

EA-NORTH WEST Box 5

**MICROBIOLOGICAL EXAMINATION OF COASTAL  
WATERS IN THE NORTH WEST**

**SUMMARY OF RESULTS : 1998**

**Marine and Special Projects  
Environment Agency  
North West Region**

**MSP-99-03**

# MICROBIOLOGICAL EXAMINATION OF COASTAL WATERS IN THE NORTH WEST

## INTRODUCTION

A microbiological survey was undertaken in September 1998 as a continuation of monitoring the offshore bathing waters in the North West (see previous reports MSP-96-005 and MSP-96-014). None of the points sampled are designated bathing waters under the EC bathing directive 1975 (76/160/EEC), but it was considered appropriate to use the *mandatory* and *guideline* values given in the directive to classify the results.

## SURVEY

The samples were collected over two days and in four stages so laboratory analyses could be undertaken within the six hour limit protocol.

Skinburness to Whitehaven	2 September 1998
Whitehaven to Fleetwood	2 September 1998
Fleetwood to Mersey	2 September 1998
Great Orme to Mersey	3 September 1998

A survey track identical to previous surveys was undertaken to maintain consistency for data set comparison (See Map 1). This was between 0.25 and 1 mile offshore to include recreational waters (eg. jet skiing and windsurfing).

Samples were taken by courier to *Preston Public Health Laboratory* for analysis of **presumptive faecal coliform**, **presumptive total coliform** and **presumptive faecal streptococci**.

## RESULTS

The Bathing water directive stipulates mandatory and guideline bacterial values for the water samples undertaken. See Table 1.

per 100ml	Mandatory	Guideline
Total coliform	<10 000	<500
Faecal coliform	<2 000	<100
Faecal streptococci		<100

Table 1. Mandatory and Guideline bacterial values.

Table 2 lists all the sites that exceed the mandatory or guideline figures.

## MICROBIOLOGICAL EXAMINATION OF COASTAL WATERS IN THE NORTH WEST

Site name	Total Coliform Mandatory >10,000	Total Coliform Guideline >500	Faecal Coliform Mandatory >2000	Faecal Coliform Guideline >100	Faecal Streptococci Guideline >100
Maryport	PASS	PASS	PASS	109	PASS
Flimby	PASS	PASS	PASS	250	PASS
Workington	PASS	590	PASS	270	PASS
Cunning Pt.	PASS	570	PASS	136	PASS
N. Whitehaven	PASS	5300	PASS	1200	PASS
Marchon	PASS	550	PASS	290	PASS
Egremont	PASS	800	PASS	480	PASS
Ravenglass	PASS	PASS	PASS	173	PASS
C17	PASS	520	PASS	290	PASS
C21	PASS	2900	PASS	720	230
Tower	PASS	8200	3800	3800	1100
Rock CNL	PASS	PASS	PASS	110	PASS
Mockbeggar	PASS	2400	PASS	540	PASS
Rock Lt.	PASS	3200	PASS	650	PASS

**Table 2.** Sites exceeding Mandatory and Guideline values.

**Appendix 1** contains data used in *all* the graphical presentations while **Appendix 2** contains data used in Figures 5 – 8.

### DISCUSSION OF RESULTS

#### *Skinburness – Whitehaven (See Figure 1.)*

Most of the values along this stretch are quite low. However, guideline values for Total Coliform and Faecal Coliform were exceeded at *Workington*, *Cunning Point*, *N. Whitehaven* and *Marchon*. *Maryport* and *Flimby* exceeded the guideline values for Faecal Coliform only. *N. Whitehaven* exceeded guideline values for both Total and Faecal Coliforms quite significantly – as much as ten and twelve times the guideline value respectively.

## MICROBIOLOGICAL EXAMINATION OF COASTAL WATERS IN THE NORTH WEST

This year has seen an *increase* in the number of sites with *guideline* failures compared with previous surveys (*See Figure 5*) and although Marchon exceeded guideline values for both Total and Faecal Coliforms, levels were significantly lower than previous years.

No sites exceeded guideline values for Faecal Streptococci.

### *Whitehaven - Fleetwood (See Figure 2.)*

Again, most of the values along this stretch are quite low. However, guideline values for Total Coliform and Faecal Coliform were exceeded at *Marchon* and *Egremont* while at *Ravenglass*, the Faecal coliform guideline level was exceeded only.

Compared with 1996, this year has seen an *increase* in the number of sites with *guideline* failures. However, compared with 1995 nearly all the sites along this stretch exceeded guideline values in that year (*See Figure 6*).

No sites exceeded guideline values for Faecal Streptococci.

### *Fleetwood - Mersey (See Figure 3.)*

The majority of the values along this stretch are quite low with the exception of the sites that approach the Mersey Estuary. Guideline values for Total Coliform, Faecal Coliform and Faecal Streptococci were exceeded at *C21* and *Tower*. *Tower* also exceeded the **MANDATORY** limit for Faecal Coliform. Guideline values for Total coliform and Faecal Coliform were exceeded at *C17*.

This year as shown little change with regards to the number of sites which exceed guideline values. (*See Figure 7.*)

### *Gt Orme - Mersey (See Figure 4.)*

The majority of the values along this stretch are quite low with the exception again of the sites that approach the Mersey Estuary. Guideline values for Total Coliform and Faecal Coliform were exceeded at *Mockbeggar* and *Rock Lighthouse*. *Rock Channel* exceeded the guideline value for Faecal Coliform only.

Again, this year as shown little change with regards to the number of sites which exceed guideline values. (*See Figure 8.*)

No sites exceeded guideline values for Faecal Streptococci.

## MICROBIOLOGICAL EXAMINATION OF COASTAL WATERS IN THE NORTH WEST

### CONCLUSION

Generally, *more sites* along the North West and North Wales coastline *exceeded guideline values* compared with the survey carried out in 1996. There were no sites that failed the mandatory limits for Total Coliform and Faecal Streptococci, however, one site exceeded the mandatory limit for Faecal Coliform – TOWER. This could be due to the close proximity of one or more effluent outfalls found on the approach to the Mersey Estuary. Tower did not exceed these limits in 1996.

