

NATIONAL RIVERS AUTHORITY  
BIOLOGY  
BATHING WATER QUALITY SURVEY 1992



NRA

NEA Thames 207



ENVIRONMENT AGENCY

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### SUMMARY

Shoebury East, Thorpe Bay and Westcliff achieved compliance with the EC Directive's coliform standards. This is an improvement on 1991, when Westcliff failed. ✕

Four of the non-designated beaches rarely exceeded the EC I values for coliforms, and, if designated, would have complied with the EC Bathing Beach Directive for coliforms. Allhallows, however, had only a 89% compliance and would, therefore, have failed the coliform standard. ]

The number of samples containing viruses remains high. Between 53% and 68% of samples collected from each of the seven main Southend beaches showed viruses to be present. Viral concentrations ranged from 1/10 litres to 42/10 litres.

No samples from any of the beaches contained *Salmonella* sp..

High coliform levels still appear to be associated with high rainfall.

Although coliform levels at the ancillary beaches, Gravesend and Grays, were higher than the Southend beaches, levels were lower than previous years.

A limited amount of data obtained from additional samples showed that coliform levels 200m offshore and at low water were lower than the main Bathing Beach Survey results. Although it is difficult to make an accurate assessment from these results, the higher concentrations found in the main survey are likely to be due to the influence of local surface water/storm drains.

*Change at Allhallows? how tide work interesting (repeat?)*

*Confirmed levels "help" in the right direction (should have been done - the part)*

*Canway complied ok.*

## 1. INTRODUCTION

The National Rivers Authority, Thames Region, is responsible for monitoring the three EC designated bathing beaches which fall within the region's boundaries. This document presents the results of the 1992 Bathing Water Quality Survey for these beaches, along with the results from five non-designated beaches.

The Bathing Water Quality Survey samples were collected around high water from the shore. Additionally, in an attempt to determine if microbiological results were influenced by tidal state or sampling position, samples were taken at low water and 200m offshore at high water. These results are also presented.

The coliform results from two ancillary beaches sampled on five occasions during the bathing season are included in this document.

## 2. BATHING BEACH SURVEY, 1992

### a) Methodology

The method of sample collection followed that reported in the Bathing Water Quality Report, 1990 (Thomas, 1991). The sites, the frequency with which they were sampled and the microbiological analysis undertaken at each is summarised in Table 1 with their location shown in Figure 1.

Coliform and faecal streptococci analysis was carried out by the NRA Biology Laboratory at Waltham Cross. Coliform confirmation was carried out in accordance with the procedures set out in Reports on Public Health and Medical Subjects No. 71 (HMSO, 1984). *Salmonella* sp. was analysed at Greystone Environmental Ltd. (formerly Berridge Environmental Laboratories Ltd.) and viruses at the NRA Exeter Regional Laboratory.

### b) Results and Discussion

The microbiological results from all ten beaches (three designated, five non-designated and two ancillary) are appended.

Designated beach compliance with the EC directive's microbiological standards is summarised in Table 2. Shoebury East, Thorpe Bay and Westcliff complied with the EC Coliform standards. In previous years, presumptive coliform results only have been recorded. In 1992, confirmation was carried out on all coliform samples from the designated beaches. Tables 3 to 5 compare the 1992 confirmed results with the presumptive results.

Table 6 presents the summary results for the non-designated and ancillary beaches. Originally, 20 samples for all microbiological parameters were planned from the non-designated sites, however, poor weather on some sampling dates meant that this was not always possible. Only Allhallows failed to comply with the EC Coliform standards. Coliform levels at the two ancillary beaches were generally lower than in previous years.

Table 7 summarises the coliform results from recent years for the designated and non-designated beaches. 1992 was the first year that all samples collected from the designated beaches remained below EC coliform standards.

In recent years, high rainfall has been linked with coliform failures in the Southend area. Table 8 summarises rainfall during the 1992 bathing beach season and the associated coliform failures. As in previous years, coliform failure would appear to be linked to high rainfall.

The number of samples containing viruses remains high. No samples contained *Salmonella* sp..

### 3. ADDITIONAL INVESTIGATIONS

Five low water and five offshore samples were originally planned. Due to poor weather conditions, only two of each were taken.

#### a) Offshore Samples

On 1/6/92 and 30/6/92, coinciding with the main Bathing Beach Survey, a full set of microbiological samples were collected approximately 200m offshore at each of the three designated beaches, and at three or four non-designated beaches depending on sea conditions. These samples were analysed using the same techniques as in the Bathing Beach Survey.

