.3000	0.0360	7.8500
15/01/99	8.0000	9.4000	97.0000	11.0700	1.1000	0.0720	8.2800
11/02/99	8.0500	8.9000	98.0000	11.9100	1.5000	0.0480	8.4400
11/03/99	7.9500	8.7000	98.0000	11.3800	1.3000	0.0520	8.6600

AA Annual Average
 MAC Maximum Allowable Concentration
 EQS Environmental Quality Standard

Propyrinofos ng/l	Chlorpyrifos 10 ng/l as AA 100 ng/l	Diazinon ng/l 10 ng/l as AA 100 ng/l	HCH Gamma ng/l 100 ng/l as AA	Simazine ng/l 2000 ng/l 10000 ng/l	Carbendazim ng/l 1 ng/l as AA 10 ng/l	Vincetozin ng/l 0.1 ng/l	Duron ng/l 2 ng/l as AA 20 ng/l
	Proposed DoE EQS	Proposed DoE EQS	EC DS Directive	Proposed DoE EQS	Proposed DoE EQS	EC Drinking Water Dr.	Proposed DoE EQS
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 7 0000	< 0 0400	
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 21.3000	< 6 3800	3 9000	< 31.9000	< 0 9000		< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 6000	< 20 0000	< 6 0000	< 2.7000		< 0 9000	< 7 0000	
10 0000			< 2.9000		< 0 9000	< 7 4000	0 0470
10 0000					< 0 9000		
10 0000	< 21 4000	< 6 4300	< 2.7000	< 32.2000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.9000	< 30 0000	< 0 9000	< 7.3000	< 0 0400
11 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	
10 0000	< 22 5000	< 6 8000	< 2.7000	< 33 7000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 9000	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 0200	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.6000	< 30 0000	< 0 0200	< 6 6000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 0200	< 7 0000	< 0 0400
10 0000	< 20 0000	< 6 0000	< 2.7000	< 30 0000	< 0 0700	< 7 0000	< 0 0400

Nitrate (mg/l)	Nitrite (mg/l)	Ammonia non-ionised (mg/l)	Suspended Solids (mg/l)	Alkalinity (mg/l)	Ortho Phosphate (ug/l)	Nitrogen (mg/l)
			< 3 0000			
			4 8000			
			6 5000			
			3 0000			
			5 9000			
			7 1000			
			26 0000			
			7 7000			
			41 4000			
5 5668	0 0332	0 0024	13 0000	88 0000	0 0410	5 7200
8 6277	0 0123	0 0011	7 0000	100 0000	0 0310	8 6700
5 8760	0 0340	0 0012	9 2000	98 0000	0 0420	5 9500
5 8600	0 0201	0 0010	5 7000	104 0000	0 0570	5 9200
8 0000	0 0090	< 0 0007	3 2000	117 0000	0 0430	8 0400
7 2000	0 0071	0 0008	3 1000	118 0000	0 0510	7 2400
7 0100	0 0089	< 0 0006	3 4000	112 0000	0 0500	7 0500
7 9600	0 0173	0 0006	5 3000	84 0000	0 0350	8 0200
7 8400	0 0133	0 0003	11 9000	71 0000	0 0290	7 8900
8 2800	0 0210	0 0013	24 2000	83 0000	0 0410	8 3500
8 4200	0 0159	0 0007	8 6000	85 0000	0 0310	8 4900
8 6400	0 0164	0 0008	6 4000	95 0000	0 0240	8 7100

APPENDIX 4

Perculi River at Trethem Mill (81910560)

Parameter	Concentration (mg/l)	Standard	Parameter	Concentration (mg/l)	Standard	Parameter	Concentration (mg/l)	Standard	Parameter	Concentration (mg/l)	Standard	Parameter	Concentration (mg/l)	Standard	Parameter	Concentration (mg/l)	Standard
Carbonate (as Ca)	1000	1000	Propertinopsid	10	10	Chlorophyllin	10	10	Diazene	10	10	Chloroform	10	10	Diuron	10	10
EOS	< 0.000	< 22.000	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
MAC	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
STD	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
Dir	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
07-Apr-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
02-May-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
19-Jun-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
01-Jul-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
18-Aug-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
01-Sep-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
01-Oct-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
06-Nov-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
01-Dec-97	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
15-Jan-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
21-Mar-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
16-May-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
16-Aug-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
16-Sep-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
18-Oct-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
07-Nov-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
26-Nov-98	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
26-Jan-99	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
26-Feb-99	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040
26-Mar-99	< 0.000	< 33.200	Propertinopsid	< 5.000	< 5.000	Chlorophyllin	< 0.040	< 0.040	Diuron	< 0.040	< 0.040	Chloroform	< 0.000	< 0.000	Diuron	< 0.040	< 0.040