The high bacterial values found at Maryport, Workington and Marchon were expected as various outfall pipes exist in these areas. Although Marchon exceeded the *mandatory* limit for Faecal Coliform in 1996, this year has shown a significant improvement in the bacteria levels found at Marchon (although they still exceeded the guideline values for Total and Faecal Coliforms). In contrast Whitehaven exceeded guideline values quite significantly compared with previous years.

The expected high bacterial levels found at C17, C21 Rock Lighthouse and Tower can be attributed to the effluent outfalls into the Mersey and while Gt. Orme has shown an improvement in the levels of bacteria in 1998, at Mockbeggar levels have *increased* compared with previous years.

Although this report contains only a very brief summary or 'snapshot' of related information it is intended to serve as no more than a very preliminary review, drawn from a limited dataset. However, even though none of the points sampled are designated bathing waters under the EC Bathing Directive 1975 (76/160/EEC), the results should not be taken with complacency and used in context with the wide-ranging picture.



Map 1 Microbiological Sample Points  
(for key see overleaf)

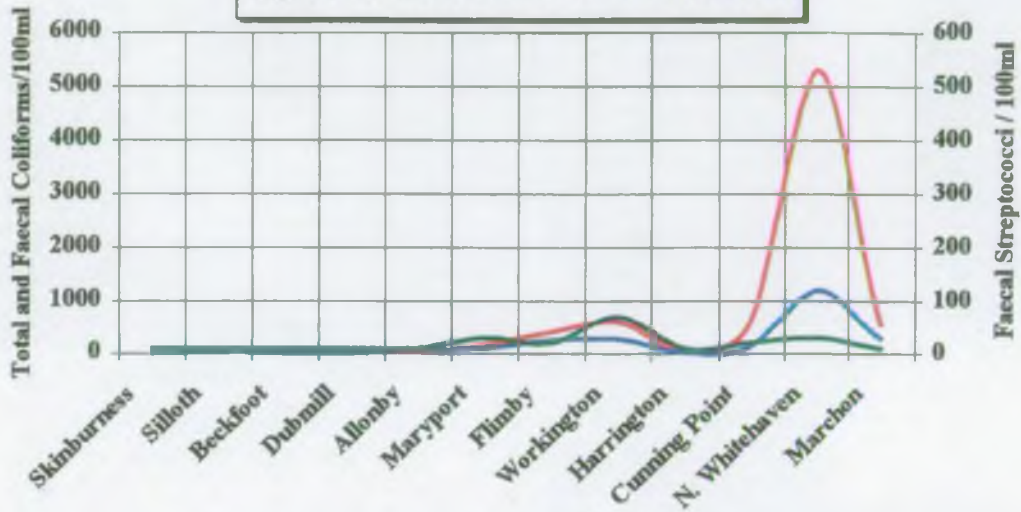
## MICROBIOLOGICAL SAMPLE POINTS

### KEY FOR MAP 1

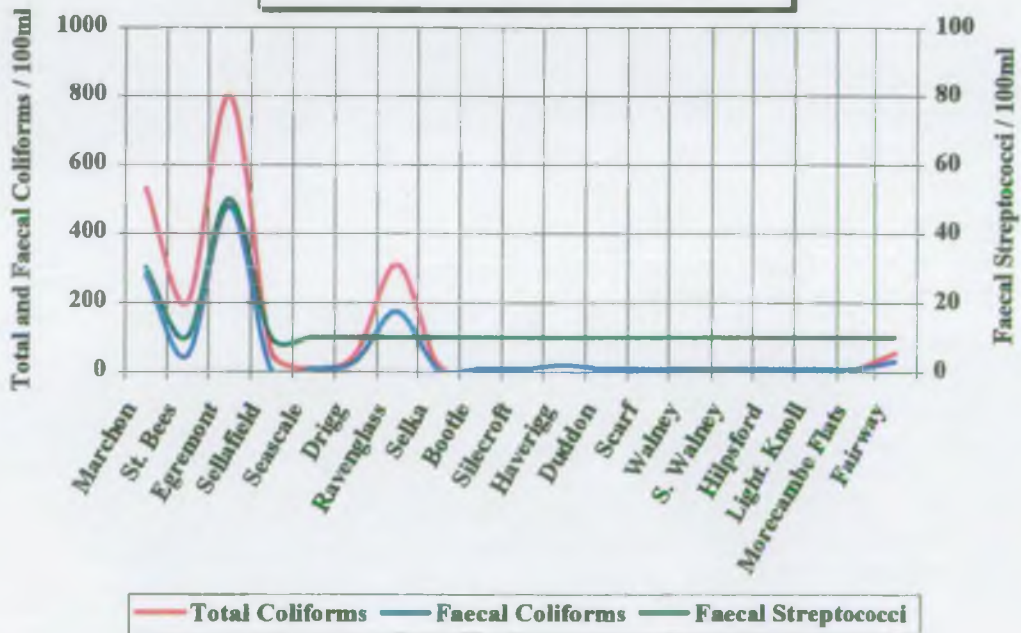
1	Skinburness	33	Anchors H
2	Silloth	34	North Shore
3	Beckfoot	35	South Shore
4	Dubmill	36	Lytham
5	Allonby	37	Salters Bank
6	Maryport	38	South Gut
7	Flimby	39	Penfold
8	Workington	40	Southport
9	Harrington	41	Ainsdale
10	Cunning Pt	42	Formby Point
11	N. Whitehaven	43	Q2
12	Marchon	44	C17
13	St. Bees	45	C21
14	Egremont	46	Tower
15	Sellafield	47	Rock Lt
16	Seascale	48	Mockbeggar
17	Drigg	49	Rock Channel
18	Ravenglass	50	Spencer
19	Selka	51	HE2
20	Bootle	52	HE4
21	Silecroft	53	Mostyn
22	Haverigg	54	Pt. Of Ayre
23	Duddon	55	Earwig
24	Scarf	56	Prestatyn
25	Walney	57	Rhyl
26	S. Walney	58	Kimnel
27	Hilpsford	59	Abergele
28	Lightning Knoll	60	Llandulas
29	Morecambe	61	Colwyn Bay
30	Fairway	62	Rhos
31	Russell Point	63	Lt. Orme
32	Clevleys	64	Gt. Orme