The presumptive results are presented in Tables 9 and 10 along with the Bathing Beach Survey presumptive results for 1/6/92 and 30/6/92 for comparison. Coliform concentrations tended to be slightly higher in the main Bathing Beach Survey samples. This is probably due to the effect of local surface water/storm drains at the High Water Mark.

#### b) Low Water Samples

A full set of microbiological samples were collected from the three designated beaches and three of the non-designated beaches at low water on 26/5/92 and 22/6/92. There is very little water present at Leigh-on-Sea during Low Tide and it was therefore not possible to collect samples at this site. The samples were analysed using the same techniques as in the Bathing Beach Survey.

The presumptive results, along with the presumptive results from the main Bathing Beach Survey a few days later, are presented in Tables 11 and 12. Because the samples were taken on different days, direct comparisons between the Bathing Beach Survey and low water samples is not possible. Coliform concentrations in the low water samples, however, tended to be lower than in the Bathing Beach Survey results.

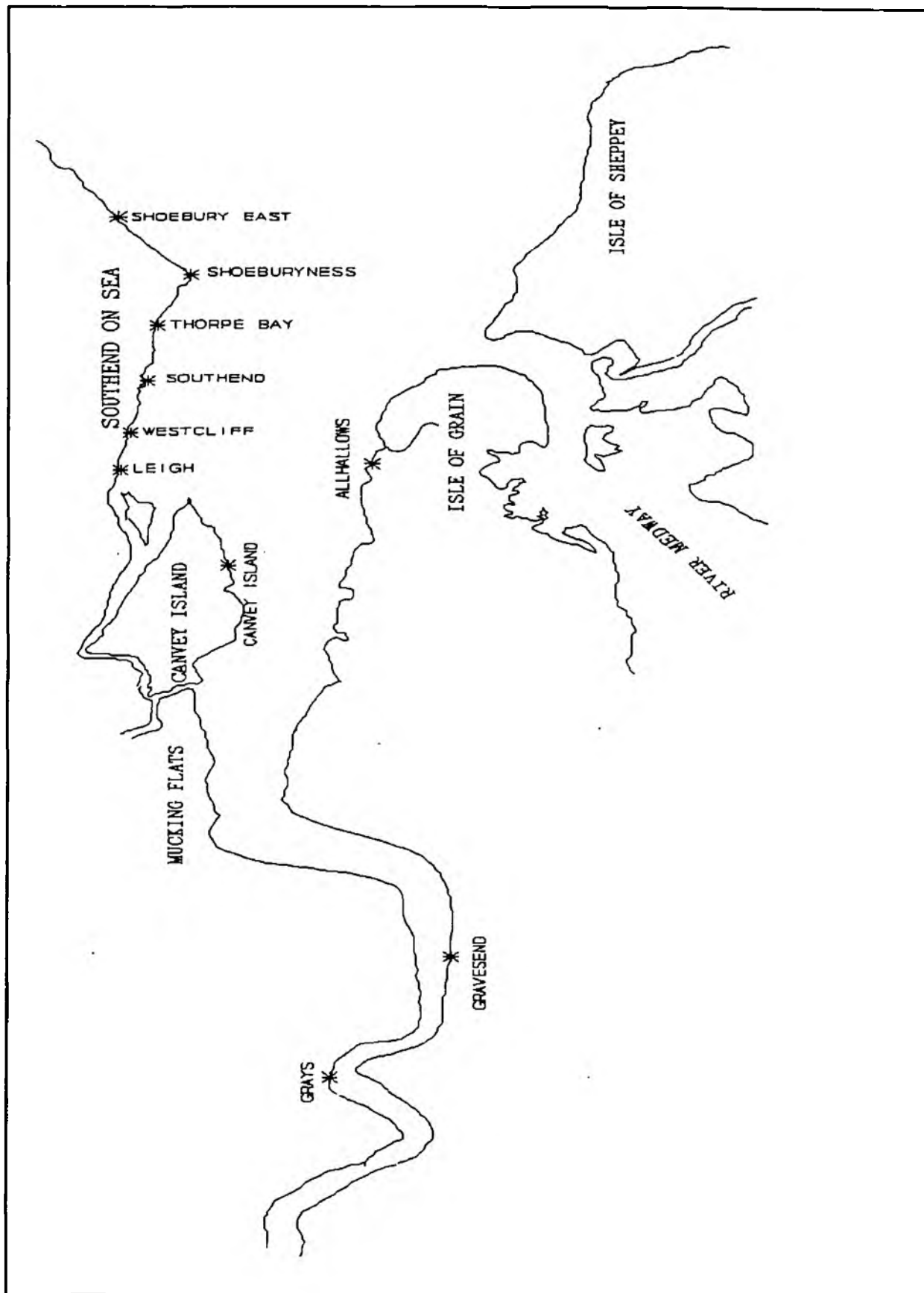


FIGURE 1 - BATHING BEACH SITES 1992

TABLE 1

SAMPLING FREQUENCY

<u>SITE</u>	<u>GRID REF.</u>	<u>E. COLI</u>	<u>TOTAL COLIFORMS</u>	<u>FAECAL STREPS.</u>	<u>SALMONELLA</u>	<u>VIRUSES</u>
<u>EC DESIGNATED BEACHES</u>						
Shoebury East	TQ 945 852	20	20	20	19 <sup>1</sup>	19 <sup>1</sup>
Thorpe Bay	TQ 911 847	20	20	20	19 <sup>1</sup>	18 <sup>1,2</sup>
Westcliff	TQ 864 853	20	20	20	19 <sup>1</sup>	19 <sup>1</sup>
<u>NON-DESIGNATED BEACHES</u>						
Shoeburyness	TQ 925 841	19 <sup>1</sup>	19 <sup>1</sup>	19 <sup>1</sup>	18 <sup>1</sup>	18 <sup>1</sup>
Southend	TQ 887 850	20	20	20	19 <sup>1</sup>	19 <sup>1</sup>
Leigh-on-Sea	TQ 841 856	20	20	20	19 <sup>1</sup>	19 <sup>1</sup>
Canvey Island	TQ 805 824	19 <sup>1</sup>	19 <sup>1</sup>	19 <sup>1</sup>	18 <sup>1</sup>	18 <sup>1</sup>
Allhallows	TQ 837 789	19 <sup>1</sup>	19 <sup>1</sup>	19 <sup>1</sup>	18 <sup>1,2</sup>	18 <sup>1,2</sup>
<u>ANCILLARY BEACHES</u>						
Grays	TQ 614 775	5	5	5	0	0
