



ENVIRONMENT
AGENCY

**ENVIRONMENT PROTECTION DEPARTMENT
CORNWALL AREA**

**Crantock EC Bathing Beach
Additional Monitoring Data Report
FINAL REPORT**

February 2002

COR/2001/44

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ENVIRONMENT AGENCY

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1. INTRODUCTION

1.1 Background

The EC Designated Bathing Water at Crantock (82514949) on the north coast of Cornwall is sampled in accordance with the requirements of the EC Bathing Waters Directive (EC/76/100).

Since 1991 Crantock Beach has failed to meet the guideline standard requirements 8 times. Historical data shows that the River Gannel Estuary, which flows to the north eastern side of the beach, influences the bathing water at Crantock.

During 2001, five additional sample sites were sampled through the bathing season, three on the River Gannel and two on the Trencreek which flows into the Gannel estuary to the south of Newquay. Samples were collected from these sites coincidentally with routine bathing water sampling.

1.2 Objectives

To assess additional data collected in 2001 in order to progress pollution prevention measures to ensure that Crantock Beach meets the EC Bathing Water Guideline Standards. To assess whether the additional data has identified sources of bacterial contamination to the River Gannel Estuary.

2. RESULTS

The following index lists the location of the data collected and a map showing the catchment and sample sites.

Data	Location
Crantock Bathing Water Data (2001)	Table 1
River Gannel at Tretrice Mill & Gwills Gauging Station data (2001)	Table 2
River Gannel at Trevemper Bridge and by BP Garage data (2001)	Table 3
Trencreek at Chy-an-Gover and Overflow to the Boating Lake data (2001)	Table 4
Additional Monitoring Points	Figure 1
Summercourt (SW8609 5693) 2001 Rainfall Data	Appended to Tables 2 to 4

3. DISCUSSION

The two freshwater inputs, which were additionally monitored showed consistent, elevated bacterial contamination with occasional peaks in concentrations. These peaks did not always coincide with rainfall events (Tables 1 to 4).

3.1 River Gannel

Three South West Water Services Ltd. sewage treatment works (STW), (Fraddon, Mitchell and St.Newlyn East) were discharging to the River Gannel in 2001. Under the Asset Management Program (AMP) all sewage received at Mitchell STW will be pumped to St.Newlyn East STW from December 2001. In addition, under the AMP3 program the final effluent at St Newlyn East STW now receives Ultra-Violet (U.V.) disinfection. U.V. dosing



data is available from 12 July 2001 onwards. The inclusion of U.V. disinfection at St Newlyn East STW does not appear to have significantly reduced the concentrations of bacterial indicator organisms downstream of the STW outfall (Table 3).

Fraddon STW final effluent passes through a reed bed system, the performance of which is currently being assessed.

The private sewage treatment plant at Rosecliston Park also discharges to a tributary of the River Gannel. This tributary meets the Gannel between Gwills Gauging Station and Trevemper Bridge.

3.2 Trencreek

Mean total and faecal coliform concentrations at the upper most site, Chy-an-Gover, are virtually identical. Faecal coliform levels elevated in this way indicate a sewage related source. Background bacterial concentrations were also elevated and occasional peaks in concentrations were observed, although they did not coincide with rainfall events (Table 4).

Data gathered from the Trencreek at the boating lake overflow also showed elevated background concentrations with occasional peaks. Again these peaks did not always coincide with rainfall events and did not always coincide with peaks founds at the upstream site.

No monitoring data was collected from the stream that runs into the south of the Gannel Estuary. This stream rises to the east of Trevella Park.

4. CONCLUSIONS

Both the River Gannel and Trencreek showed elevated background concentrations of indicator organisms with occasional peaks. These peaks did not always coincide with rainfall events.

The AMP3 works at St Newlyn East STW does not appear to have reduced loadings of indicator organisms in the River Gannel catchment.

5. RECOMMENDATIONS

Should Guideline compliance at this Bathing Water become a priority then the following recommendations should be considered:

- 5.1** Conduct further investigation work on the River Gannel. This should include detailed wet and dry weather survey work including collection of hydrometric data to gain an indication of bacterial loadings. Loadings levels should also be calculated from Rosecliston Park STW. A catchment walkover survey would also be of significant value in this instance, should resources permit.

Action: EPr Team Leader - Investigations

- 5.2** A similar investigation should also be conducted on the Trencreek and the stream that rises to the east of Trevella Park. This work could coincide with the River Gannel investigation.