# Microbiological Results of Offshore Bathing Waters

**Figure 1. Skinburness - Whitehaven**



**Figure 2. Whitehaven - Fleetwood**



— Total Coliforms — Faecal Coliforms — Faecal Streptococci

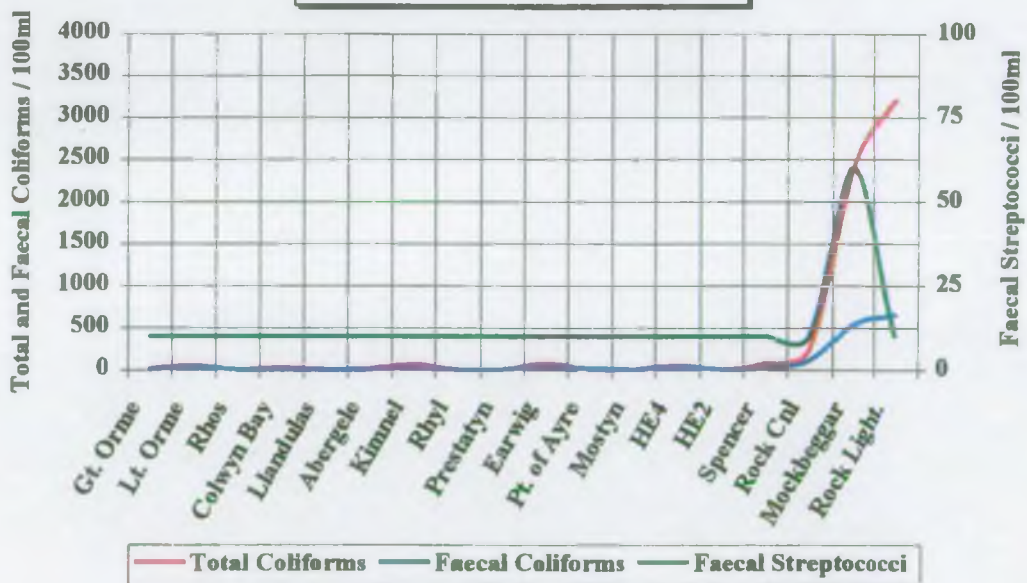


# Microbiological Results of Offshore Bathing Waters

**Figure 3. Fleetwood - Mersey**

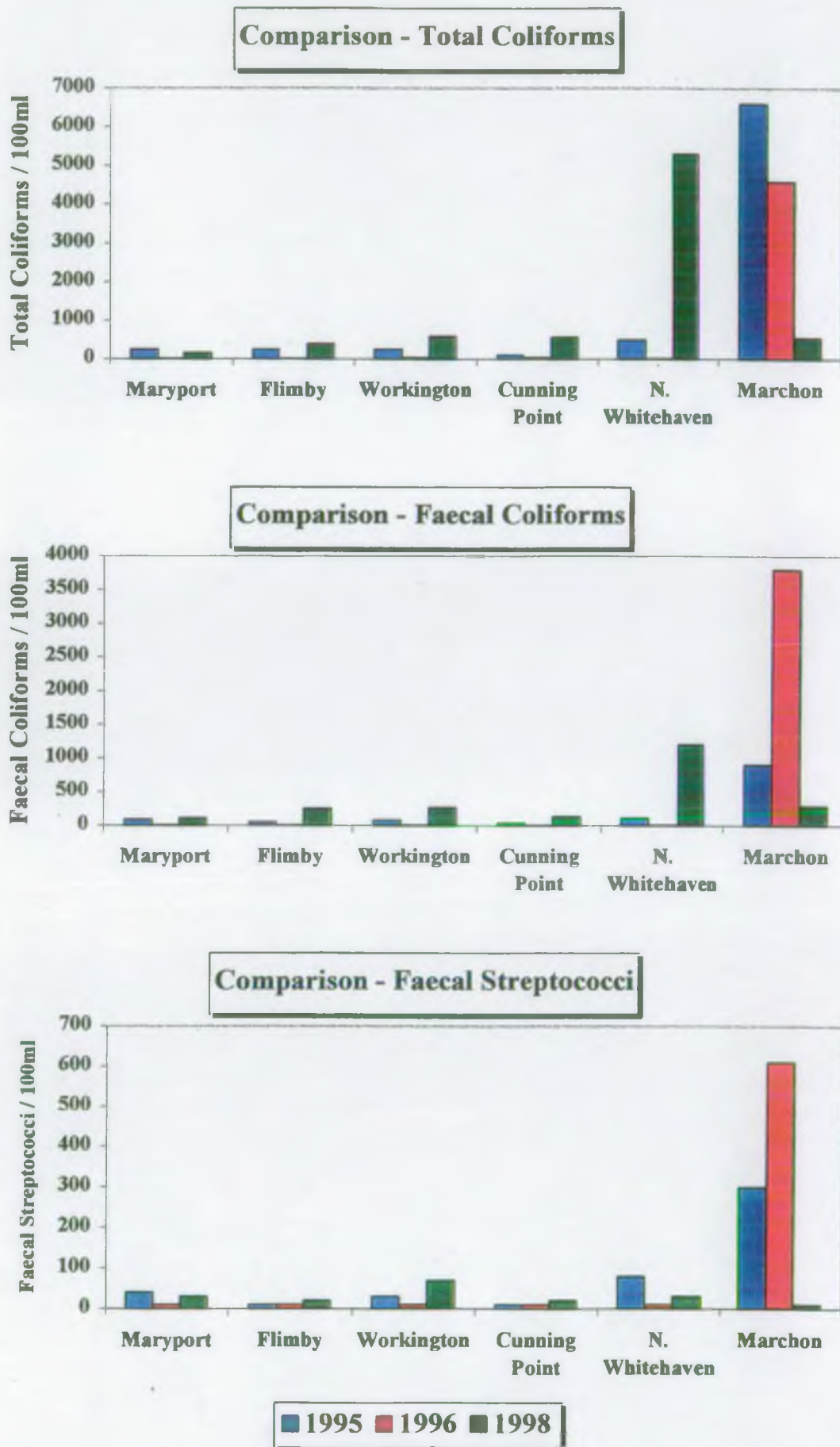


**Figure 4. Gt. Orme - Mersey**

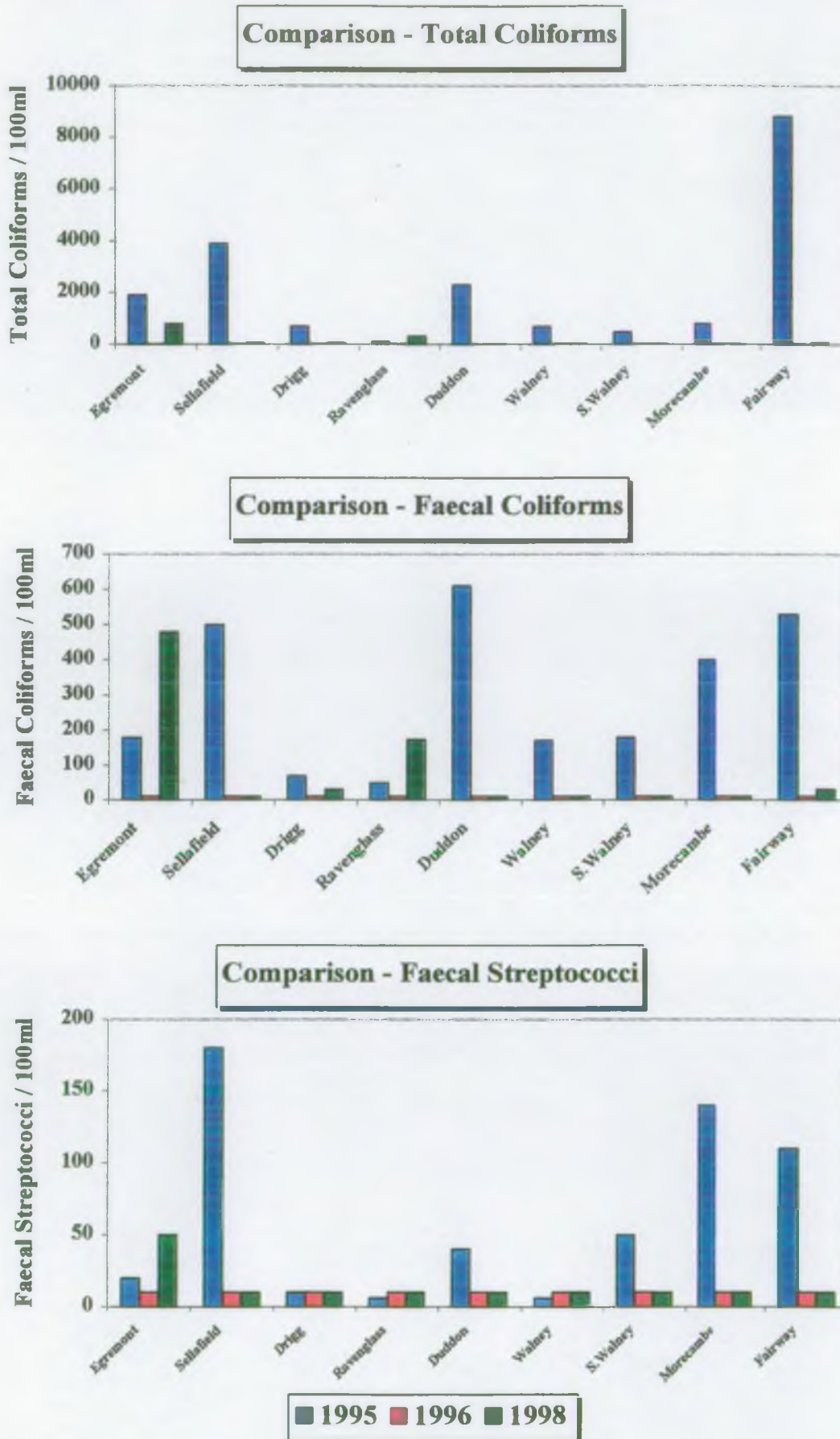


— Total Coliforms — Faecal Coliforms — Faecal Streptococci

# Figure 5. Skinburness - Whitehaven

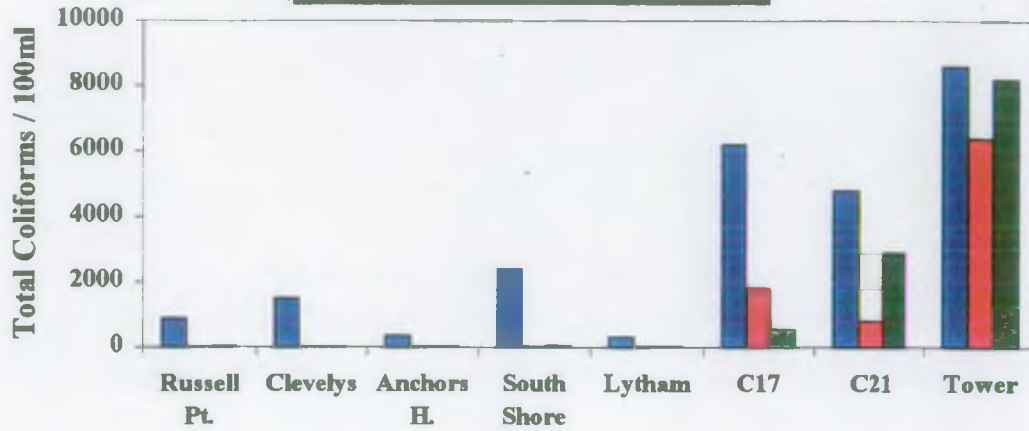