Gravesend East	TQ 649 746	5	5	5	0	0

<sup>1</sup> Sample not taken due to poor weather conditions.

<sup>2</sup> Sample not taken due to sampling/analytical error.



COMPLIANCE WITH EC DIRECTIVE ON MICROBIOLOGICAL STANDARDS

TABLE 2

EC DESIGNATED BEACHES

Compliance with Coliform I Values

	Shoebury East	Thorpe Bay	Westcliff
Number of Samples Taken	20	20	20
Number of Failures	0	0	0
% Compliance	100%	100%	100%
Compliance with EC Directive on Coliforms	PASS	PASS	PASS

Compliance with all Microbiological I Values

	Shoebury East	Thorpe Bay	Westcliff
Number of Samples Taken	20 <sup>1</sup>	20 <sup>2</sup>	20 <sup>1</sup>
Number of Failures	10	10	13
% Compliance	50%	50%	35%
Compliance with EC Directive on Coliforms, Salmonella and Enteroviruses	<u>FAIL</u>	<u>FAIL</u>	<u>FAIL</u>

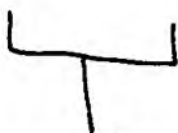
<sup>1</sup> Only 19 virus samples

<sup>2</sup> Only 18 virus samples

## SHOEBURY EAST

## CONFIRMED/PRESUMPTIVE COLIFORM RESULTS

DATE	TOTAL COLIFORMS /100ml Confirmed	E. COLI /100ml Confirmed	TOTAL COLIFORMS /100ml Presumptive	E. COLI /100ml Presumptive
13/5/92	20	4	20	4
14/5/92	10	8	20	8
15/5/92	<10	4	10	5
18/5/92	60	1	90	3
29/5/92	520	50	520	50
1/6/92	1,400	171	2,000	190
11/6/92	288	180	320	200
13/6/92	<10	3	50	4
29/6/92	53	9	80	9
30/6/92	11	11	11	11
13/7/92	144	104	180	130
14/7/92	60	36	60	36
27/7/92	10	3	10	3
11/8/92	60	10	70	12
12/8/92	210	70	210	90
16/8/92	252	162	280	180
26/8/92	200	50	200	100
8/9/92	70	12	70	13
9/9/92	20	7	20	9
10/9/92	30	30	40	40

  
 '625' Sara

## THORPE BAY

## CONFIRMED/PRESUMPTIVE COLIFORMS RESULTS

DATE	TOTAL COLIFORMS /100ml Confirmed	E. COLI /100ml Confirmed	TOTAL COLIFORMS /100ml Presumptive	E. COLI /100ml Presumptive
13/5/92	280	80	280	90
14/5/92	70	16	90	16
15/5/92	30	10	30	12
18/5/92	20	19	30	24
29/5/92	91	91	180	130
1/6/92	200	84	200	120
11/6/92	20	12	20	13
13/6/92	<10	ND	<10	ND
29/6/92	10	6	10	6
30/6/92	200	200	220	200
13/7/92	470	470	600	470
14/7/92	54	54	60	60
27/7/92	30	27	30	30
11/8/92	198	47	220	52
12/8/92	504	240	560	240
16/8/92	630	272	700	340
26/8/92	1,800	900	2,000	900
8/9/92	500	180	500	180
9/9/92	104	70	130	80
10/9/92	60	38	60	48