Action: EPr Team Leader - Investigations

Figure 1. Crantock ECBW Freshwater Inputs Additional Monitoring Points (2001)

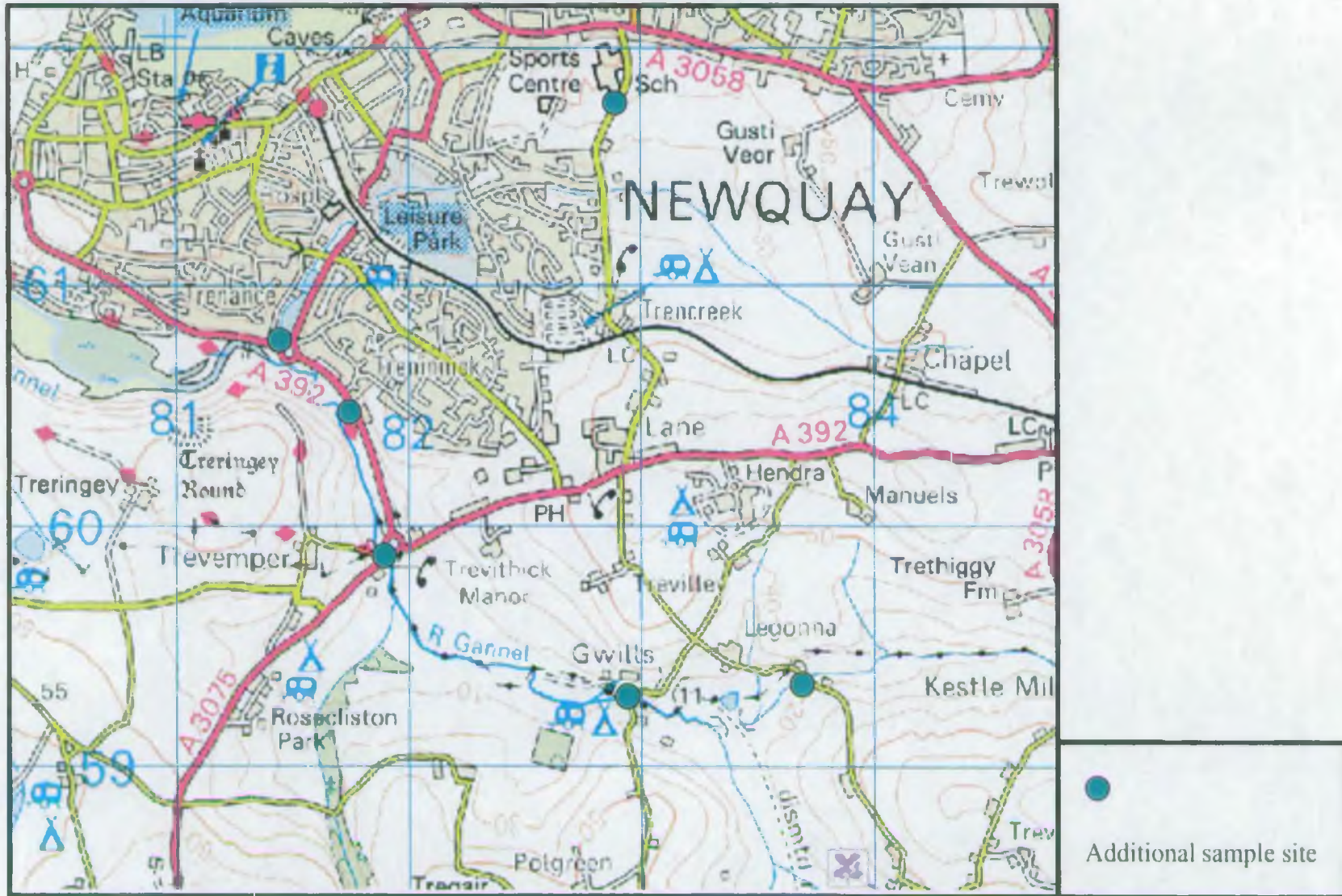


Table 1. Crantock Beach. Bathing Water data 2001

	Sample time (BST)	High Water (BST)	State of tide (HW \pm hrs)	Total Coliforms (No./100ml)	Faecal Coliforms (No./100ml)	Faecal Streps (No./100ml)	Salinity (g/kg)
02-May-01	11:20	13:41	-2.3	<10.0	<10.0	<10.0	34.1
13-May-01	13:40	9:35	+4.1	82.0	<10.0	<10.0	29.0
18-May-01	10:55	15:04	-4.2	55.0	27.0	<10.0	33.8
24-May-01	12:40	6:39	+6.0	<10.0	18.0	10.0	34.4
29-May-01	12:50	10:50	+2.0	<10.0	<10.0	<10.0	34.6
12-Jun-01	12:05	9:52	+2.2	<10.0	<10.0	<10.0	34.7
20-Jun-01	11:00	4:52	+6.0	109.0	64.0	<10.0	33.6
25-Jun-01	12:55	8:49	+4.1	18.0	<10.0	10.0	34.3
03-Jul-01	14:30	16:42	-2.3	<10.0	10.0	<10.0	34.8
09-Jul-01	15:30	20:32	-5.0	10.0	10.0	<10.0	34.5
18-Jul-01	11:45	16:03	-4.3	198.0	164.0	36.0	34.3
23-Jul-01	15:00	20:08	-5.0	18.0	<10.0	<10.0	34.8
01-Aug-01	14:30	16:29	-2.0	696.0	418.0	845.0	34.9
05-Aug-01	13:00	7:02	6.0	28.0	27.0	<10.0	34.0
10-Aug-01	10:30	9:27	+1.0	36.0	18.0	<10.0	34.8
22-Aug-01	12:15	8:15	+4.0	333.0	380.0	100.0	34.7
29-Aug-01	10:30	15:19	-4.8	27.0	27.0	<10.0	34.7
05-Sep-01	12:00	7:23	+4.5	64.0	73.0	91.0	34.4
10-Sep-01	11:55	10:15	+1.5	<10.0	10.0	<10.0	35.0
15-Sep-01	12:20	16:27	-4.0	420.0	55.0	10.0	34.9

Table 2

River Gannel at Trerice Mill (82410255) - SW83700 59350

Date	Time (BST)	Total Coliforms (No./100ml)	Faecal Coliforms (No./100ml)	Faecal Streps (No./100ml)	Rainfall - past 24hrs (mm)	Rainfall - todays (mm)
02-May-01	1200	2000.0	1245.0	230.0	2.3	0.0
13-May-01	1315	1900.0	845.0	882.0	0.3	0.0
18-May-01	1130	>20000.0	>20000.0	2500.0	0.5	0.0
24-May-01	1155	2800.0	873.0	118.0	0.0	0.0
29-May-01	1325	>20000.0	18800.0	1336.0	0.0	0.0