**Figure 6. Whitehaven - Fleetwood**

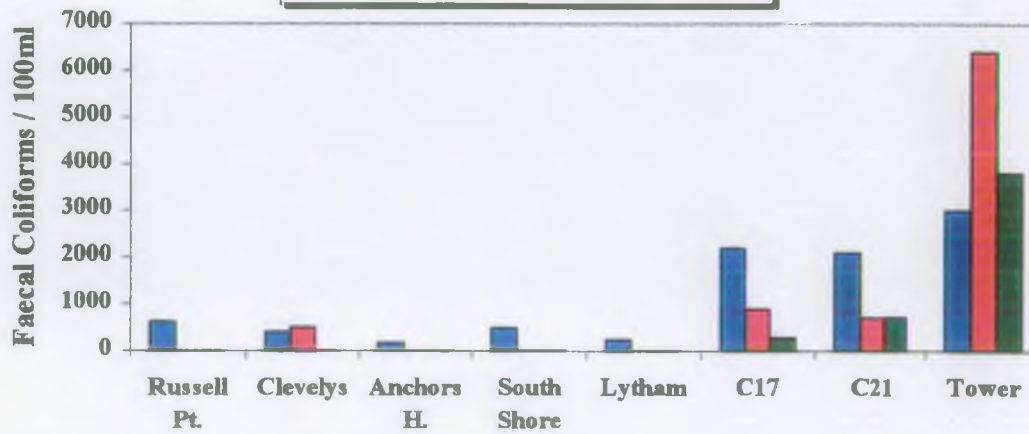


# Figure 7. Fleetwood - Mersey

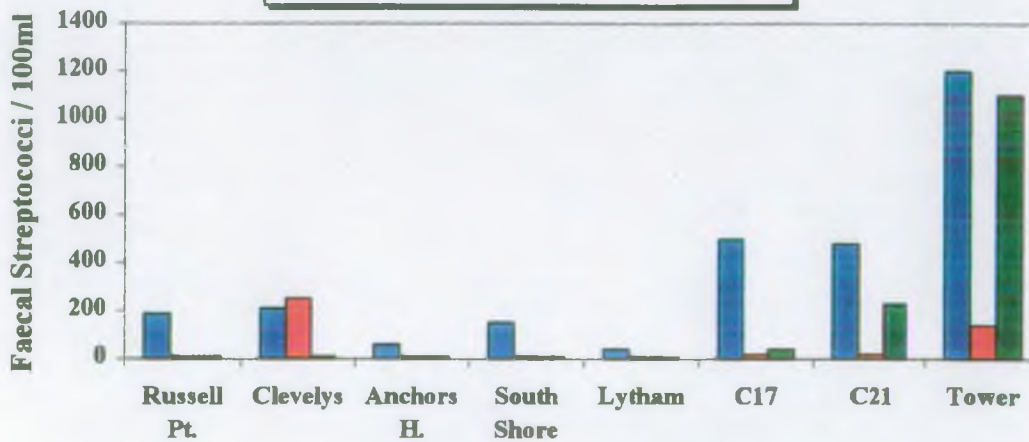
## Comparison - Total Coliforms



## Comparison - Faecal Coliforms

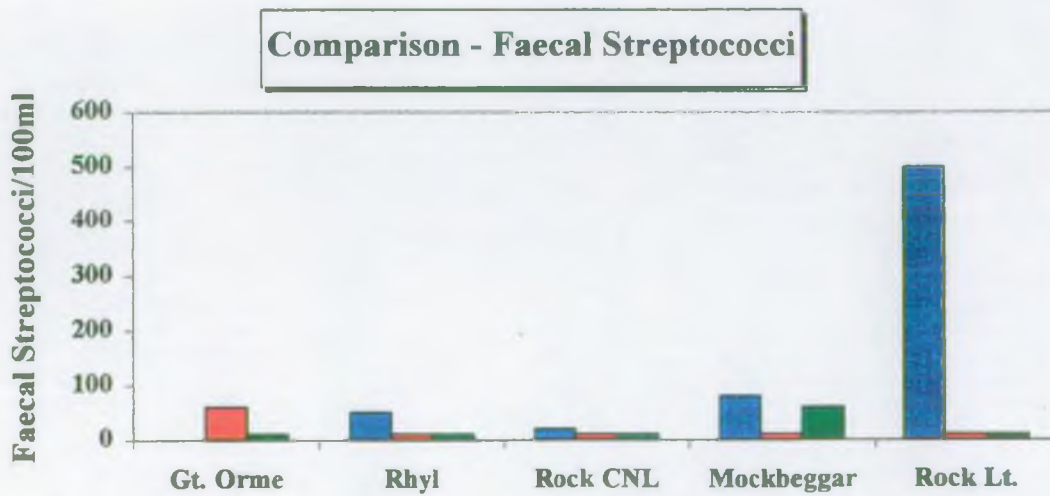
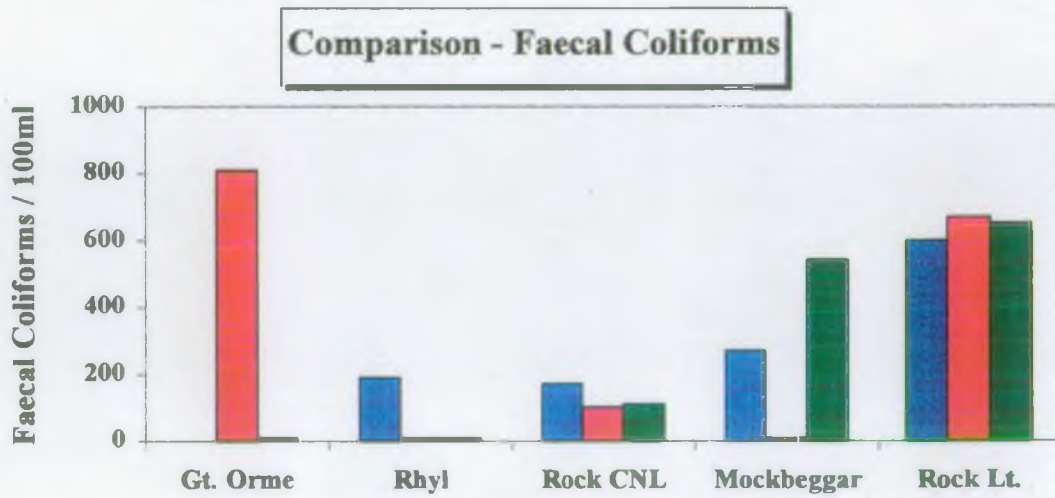
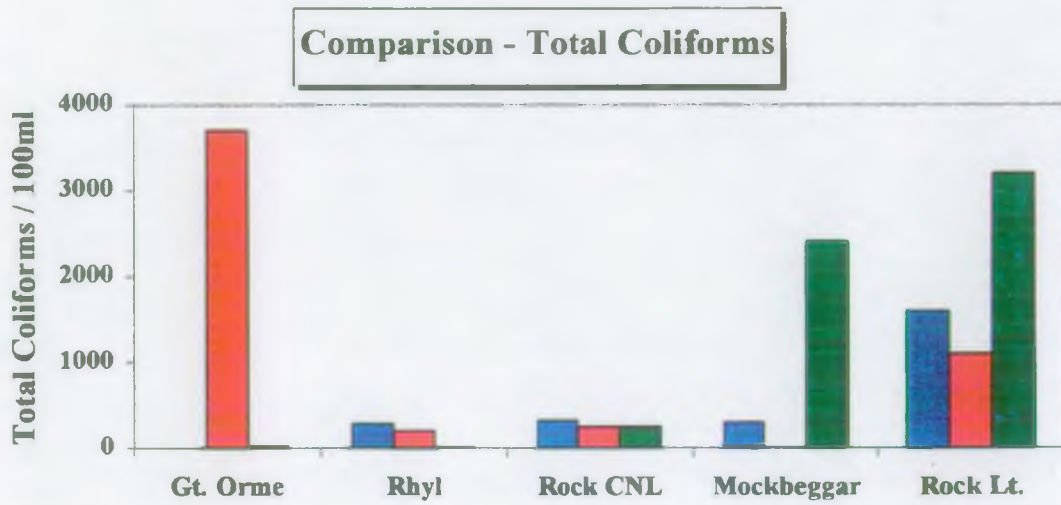