## WESTCLIFF

## CONFIRMED/PRESUMPTIVE COLIFORMS RESULTS

DATE	TOTAL COLIFORMS /100ml Confirmed	E. COLI /100ml Confirmed	TOTAL COLIFORMS /100ml Presumptive	E. COLI /100ml Presumptive
13/5/92	37	37	40	42
14/5/92	423	78	470	130
15/5/92	368	138	460	230
18/5/92	40	34	50	38
29/5/92	1,700	558	3,400	620
1/6/92	500	280	700	280
11/6/92	70	50	80	50
13/6/92	10	4	10	4
29/6/92	18	18	18	18
30/6/92	220	220	220	220
13/7/92	108	98	120	140
14/7/92	186	186	310	310
27/7/92	200	64	200	64
11/8/92	70	34	90	34
12/8/92	280	105	350	150
16/8/92	990	432	1,100	480
26/8/92	261	261	290	290
8/9/92	40	27	60	27
9/9/92	70	56	80	62
10/9/92	162	52	180	58

TABLE 6

COMPARISON OF MICROBIOLOGICAL RESULTS FROM NON-DESIGNATED BEACHES WITH EC I VALUES

	SHOEBURYNESS	SOUTHEND	LEIGH ON-SEA	CANVEY ISLAND	ALLHALLOWS	GRAVESEND EAST	GRAYS
Number of Samples Taken	19	20 <sup>1</sup>	20 <sup>1</sup>	19 <sup>2</sup>	19 <sup>2</sup>	5	5
Number of Samples Exceeding EC I Values for Coliforms	0	0	1	0	2	0	0
Percentage of Samples Within EC I Values for Coliforms	100%	100%	95%	100%	89%	100%	100%
Number of Samples Exceeding EC I Values for at least one Microbiological Standard. (Coliforms, Salmonella and Viruses)	10	12	12	11	6	-	-
Percentage of Samples Within EC I Values for all Microbiological Standards. (Coliforms, Salmonella and Viruses)	47%	40%	40%	42%	68%	-	-

<sup>1</sup> Only 19 virus samples<sup>2</sup> Only 18 virus samples



TABLE 8

DAILY RAINFALL FIGURES FOR SOUTHEND, SOUTHCHURCH PARK (mm)

DAY No.	MAY	JUN	JUL	AUG	SEP
1	0.0	<u>0.0</u>	3.1	0.0	0.3
2	0.0	0.0	0.8	0.0	0.7
3	0.0	0.0	4.5	0.0	4.8
4	0.0	8.9	1.0	0.0	0.0
5	0.3	1.7	0.5	0.0	0.0
6	0.0	0.7	0.0	0.0	1.6
7	0.0	0.0	0.0	2.8	0.0
8	1.9	0.0	0.0	0.0	<u>0.0</u>
9	10.6	0.0	1.5	13.0	<u>0.0</u>
10	0.2	0.0	0.0	0.0	<u>0.1</u>
11	0.9	<u>0.0</u>	0.0	<u>0.0</u>	0.0
12	0.0	0.0	0.0	<u>0.0</u>	0.0
13	<u>0.0</u>	<u>0.0</u>	<u>3.2</u>	16.8	1.9
14	<u>0.0</u>	0.0	<u>0.0</u>	0.0	0.1
15	<u>0.0</u>	0.0	2.1	2.6	0.0
16	0.0	0.0	0.0	<u>0.0</u>	0.0
17	0.0	0.0	0.0	0.0	14.3
18	<u>0.0</u>	0.7	0.0	1.4	0.0
19	0.0	6.3	0.0	2.2	0.0
20	0.0	0.0	28.5	0.0	0.0
21	0.0	0.0	0.0	0.0	16.0
22	0.0	0.0	0.0	0.0	13.8
23	0.0	0.0	0.0	2.3	3.1
24	0.0	0.0	0.0	12.3	6.2
25	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	<u>0.0</u>	0.0
27	2.2	0.0	<u>0.0</u>	0.2	0.0
28	8.8	0.0	0.0	0.0	0.0
29	<u>14.5</u>	<u>0.0</u>	0.0	3.1	1.7
30	0.0	<u>0.8</u>	0.0	0.0	0.0
31	<u>3.2</u>		0.0	0.0	
TOTAL	42.6	19.1	45.2	56.7	64.6

Shaded block indicates sample date.