12-Jun-01	1130	2300.0	927.0	127.0	0.0	0.0
20-Jun-01	1145	2500.0	1036.0	290.0	0.0	0.0
25-Jun-01	1220	2900.0	1255.0	1327.0	0.0	0.0
03-Jul-01	1500	2900.0	2600.0	1082.0	0.0	21.9
09-Jul-01	1455	>20000.0	10700.0	1145.0	8.4	6.3
18-Jul-01	1225	12100.0	11200.0	2700.0	6.8	0.0
23-Jul-01	1430	8500.0	4200.0	400.0	0.0	0.0
01-Aug-01	1500	3300.0	1300.0	310.0	0.0	0.0
05-Aug-01	1230	4400.0	1255.0	560.0	3.7	1.0
10-Aug-01	1105	9200.0	3600.0	440.0	0.0	0.0
22-Aug-01	1120	1055.0	1045.0	770.0	0.9	0.0
29-Aug-01	1105	5700.0	3000.0	420.0	0.0	0.7
05-Sep-01	1130	2300.0	1091.0	790.0	0.0	0.0
10-Sep-01	1230	2800.0	1191.0	360.0	0.0	0.0
15-Sep-01	1145	5000.0	2800.0	982.0	0.6	0.0
	Mean	6582.8	4448.2	838.5		

River Gannel at Gwills Gauging Station (82410249) - SW82857 59297

Date	Time (BST)	Total Coliforms (No./100ml)	Faecal Coliforms (No./100ml)	Faecal Streps (No./100ml)	Rainfall - past 24hrs (mm)	Rainfall - todays (mm)
02-May-01	1155	1645.0	710.0	200.0	2.3	0.0
13-May-01	1300	4300.0	4000.0	109.0	0.3	0.0
18-May-01	1140	3000.0	2300.0	73.0	0.5	0.0
24-May-01	1205	1036.0	982.0	36.0	0.0	0.0
29-May-01	1335	2800.0	1482.0	73.0	0.0	0.0
12-Jun-01	1140	11400.0	6900.0	200.0	0.0	0.0
20-Jun-01	1140	3200.0	1218.0	280.0	0.0	0.0
25-Jun-01	1225	2000.0	2100.0	4000.0	0.0	0.0
03-Jul-01	1505	1700.0	1573.0	1182.0	0.0	21.9
09-Jul-01	1505	>20000.0	11800.0	2600.0	8.4	6.3
18-Jul-01	1230	8600.0	7200.0	2100.0	6.8	0.0
23-Jul-01	1440	1700.0	1600.0	300.0	0.0	0.0
01-Aug-01	1455	2600.0	973.0	136.0	0.0	0.0
05-Aug-01	1235	5100.0	3400.0	360.0	3.7	1.0
10-Aug-01	1110	6400.0	2900.0	800.0	0.0	0.0
22-Aug-01	1125	1700.0	2800.0	540.0	0.9	0.0
29-Aug-01	1110	5100.0	1130.0	500.0	0.0	0.7
05-Sep-01	1140	5600.0	2900.0	640.0	0.0	0.0
10-Sep-01	1235	4900.0	1745.0	460.0	0.0	0.0
15-Sep-01	1150	2800.0	964.0	520.0	0.6	0.0
	Mean	4779.1	2933.9	755.5		