## Comparison - Faecal Streptococci

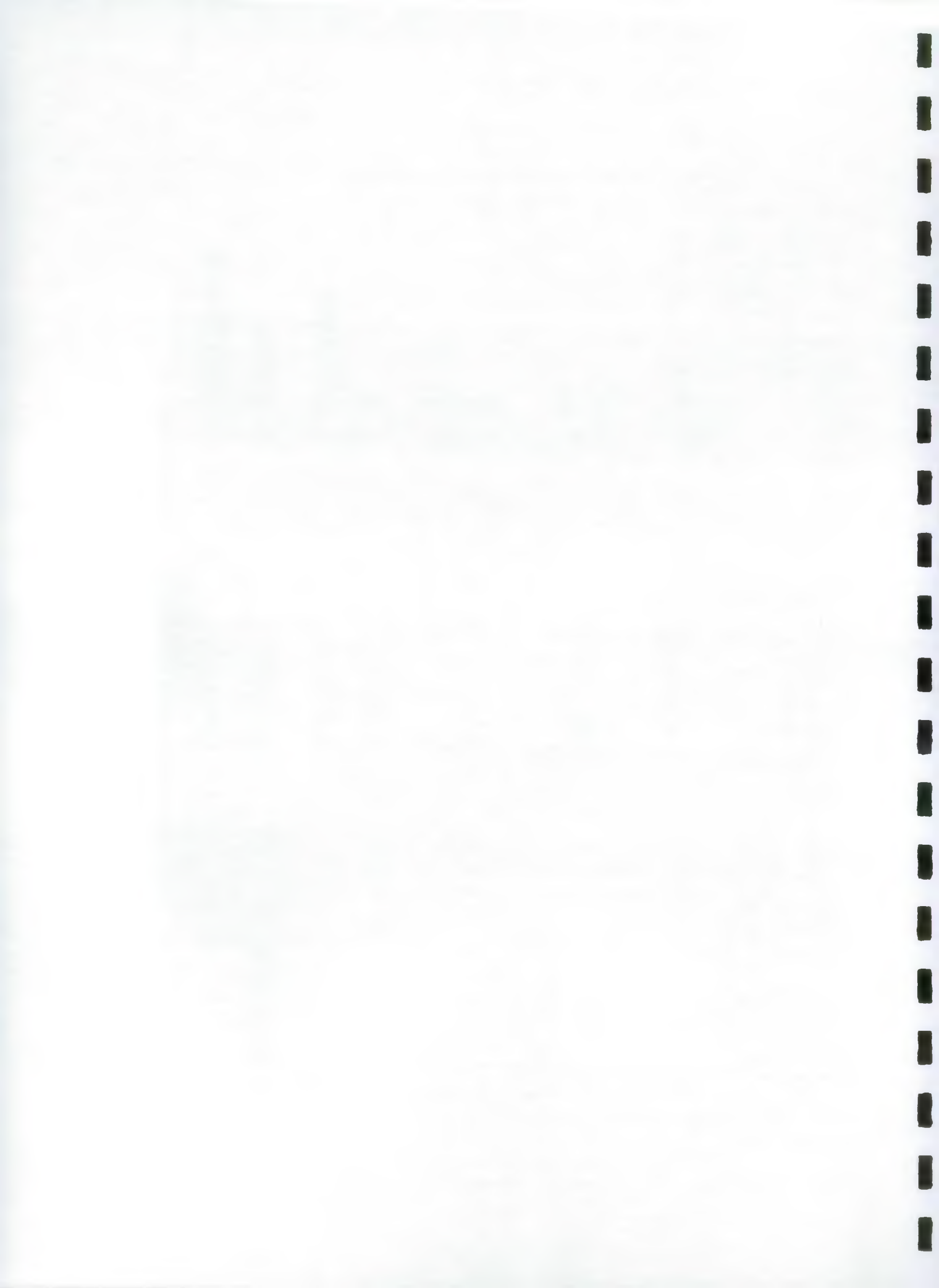


■ 1995 ■ 1996 ■ 1998

# Figure 8. Gt. Orme - Mersey



■ 1995   
 ■ 1996   
 ■ 1998



## APPENDIX 1

### Microbiology Survey 01- 03th September 1998

#### Skinburness to Whitehaven

Site Name	Date	Time	Total Coliforms	Faecal Coliforms	Faecal Streps
Skinburness	02-Sep-98	07:35	100	10	10
Silloth	02-Sep-98	07:58	82	40	10
Beckfoot	02-Sep-98	08:14	20	10	10
Dubmill	02-Sep-98	08:30	50	10	10
Allonby	02-Sep-98	08:44	36	73	10
Maryport	02-Sep-98	08:58	163	109 G	30
Flimby	02-Sep-98	09:13	400	250 G	20
Workington	02-Sep-98	09:27	590 G	270 G	70
Harrington	02-Sep-98	09:41	45	27	10
Cunning Point	02-Sep-98	09:55	570 G	136 G	20
N. Whitehaven	02-Sep-98	10:09	5300 G	1200 G	30
Marchon	02-Sep-98	10:23	550 G	290 G	10

#### Whitehaven to Fleetwood

Site Name	Date	Time	Total Coliforms	Faecal Coliforms	Faecal Streps
Marchon	02-Sep-98	10:48	530 G	280 G	30
St. Bees	02-Sep-98	11:09	200	45	10
Egremont	02-Sep-98	11:29	800 G	480 G	50
Sellafield	02-Sep-98	11:48	60	10	10
Seascale	02-Sep-98	12:05	10	10	10
Drigg	02-Sep-98	12:22	50	30	10
Ravenglass	02-Sep-98	12:39	310	173 G	10
Selka	02-Sep-98	12:54	20	10	10
Bootle	02-Sep-98	13:15	10	10	10
Silecroft	02-Sep-98	13:34	10	10	10
Haverigg	02-Sep-98	13:51	20	20	10
Duddon	02-Sep-98	14:03	10	10	10
Scarf	02-Sep-98	14:19	10	10	10
Walney	02-Sep-98	14:35	10	10	10
S. Walney	02-Sep-98	14:49	10	10	10
Hilpsford	02-Sep-98	15:06	10	10	10
Light. Knoll	02-Sep-98	15:23	10	10	10
Morecambe Flats	02-Sep-98	15:38	10	10	10