Bold figure indicates non-designated beach coliform failure.

TABLE 9

OFFSHORE SAMPLES

1/6/92

RESULTS AND COMPARISON WITH EC BATHING BEACH SURVEY RESULTS

		TOTAL COLIFORMS (Presumptive)	<i>E. coli</i> (Presumptive)	FAECAL STREPS.	SALMONELLA	VIRUSES
SHOEBURY EAST	SHORE SAMPLE	2,000	240	160	ND	3
	OFFSHORE SAMPLE	240	130	<10	ND	ND
SHOEBURYNESS	SHORE SAMPLE	500	120	<100	ND	3
	OFFSHORE SAMPLE	100	100	<100	ND	ND
THORPE BAY	SHORE SAMPLE	200	120	450	ND	3
	OFFSHORE SAMPLE	20	10	<10	ND	2
SOUTHEND	SHORE SAMPLE	1,500	100	1,100	ND	1
	OFFSHORE SAMPLE	100	30	<100	ND	1
WESTCLIFF	SHORE SAMPLE	700	280	30	ND	ND
	OFFSHORE SAMPLE	110	28	<10	ND	ND
LEIGH-ON-SEA	SHORE SAMPLE	700	350	900	ND	1
	OFFSHORE SAMPLE	<100	60	100	ND	ND
CANVEY ISLAND	SHORE SAMPLE	700	250	100	ND	1
	OFFSHORE SAMPLE	200	200	<100	ND	1



OFFSHORE SAMPLES

30/6/92

RESULTS AND COMPARISON WITH EC BATHING BEACH SURVEY RESULTS

		TOTAL COLIFORMS (Presumptive)	<i>E. coli</i> (Presumptive)	FAECAL STREPS.	SALMONELLA	VIRUSES
SHOEBURY EAST	SHORE SAMPLE	11	11	20	ND	1
	OFFSHORE SAMPLE	10	8	<10	ND	1
SHOEBURYNESS	SHORE SAMPLE	700	10	<100	ND	1
	OFFSHORE SAMPLE	<100	40	*	ND	3
THORPE BAY	SHORE SAMPLE	220	200	260	ND	1
	OFFSHORE SAMPLE	<10	3	<10	ND	2
SOUTHEND	SHORE SAMPLE	1,700	1,700	200	ND	1
	OFFSHORE SAMPLE	<100	10	*	ND	1
WESTCLIFF	SHORE SAMPLE	220	220	130	ND	3
	OFFSHORE SAMPLE	49	49	<10	ND	3
LEIGH-ON-SEA	SHORE SAMPLE	300	70	100	ND	ND
	OFFSHORE SAMPLE	200	10	*	ND	2

\* Analysis not carried out.

TABLE 11

LOW WATER SAMPLES

26/5/92

RESULTS AND COMPARISON WITH EC BATHING BEACH SURVEY RESULTS 29/5/92

		TOTAL COLIFORMS	<i>E. coli</i> (Presumptive)	FAECAL STREPS.	SALMONELLA	VIRUSES
SHOEBURY EAST	LOW WATER	<10	0	<10	ND	ND
	29/5/92	520	50	140	ND	ND
SHOEBURYNESS	LOW WATER	100	<10	<100	ND	2
	29/5/92	200	70	100	ND	1
THORPE BAY	LOW WATER	<10	1	<10	ND	ND
	29/5/92	180	130	50	ND	1
SOUTHEND	LOW WATER	<100	<10	<100	ND	ND
	29/5/92	8,000	1,800	2,900	ND	1
WESTCLIFF	LOW WATER	<10	2	<10	ND	ND
	29/5/92	3,400	620	280	ND	3
CANVEY ISLAND	LOW WATER	400	50	<100	ND	ND
	29/5/92	500	300	1,000	ND	ND

TABLE 12

LOW WATER SAMPLES

22/6/92

RESULTS AND COMPARISON WITH EC BATHING BEACH SURVEY 29/6/92

		TOTAL COLIFORMS	<i>E. coli</i> (Presumptive)	FAECAL STREPS.	SALMONELLA	VIRUSES
SHOEBURY EAST	LOW WATER	70	20	<10	ND	2
	29/6/92	80	9	90	ND	2
SHOEBURYNESS	LOW WATER	<100	50	<100	ND	1
	29/6/92	<100	30	<100	ND	2
THORPE BAY	LOW WATER	31	31	<10	ND	ND
	29/6/92	10	6	10	ND	3
SOUTHEND	LOW WATER	100	110	<100	ND	1
	29/6/92	1,200	1,200	<100	ND	ND
WESTCLIFF	LOW WATER	<10	11	10	ND	ND
	29/6/92	18	18	<10	ND	2
CANVEY ISLAND	LOW WATER	<100	50	<100	ND	2
	29/6/92	<100	70	<100	ND	1