Table 3

River Gannel at Trevemper Bridge (82410232) - SW81931 59891

Date	Time (BST)	Salinity (g/kg)	Total Coliforms (No./100ml)	Faecal Coliforms (No./100ml)	Faecal Streps (No./100ml)	Rainfall - past 24hrs (mm)	Rainfall - todays (mm)
02-May-01	1205	<1.0	1145.0	791.0	45.0	2.3	0.0
13-May-01	1250	<1.0	2200.0	1045.0	10.0	0.3	0.0
18-May-01	1130	<1.0	>20000.0	17600.0	118.0	0.5	0.0
24-May-01	1215	<1.0	2200.0	1255.0	109.0	0.0	0.0
29-May-01	1315	<1.0	5600.0	4500.0	2000.0	0.0	0.0
12-Jun-01	1145	<1.0	3200.0	2300.0	250.0	0.0	0.0
20-Jun-01	1125	<1.0	1800.0	1155.0	200.0	0.0	0.0
25-Jun-01	1235	<1.0	11500.0	12100.0	10100.0	0.0	0.0
03-Jul-01	1450	<1.0	5900.0	5300.0	1373.0	0.0	21.9
09-Jul-01	1510	<1.0	>20000.0	9700.0	2700.0	8.4	6.3
18-Jul-01	1215	<1.0	8300.0	8200.0	2100.0	6.8	0.0
23-Jul-01	1450	<1.0	12600.0	6500.0	390.0	0.0	0.0
01-Aug-01	1455	<1.0	4400.0	2400.0	182.0	0.0	0.0
05-Aug-01	1225	<1.0	3700.0	1527.0	210.0	3.7	1.0
10-Aug-01	1045	<1.0	>20000.0	5600.0	520.0	0.0	0.0
22-Aug-01	1145	<1.0	2200.0	2600.0	390.0	0.9	0.0
29-Aug-01	1100	<1.0	>20000.0	7200.0	500.0	0.0	0.7
05-Sep-01	1150	<1.0	1900.0	310.0	530.0	0.0	0.0
10-Sep-01	1220	<1.0	5700.0	1755.0	340.0	0.0	0.0
15-Sep-01	1125	<1.0	2000.0	720.0	370.0	0.6	0.0
		Mean	7717.3	4627.9	1121.9		

River Gannel by BP Garage (82410230) - SW81730 60630

Date	Time (BST)	Total Coliforms (No./100ml)	Faecal Coliforms (No./100ml)	Faecal Streps (No./100ml)	Rainfall - past 24hrs (mm)	Rainfall - todays (mm)
02-May-01	1215	3700.0	3300.0	118.0	2.3	0.0
13-May-01	1240	4500.0	1391.0	45.0	0.3	0.0
18-May-01	1150	4200.0	4400.0	127.0	0.5	0.0
24-May-01	1150	2300.0	620.0	82.0	0.0	0.0
29-May-01	1345	1836.0	2200.0	780.0	0.0	0.0
12-Jun-01	1120	2200.0	1027.0	330.0	0.0	0.0
20-Jun-01	1155	4300.0	4000.0	118.0	0.0	0.0
25-Jun-01	1215	8500.0	8000.0	580.0	0.0	0.0
03-Jul-01	1515	3800.0	2700.0	>20000.0	0.0	21.9
09-Jul-01	1450	>20000.0	17300.0	3800.0	8.4	6.3
18-Jul-01	1315	8800.0	7700.0	2800.0	6.8	0.0
23-Jul-01	1420	2900.0	2300.0	164.0	0.0	0.0
01-Aug-01	1505	6600.0	4400.0	230.0	0.0	0.0
05-Aug-01	1215	7200.0	4700.0	290.0	3.7	1.0
10-Aug-01	1130	10800.0	2800.0	460.0	0.0	0.0
22-Aug-01	1115	11900.0	4200.0	1227.0	0.9	0.0
29-Aug-01	1120	>20000.0	3300.0	250.0	0.0	0.7
05-Sep-01	1115	5900.0	1236.0	530.0	0.0	0.0
10-Sep-01	1240	2900.0	827.0	164.0	0.0	0.0
15-Sep-01	1120	>20000.0	4200.0	480.0	0.6	0.0
	Mean	7616.8	4030.1	1628.8		