Fairway	02-Sep-98	16:03	54	30	10

## APPENDIX 1

### Microbiology Survey 01- 03th September 1998

#### Fleetwood to Mersey

Site Name	Date	Time	Total Coliforms	Faecal Coliforms	Faecal Streps
Fairway	02-Sep-98	16:43	90	10	10
Russell Pt.	02-Sep-98	17:05	36	10	10
Clevelys	02-Sep-98	17:22	10	10	10
Anchors H.	02-Sep-98	17:38	10	10	10
North Shore	02-Sep-98	17:55	20	10	10
South Shore	02-Sep-98	18:10	50	10	10
Lytham	02-Sep-98	18:25	10	10	10
Salters Bank	02-Sep-98	18:41	10	10	10
South Gut	02-Sep-98	18:58	10	10	10
Penfold	02-Sep-98	19:17	10	10	10
Southport	02-Sep-98	19:28	10	10	10
Ainsdale	02-Sep-98	19:42	10	10	10
Formby Pt.	02-Sep-98	20:00	10	10	10
Q2	02-Sep-98	20:29	10	10	10
C17	02-Sep-98	21:17	520 G	290 G	40
C21	02-Sep-98	21:36	2900 G	720 G	230 G
Tower	02-Sep-98	21:55	8200 G	3800 M	1100 G

#### Gt. Orme to Mersey

Site Name	Date	Time	Total Coliforms	Faecal Coliforms	Faecal Streps
Gt. Orme	03-Sep-98	12:45	20	10	10
Lt. Orme	03-Sep-98	13:01	64	27	10
Rhos	03-Sep-98	13:12	10	10	10
Colwyn Bay	03-Sep-98	13:35	40	10	10
Llandulas	03-Sep-98	13:50	10	10	10
Abergele	03-Sep-98	14:05	20	10	10
Kimnel	03-Sep-98	14:21	73	20	10
Rhyl	03-Sep-98	14:39	10	10	10
Prestatyn	03-Sep-98	14:54	10	10	10
Earwig	03-Sep-98	15:11	82	36	10
Pt. of Ayre	03-Sep-98	15:25	10	20	10
Mostyn	03-Sep-98	15:41	10	10	10
HE4	03-Sep-98	16:27	60	27	10
HE2	03-Sep-98	16:50	10	10	10
Spencer	03-Sep-98	17:09	80	20	10
Rock Cnl	03-Sep-98	17:22	250	110 G	10
Mockbeggar	03-Sep-98	17:33	2400 G	540 G	60
Rock Light.	03-Sep-98	17:41	3200 G	650 G	10