APPENDICES

**N.R.A. BATHING BEACH RESULTS - 1992**

**SHOEBURY EAST**  
 TQ 945 852  
 (EC Designated Beach)

DATE	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Confirmed)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
13/5/92	20	4	<10	ND	ND
14/5/92	10	8	<10	ND	1
15/5/92	<10	4	<10	ND	ND
18/5/92	60	1	<10	ND	3
29/5/92	520	50	140	ND <sup>1</sup>	ND <sup>1</sup>
31/5/92	Note 2	Note 2	50	ND	ND
1/6/92	1,400	171	160	ND	3
11/6/92	288	180	<10	ND	ND
13/6/92	<10	3	<10	ND	1
29/6/92	53	9	90	ND	2
30/6/92	11	11	20	ND	1
13/7/92	144	104	210	ND	3
14/7/92	60	36	240	ND	1
27/7/92	10	3	<10	ND	ND
11/8/92	60	10	10	ND	3
12/8/92	210	70	60	ND	ND
16/8/92	252	162	-	-	-
26/8/92	200	50	80	ND <sup>1</sup>	1 <sup>1</sup>
28/8/92 <sup>3</sup>	-	-	-	-	-
8/9/92	70	12	10	-	-
9/9/92	20	7	20	ND	ND
10/9/92	30	30	<10	ND	ND

ND=Not Detected

**Notes:**

- 1 Salmonella and Virus results to be used to assess compliance with EC Bathing Beach Directive.
- 2 E.coli and Total Coliform results unreliable due to analysis error. Sampling rescheduled to 16/8/92.
- 3 Sampling not possible due to poor sea conditions. Sampling for E.coli, Total Coliforms and Faecal streps. rescheduled to 8/9/92.

**N.R.A. BATHING BEACH RESULTS - 1992**

**THORPE BAY**  
TQ 911 847  
(EC Designated Beach)

DATE	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Confirmed)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
13/5/92	280	80	2,500	ND	ND
14/5/92	70	16	10	ND	1
15/5/92	30	10	<10	ND	LOST
18/5/92	20	19	<10	ND	1
29/5/92	91	91	50	ND <sup>1</sup>	1 <sup>1</sup>
31/5/92	Note 2	Note 2	20	ND	ND
1/6/92	200	84	450	ND	3
11/6/92	20	12	10	ND	ND
13/6/92	<10	ND	<10	ND	ND
29/6/92	10	6	10	ND	3
30/6/92	200	200	260	ND	1
13/7/92	470	470	130	ND	1
14/7/92	54	54	40	ND	ND
27/7/92	30	27	40	ND	ND
11/8/92	198	47	<10	ND	ND
12/8/92	504	240	410	ND	1
16/8/92	630	272	-	-	-
26/8/92	1,800	900	290	ND <sup>1</sup>	3 <sup>1</sup>
28/8/92 <sup>3</sup>	-	-	-	-	-
8/9/92	500	180	110	-	-
9/9/92	104	70	40	ND	ND
10/9/92	60	38	10	ND	1

ND=Not Detected

**Notes:**

- 1 Salmonella and Virus results to be used to assess compliance with EC Bathing Beach Directive.
- 2 E.coli and Total Coliform results unreliable due to analysis error. Sampling rescheduled to 16/8/92.
- 3 Sampling not possible due to poor sea conditions. Sampling for E.coli, Total Coliforms and Faecal streps. rescheduled to 8/9/92.

**N.R.A. BATHING BEACH RESULTS - 1992**

**WESTCLIFF**  
TQ 864 853  
(EC Designated Beach)

DATE	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Confirmed)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
13/5/92	37	37	20	ND	2
14/5/92	423	78	360	ND	2
15/5/92	368	138	70	ND	4
18/5/92	40	34	10	ND	ND
29/5/92	1,700	558	280	ND <sup>1</sup>	3 <sup>1</sup>
31/5/92	Note 2	Note 2	40	ND	1
1/6/92	500	280	30	ND	ND
11/6/92	70	50	50	ND	ND
13/6/92	10	4	<10	ND	ND
29/6/92	18	18	<10	ND	2
30/6/92	220	220	130	ND	3
13/7/92	108	98	340	ND	2
14/7/92	186	186	310	ND	2
27/7/92	200	64	20	ND	2
11/8/92	70	34	10	ND	1
12/8/92	280	105	130	ND	ND
16/8/92	990	432	-	-	-
26/8/92	261	261	140	ND <sup>1</sup>	ND <sup>1</sup>
28/8/92 <sup>3</sup>	-	-	-	-	-
8/9/92	40	27	10	-	-
9/9/92	70	56	60	ND	4
10/9/92	162	52	<10	ND	5