Perculi River at Trethem Mill (81910560)

Date	pH	Temp (°C)	D.O (% sat)	D.O (mg/l)	BOB (mg/l)	NHA (mg/l)	TON (mg/l)	Nitrate (mg/l)	Nitrite (mg/l)	NH3 (mg/l)	Suspended Solids (mg/l)	Alkalinity (mg/l)	Ortho Phosphate (mg/l)	Nitrogen (mg/l)
7-Apr-97	8.030	9.500	96.000	10.930	1.200	< 0.030	8.200	8.190	0.000	0.000	4.700	71.000	< 0.010	8.230
2-May-97	8.030	11.900	91.000	10.930	1.200	< 0.030	7.500	7.480	0.010	0.007	3.700	60.000	< 0.010	7.330
19-Jun-97	8.000	13.500	85.000	9.960	4.800	0.040	7.100	7.080	0.010	0.016	6.700	76.000	0.030	7.140
18-Jul-97	8.000	14.800	84.000	9.410	2.800	0.040	7.100	7.080	0.010	0.016	6.700	76.000	0.030	7.140
1-Aug-97	7.910	15.000	85.000	9.460	1.000	0.040	6.500	6.480	0.030	0.005	5.900	87.000	0.030	6.540
3-Sep-97	7.910	15.000	85.000	9.820	2.300	0.030	5.490	5.470	0.010	0.005	5.900	87.000	0.030	5.520
3-Oct-97	8.050	13.700	92.000	9.200	1.800	0.030	4.190	4.180	< 0.000	0.002	3.400	69.000	< 0.000	4.260
6-Nov-97	7.800	10.400	95.000	10.800	< 1.000	0.030	6.370	6.360	0.010	0.004	21.200	83.000	< 0.000	6.580
1-Dec-97	7.800	10.400	95.000	10.800	< 1.000	0.030	6.370	6.360	0.010	0.004	21.200	83.000	< 0.000	6.580
15-Apr-98	7.900	5.900	94.000	11.700	1.400	< 0.030	9.480	9.470	0.020	0.005	10.600	62.000	0.010	9.480
21-May-98	7.900	13.100	98.000	10.350	1.400	< 0.030	6.510	6.500	0.007	0.003	10.600	62.000	0.010	6.560
16-Jun-98	8.000	14.300	92.000	9.480	1.000	< 0.030	6.510	6.500	0.008	0.006	4.100	75.000	0.010	6.570
24-Jul-98	7.900	15.000	87.000	9.480	1.000	< 0.030	6.510	6.500	0.017	0.007	3.100	84.000	0.010	6.470
16-Aug-98	8.200	15.000	87.000	9.480	1.000	< 0.030	6.510	6.500	0.017	0.007	3.100	84.000	0.010	6.470
24-Sep-98	7.900	15.000	87.000	9.480	1.000	< 0.030	6.510	6.500	0.017	0.007	3.100	84.000	0.010	6.470
18-Oct-98	7.900	15.000	87.000	9.480	1.000	< 0.030	6.510	6.500	0.017	0.007	3.100	84.000	0.010	6.470
2-Nov-98	7.700	9.200	94.000	10.700	1.700	0.010	4.230	4.220	0.014	0.004	3.600	54.000	0.010	4.260
11-Dec-98	7.700	9.200	94.000	10.700	1.700	0.010	4.230	4.220	0.014	0.004	3.600	54.000	0.010	4.260
26-Nov-98	7.200	10.000	94.000	10.470	< 1.000	< 0.030	8.080	8.070	0.006	0.001	9.100	54.000	0.010	8.100
26-Jan-99	7.200	10.000	94.000	10.470	< 1.000	< 0.030	8.080	8.070	0.006	0.001	9.100	54.000	0.010	8.100
26-Feb-99	7.100	9.700	94.000	11.450	1.200	< 0.030	9.240	9.230	0.008	0.004	13.700	64.000	0.010	9.270
26-Mar-99	7.100	9.700	94.000	11.450	1.200	< 0.030	9.240	9.230	0.008	0.004	13.700	64.000	0.010	9.270
26-Apr-99	8.100	8.100	100.000	11.790	< 1.000	< 0.030	8.290	8.280	0.010	0.005	5.000	81.000	0.010	8.330