Table 4

Trencreek at Chy-an-Gover (82410430) - SW82870 61400

Date	Time (BST)	Total Coliforms (No./100ml)	Faecal Coliforms (No./100ml)	Faecal Streps (No./100ml)	Rainfall - past 24hrs (mm)	Rainfall - todays (mm)
02-May-01	1445	1036.0	490.0	45.0	2.3	0.0
13-May-01	1040	4600.0	4600.0	18.0	0.3	0.0
18-May-01	1300	1509.0	955.0	91.0	0.5	0.0
24-May-01	1000	2200.0	1536.0	82.0	0.0	0.0
29-May-01	1605	5800.0	6500.0	118.0	0.0	0.0
12-Jun-01	940		2000.0	191.0	0.0	0.0
20-Jun-01	1330	>20000.0	>20000.0	>20000.0	0.0	0.0
25-Jun-01	1015	3300.0	2000.0	230.0	0.0	0.0
03-Jul-01	1720	9900.0	8500.0	1473.0	0.0	21.9
09-Jul-01	1320	6700.0	4100.0	600.0	8.4	6.3
18-Jul-01	1530	5000.0	3700.0	750.0	6.8	0.0
23-Jul-01	1210	918.0	882.0	200.0	0.0	0.0
01-Aug-01	1635	>20000.0	>20000.0	3000.0	0.0	0.0
05-Aug-01	1005	5500.0	4000.0	480.0	3.7	1.0
10-Aug-01	1350	5800.0	4600.0	891.0	0.0	0.0
22-Aug-01	935	1145.0	760.0	510.0	0.9	0.0
29-Aug-01	1340	3100.0	1300.0	290.0	0.0	0.7
05-Sep-01	845	1418.0	740.0	340.0	0.0	0.0
10-Sep-01	1410	1845.0	2200.0	380.0	0.0	0.0
15-Sep-01	920	845.0	800.0	520.0	0.6	0.0
Mean		5295.6	5255.9	2118.9		

Trencreek at Boating Lake Overflow (82410403) - SW81450 60750

Date	Time (BST)	Total Coliforms (No./100ml)	Faecal Coliforms (No./100ml)	Faecal Streps (No./100ml)	Rainfall - past 24hrs (mm)	Rainfall - todays (mm)
02-May-01	1220	5500.0	620.0	91.0	2.3	0.0
13-May-01	1230	3300.0	1018.0	873.0	0.3	0.0
18-May-01	1155	10600.0	4300.0	55.0	0.5	0.0
24-May-01	1145	770.0	600.0	210.0	0.0	0.0
29-May-01	1350	300.0	154.0	10.0	0.0	0.0
12-Jun-01	1115	7800.0	3100.0	220.0	0.0	0.0
20-Jun-01	1205	>20000.0	1545.0	440.0	0.0	0.0
25-Jun-01	1210	2300.0	910.0	290.0	0.0	0.0
03-Jul-01	1520	918.0	1109.0	280.0	0.0	21.9
09-Jul-01	1445	>20000.0	3300.0	330.0	8.4	6.3
18-Jul-01	1310	14700.0	14200.0	4900.0	6.8	0.0
23-Jul-01	1410	4200.0	3100.0	64.0	0.0	0.0
01-Aug-01	1510	3200.0	882.0	145.0	0.0	0.0
05-Aug-01	1210	1400.0	1164.0	118.0	3.7	1.0
10-Aug-01	1140	4800.0	2300.0	136.0	0.0	0.0
22-Aug-01	1110	>20000.0	9000.0	3600.0	0.9	0.0
29-Aug-01	1125	8300.0	3600.0	1009.0	0.0	0.7
05-Sep-01	1110	2500.0	1355.0	620.0	0.0	0.0
10-Sep-01	1245	2700.0	1273.0	620.0	0.0	0.0
15-Sep-01	1115	1091.0	882.0	390.0	0.6	0.0
Mean		6719.0	2720.6	719.8		