ND=Not Detected

Notes:

- 1 Salmonella and Virus results to be used to assess compliance with EC Bathing Beach Directive.
- 2 E.coli and Total Coliform results unreliable due to analysis error. Sampling rescheduled to 16/8/92.
- 3 Sampling not possible due to poor sea conditions. Sampling for E.coli, Total Coliforms and Faecal streps. rescheduled to 8/9/92.

**N.R.A. BATHING BEACH RESULTS - 1992**

**SHOEBURYNESS**

TQ 925 841

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
13/5/92	<100	10	<100	ND	3
14/5/92	<100	70	<100	ND	2
15/5/92	<100	20	100	ND	1
18/5/92	<100	<10	<100	ND	ND
29/5/92	200	70	100	ND	1
31/5/92	Note 1	Note 1	<100	ND	2
1/6/92	500	120	<100	ND	3
11/6/92	2,600	800	<100	ND	6
13/6/92	<100	50	<100	ND	ND
29/6/92	<100	30	<100	ND	2
30/6/92	700	10	<100	ND	1
13/7/92	100	40	<100	ND	ND
14/7/92	200	50	<100	ND	ND
27/7/92	100	20	<100	ND	ND
11/8/92	300	40	<100	ND	ND
12/8/92 <sup>2</sup>	-	-	-	-	-
16/8/92	7,200	720	-	-	-
26/8/92	1,200	350	<100	ND	ND
28/8/92 <sup>3</sup>	-	-	-	-	-
8/9/92	100	10	100	-	-
9/9/92	100	10	<100	ND	ND
10/9/92	200	30	<100	ND	1

ND=Not Detected

**Notes:**

- 1 E.coli and Total Coliform results unreliable due to analysis error. Sampling rescheduled to 16/8/92.
- 2 Sample not taken due to bad weather. Unable to reschedule.
- 3 Sampling not possible due to poor sea conditions. Sampling for E.coli, Total Coliforms and Faecal streps. rescheduled to 8/9/92.



**N.R.A. BATHING BEACH RESULTS - 1992**

**SOUTHEND**

TQ 887 850

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /l	VIRUSES /10l
13/5/92	100	80	<100	ND	2
14/5/92	700	500	<100	ND	1
15/5/92	400	280	400	ND	1
18/5/92	<100	70	100	ND	2
29/5/92	8,000	1,800	2,900	ND	1
31/5/92	Note 1	Note 1	300	ND	ND
1/6/92	1,500	100	1,100	ND	1
11/6/92	150	150	400	ND	ND
13/6/92	<100	10	<100	ND	ND
29/6/92	1,200	1,200	<100	ND	ND
30/6/92	1,700	1,700	200	ND	1
13/7/92	600	290	100	ND	ND
14/7/92	1300	1300	600	ND	1
27/7/92	100	10	<100	ND	2
11/8/92	200	50	<100	ND	ND
12/8/92	180	180	100	ND	ND
16/8/92	4,800	700	-	-	-
26/8/92	400	120	100	ND	2
28/8/92 <sup>2</sup>	-	-	-	-	-
8/9/92	<100	20	<100	-	-
9/9/92	400	110	<100	ND	2
10/9/92	110	110	100	ND	2

ND=Not Detected

Notes:

1. E.coli and Total Coliform results unreliable due to analysis error. Sampling to 16/8/92.
2. Sampling not possible due to poor sea conditions. Sampling for E.coli. Total Coliforms and Faecal streps. rescheduled to 8/9/92.

**N.R.A. BATHING BEACH RESULTS - 1992**

**LEIGH-ON-SEA**

TQ 841 856

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /10l
13/5/92	<100	20	100	ND	ND
14/5/92	200	130	<100	ND	5
15/5/92	300	300	<100	ND	5
18/5/92	<100	50	<100	ND	ND
29/5/92	<del>16,000</del>	<del>8,400</del>	2,800	ND	42
31/5/92	Note 1	Note 1	500	ND	2
1/6/92	700	350	900	ND	1
11/6/92	<100	10	<100	ND	1
13/6/92	100	20	100	ND	ND
29/6/92	100	<10	100	ND	ND
30/6/92	300	70	100	ND	ND
13/7/92	100	100	500	ND	2
14/7/92	170	170	<100	ND	1
27/7/92	300	20	<100	ND	1
11/8/92	<100	50	100	ND	1
12/8/92	400	80	<100	ND	2
16/8/92	400	90	-	-	-
26/8/92	200	110	200	ND	ND
28/8/92 <sup>2</sup>	-	-	-	-	-
8/9/92	200	10	<100	-	-
9/9/92	150	150	<100	ND	ND
10/9/92	100	80	<100	ND	1

ND=Not Detected

**Notes:**

- 1 *E.coli* and Total Coliform results unreliable due to analysis error. Sampling rescheduled to 16/8/92.
- 2 Sampling not possible due to poor sea conditions. Sampling for *E.coli*. Total Coliforms and Faecal streps. rescheduled to 8/9/92.