AA Annual Average
 MAC Maximum Allowable Concentration
 EOS Environmental Quality Standard

APPENDIX 5

Varfell Stream at Longbrook Bypass (82111138)

EQS MAC STD Date	Suspended Solids mg/l 25 mg/l as AA EC FWF Dis.	Carbofuran µg/l	Dimethoate ng/l 1000 ng/l as AA Proposed DoE EQS	Propetazophos ng/l 10 ng/l as AA 100 ng/l Proposed DoE EQS	Chloroproprham ng/l 10 µg/l as AA 40 µg/l total conc. Proposed DoE EQS	Linuron µg/l 2 µg/l as AA 70 µg/l Proposed DoE EQS	Fenitrothion µg/l 10 ng/l as AA 250 µg/l Proposed DoE EQS	Atrazine ng/l 2000 ng/l 10000 ng/l Proposed DoE EQS
02/04/97	3.3000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
06/05/97	< 3.0000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
14/05/97								
30/06/97	< 3.0000	< 0.0600	< 22.0000	< 5.2800	< 0.0400	< 0.0400	< 10.0000	< 31.7000
24/07/97	< 3.0000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
29/08/97	< 3.0000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
24/09/97	< 3.0000	< 0.0600	< 22.9000	< 5.4500	< 0.0400	< 0.0400	< 10.0000	< 32.7000
21/10/97	3.0000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
04/11/97	8.9000	< 0.0600	< 22.0000	< 5.3700	< 0.0400	< 0.0400	< 10.0000	< 32.2000
27/11/97	15.5000	< 0.0600	< 22.0000	< 5.4000	< 0.0400	< 0.0400	< 10.0000	< 32.6000
08/04/98	6.9000	< 0.0600	< 24.1000	< 5.3400	< 0.0400	< 0.0400	< 10.9000	< 32.0000
06/05/98	9.6000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
08/06/98	19.4000	< 0.0600	< 22.0000		< 0.0400	< 0.0400	< 10.0000	
14/07/98	3.0000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
07/08/98	4.3000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
04/09/98	4.8000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
02/10/98	5.1000	< 0.0600	< 22.0000	14.9000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
04/11/98	12.4000	< 0.0600	< 23.6000	< 5.0000	< 0.0400	< 0.0400	< 10.7000	< 30.0000
26/11/98	17.4000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
12/01/99	76.5000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
02/02/99	7.4000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000
01/03/99	11.9000	< 0.0600	< 22.0000	< 5.0000	< 0.0400	< 0.0400	< 10.0000	< 30.0000

AA Annual Average
 MAC Maximum Allowable Concentration
 EQS Environmental Quality Standard

Chlorpyrifos ng/l	Chlorfenvinphos ng/l 10 ng/l as AA 100 ng/l Proposed DoE EQS	Diazinon ng/l 10 ng/l as AA 100 ng/l Proposed DoE EQS	HCH Gamma ng/l 100 ng/l as AA EC DS Directive	Simazine ng/l 2000 ng/l 10000 ng/l Proposed DoE EQS	Carbofendiazin µg/l 1 µg/l as AA 10 µg/l Proposed DoE EQS	Vinclozolin ng/l 0.1 µg/l EC Drinking Water Dir.	Diuron µg/l 2 µg/l as AA 20 µg/l Proposed DoE EQS
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000		< 7.0000	< 0.0400
< 10.0000	537.0000	< 6.0000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
					< 0.9000		
< 10.0000	< 21.1000	< 6.3100	< 2.7000	< 31.7000	< 0.9000		< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
< 10.0000	< 21.5000	< 6.5400	< 2.7000	< 32.7000	< 0.9000	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
< 10.0000	< 21.5000	< 6.4400	< 2.7000	< 32.2000	< 0.9000		< 0.0400
< 10.0000	< 21.7000	< 6.5000	< 0.3000	< 32.6000		< 0.7000	< 0.0400
< 10.9000	< 21.4000	< 6.4100	< 2.7000	< 32.0000	< 0.9000	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
< 10.0000			< 2.7000		2.4000	< 7.0000	< 0.0400
< 38.1000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 30.0000	< 30.0000	< 0.9000		< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
< 10.0000	< 20.0000	27.7000	< 2.7000	< 30.0000	< 0.9000	< 7.0000	< 0.0400
< 10.2000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.0200	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.0200	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.0200	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.7000	< 30.0000	< 0.0200	< 7.0000	< 0.0400
< 10.0000	< 20.0000	< 6.0000	< 2.9000	< 30.0000	0.0640	< 7.5000	< 0.0400