## APPENDIX 2

### Skinburness to Whitehaven

	Site Name	Date	Total Coliforms	Faecal Coliforms	Faecal Streps
<b>1998</b>	Maryport	02-Sep-98	163	109 G	30
	Flimby	02-Sep-98	400	250 G	20
	Workington	02-Sep-98	590 G	270 G	70
	Cunning Point	02-Sep-98	570 G	136 G	20
	N. Whitehaven	02-Sep-98	5300 G	1200 G	30
	Marchon	02-Sep-98	550 G	290 G	10
<b>1996</b>	Maryport	14-Aug-96	10	10	10
	Flimby	14-Aug-96	10	10	10
	Workington	14-Aug-96	35	10	10
	Cunning Point	14-Aug-96	35	10	10
	N. Whitehaven	14-Aug-96	10	10	10
	Marchon	14-Aug-96	4600 G	3800 M	610 G
<b>1995</b>	Maryport	07-Nov-95	250	90	40
	Flimby	07-Nov-95	250	50	10
	Workington	07-Nov-95	250	80	30
	Cunning Point	07-Nov-95	100	40	10
	N. Whitehaven	07-Nov-95	500 G	110 G	80
	Marchon	07-Nov-95	6600 G	900 G	300 G

### Whitehaven - Fleetwood

	Site Name	Date	Total Coliforms	Faecal Coliforms	Faecal Streps
<b>1998</b>	Egremont	02-Sep-98	800 G	480 G	50
	Sellafield	02-Sep-98	60	10	10
	Drigg	02-Sep-98	50	30	10
	Ravenglass	02-Sep-98	310	173 G	10
	Duddon	02-Sep-98	10	10	10
	Walney	02-Sep-98	10	10	10
	S. Walney	02-Sep-98	10	10	10
	Morecambe	02-Sep-98	10	10	10
	Fairway	02-Sep-98	54	30	10
<b>1996</b>	Egremont	14-Aug-96	10	10	10
	Sellafield	14-Aug-96	10	10	10
	Drigg	14-Aug-96	10	10	10
	Ravenglass	14-Aug-96	10	10	10
	Duddon	14-Aug-96	10	10	10
	Walney	14-Aug-96	10	10	10
	S. Walney	14-Aug-96	10	10	10
	Morecambe	14-Aug-96	10	10	10
	Fairway	14-Aug-96	10	10	10
<b>1995</b>	Egremont	07-Nov-95	1900 G	180 G	20
	Sellafield	07-Nov-95	3900 G	500 G	180 G
	Drigg	07-Nov-95	690 G	70	10
	Ravenglass	07-Nov-95	100	50	6
	Duddon	07-Nov-95	2300 G	610 G	40
	Walney	07-Nov-95	690 G	170 G	6
	S. Walney	07-Nov-95	470	180 G	50
	Morecambe	07-Nov-95	800 G	400 G	140 G
	Fairway	07-Nov-95	8800 G	530 G	110 G

## APPENDIX 2

### Fleetwood - Mersey

	Site Name	Date	Total Coliforms	Faecal Coliforms	Faecal Streps
<b>1998</b>	Russell Pt.	02-Sep-98	36	10	10
	Clevelys	02-Sep-98	10	10	10
	Anchors H.	02-Sep-98	10	10	10
	South Shore	02-Sep-98	50	10	10
	Lytham	02-Sep-98	10	10	10
	C17	02-Sep-98	520 G	290 G	40
	C21	02-Sep-98	2900 G	720 G	230 G
	Tower	02-Sep-98	8200 G	3800 M	1100 G
<b>1996</b>	Russell Pt.	14-Aug-96	10	10	10
	Clevelys	14-Aug-96	10	500 G	250 G
	Anchors H.	14-Aug-96	10	10	10
	South Shore	14-Aug-96	10	10	10
	Lytham	14-Aug-96	10	10	10
	C17	14-Aug-96	1800 G	900 G	20
	C21	14-Aug-96	800 G	700 G	20
	Tower	14-Aug-96	6400 G	6400 G	140 G
<b>1995</b>	Russell Pt.	07-Nov-95	890 G	620 G	190 G
	Clevelys	07-Nov-95	1500 G	400 G	210 G
	Anchors H.	07-Nov-95	350	180 G	60
	South Shore	07-Nov-95	2400 G	490 G	150 G
	Lytham	07-Nov-95	320	250 G	40
	C17	07-Nov-95	6200 G	2200 G	500 G
	C21	07-Nov-95	4800 G	2100 G	480 G
	Tower	07-Nov-95	8600 G	3000 G	1200 G

### Gt. Orme - Mersey

	Site Name	Date	Total Coliforms	Faecal Coliforms	Faecal Streps
<b>1998</b>	Gt. Orme	02-Sep-98	20	10	10
	Rhyl	02-Sep-98	10	10	10
	Rock CNL	02-Sep-98	250	110 G	10
	Mockbeggar	02-Sep-98	2400 G	540 G	60
	Rock Lt.	02-Sep-98	3200 G	650 G	10
<b>1996</b>	Gt. Orme	14-Aug-96	3700 G	810 G	60
	Rhyl	14-Aug-96	200	10	10
	Rock CNL	14-Aug-96	250	100	10
	Mockbeggar	14-Aug-96	10	10	10
	Rock Lt.	14-Aug-96	1100 G	670 G	10
<b>1995</b>	Gt. Orme	07-Nov-95			
	Rhyl	07-Nov-95	280	190 G	50
	Rock CNL	07-Nov-95	320	170 G	20
	Mockbeggar	07-Nov-95	300	270 G	80
	Rock Lt.	07-Nov-95	1600 G	600 G	500 G