**N.R.A. BATHING BEACH RESULTS - 1992**

**CANVEY ISLAND**

TQ 805 824

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
13/5/92	1,100	400	<100	ND	ND
14/5/92	1,500	420	200	ND	2
15/5/92	1,000	270	100	ND	1
18/5/92	900	180	<100	ND	ND
29/5/92	500	300	1,000	ND	ND
31/5/92	Note 1	Note 1	<100	ND	1
1/6/92	700	250	100	ND	1
11/6/92	270	270	100	ND	1
13/6/92	200	110	<100	ND	ND
29/6/92	<100	70	<100	ND	1
30/6/92	500	210	<100	ND	2
13/7/92	300	190	500	ND	2
14/7/92	700	310	100	ND	9
27/7/92	700	180	<100	ND	ND
11/8/92	200	200	<100	ND	ND
12/8/92 <sup>2</sup>	-	-	-	-	-
16/8/92	1,300	260	-	-	-
26/8/92	700	180	100	ND	1
28/8/92 <sup>3</sup>	-	-	-	-	-
8/9/92	800	270	<100	-	-
9/9/92	300	260	200	ND	1
10/9/92	400	340	100	ND	ND

ND=Not Detected

**Notes:**

- 1 E.coli and Total Coliform results unreliable due to analysis error. Sampling rescheduled to 16/8/92.
- 2 Sample not taken due to bad weather. Unable to reschedule.
- 3 Sampling not possible due to poor sea conditions. Sampling for E.coli, Total Coliforms and Faecal streps. rescheduled to 8/9/92.

**N.R.A. BATHING BEACH RESULTS - 1992**

**ALLHALLOWS**

TQ 837 789

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /l	VIRUSES /10l
13/5/92	100	<10	200	ND	ND
14/5/92	280	280	<100	ND	ND
15/5/92	120	120	1,700	ND	ND
18/5/92	200	70	100	ND	ND
29/5/92	100	40	<100	ND	ND
31/5/92	Note 1	Note 1	<100	ND	ND
1/6/92	5,100	<del>5,100</del>	1,000	ND	ND
11/6/92	<100	90	100	ND	ND
13/6/92	<100	20	<100	ND	1
29/6/92	<100	10	<100	ND	ND
30/6/92	<100	40	<100	ND	1
13/7/92 <sup>2</sup>	-	-	-	-	-
14/7/92	1,700	1,400	900	ND	ND
27/7/92	1,400	280	100	ND	1
11/8/92	<100	40	<100	ND	1
12/8/92	100	100	100	ND	ND
16/8/92	3,900	<del>3,900</del>	-	-	-
26/8/92	200	80	100	ND	ND
27/8/92	3,100	1,900	700	-	-
28/8/92 <sup>3</sup>	-	-	-	-	-
9/9/92	100	30	<100	ND	1
10/9/92	<100	60	<100	ND	2

ND=Not Detected

\*=Awaiting Results

Notes:

- 1 E.coli and Total Coliform results unreliable due to analysis error. Sampling rescheduled to 16/8/92.
- 2 Sample not taken. Rescheduled to 27/8/92.
- 3 Sampling not possible due to poor sea conditions. Sampling for E.coli, Total Coliforms and Faecal streps. rescheduled to 8/9/92.

N.R.A. BATHING BEACH RESULTS - 1992

GRAYS

TQ 614 775

DATE	TOTAL COLIFORMS /100MLS	E. COLI /100MLS	FAECAL STREPS. /100MLS
14/05/92	3,300	640	100
11/06/92	8,000	1,900	100
29/06/92	1,400	390	<100
27/07/92	2,100	800	100
26/08/92	9,000	1,800	300

GRAVESEND EAST

TQ 649 746

DATE	TOTAL COLIFORMS /100MLS	E. COLI /100MLS	FAECAL STREPS. /100MLS
14/05/92	2,500	380	100
11/06/92	3,200	1,800	<100
29/06/92	1,400	1,000	<100
27/07/92	2,400	600	<100
26/08/92	6,000	1,600	100