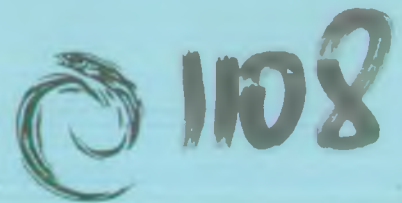


Carol - to CHRIS/ROB/RAY.
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NRA South West 417



NRA

*National Rivers Authority
South Western Region*

TECHNICAL DEPARTMENT

1994 EC Directive Returns South Western Region

June 1995

**Author: A Oliver
Scientific Officer (Quality Assessment)**

Draft Water Quality Technical Note QA95/01

**B L Milford
Water Quality Manager**

1994 EC DIRECTIVE RETURNS SOUTH WESTERN REGION

This report is a compilation of returns of compliance with EC Directives in 1994 sent to Head Office. It includes explanations for non compliant sites. If a site is not included in the return explanation, assume that the site was compliant in 1994.

LIST OF CONTENTS

	SECTION	CONTACT
EC Directive concerning the Quality of Bathing Water	1	AO
EC Dangerous Substances Directive List I	2	AG
EC Dangerous Substances Directive List II	3	AG
EC Surface Water Abstraction Directive	4	AO
EC Shellfish Waters Directive	5	AO
EC Freshwater Fisheries Directive	6	RB

For specific queries on compliance with directives please use the relevant contacts above.

RB - Rosanne Broome, Senior Scientist, Quality Assessment. Ext. 2622

AO - Anna Oliver, Scientific Officer, Quality Assessment. Ext. 2616

AG - Adrian Gurney, Scientific Officer, Quality Assessment. Ext. 2619

ENVIRONMENT AGENCY



129410

SECTION 1

EC DIRECTIVE CONCERNING QUALITY OF BATHING WATER RETURN 1994

MEMORANDUM

To: Peter Bird, Head Office
From: Nigel Morris, Exeter

Our ref: AJC
Your ref:

Date: 21 October 1994

1994 BATHING WATERS DIRECTIVE RETURN - SUPPORTING INFORMATION

1. Reasons for non compliance with mandatory coliform standards are as follows:

Kimmeridge Bay - A full survey of the entire bay and input streams has taken place. This showed the principle input of bacteriological contamination to be via the North Kimmeridge stream which receives run-off from many private cesspit/soakaway systems and from an unconsented public toilet. Due to the shallow nature of the bay, its aspect and the effect of wind and tides, pooling of contaminated water occurs at various states of tide. Negotiations are continuing with Smedmore Estate (the owners of most of Kimmeridge) and its consultants. The consent for the public toilet is currently being processed. Monitoring of the bay and its inputs will continue until the end of the year.

Weston Uphill Slipway - During this summer, a large investigation took place at Weston Bay. As part of this, the impact of the River Axe to Weston Bay was examined and discharges from Black Rock Pumping Station were monitored. The tidal nature of the bay has been investigated. Results cannot confirm any specific discharge was responsible for mandatory coliform standard exceedences on the dates of non compliance. In the days preceeding the September failure there was very little rainfall, and there was no rainfall leading up to the August failure. Investigations are continuing at Weston Bay - a full report will be drafted by the end of the year with recommendations for next year's investigations.

Lynmouth - Non compliance was caused by an unsatisfactory SWW discharge from the short crude outfall. The improvement scheme is due for completion in 1995.

Combe Martin - Reseweraging at Combe Martin is taking place. The Combe Martin Clean Sweep scheme is due to be completed by the end of 1995. This will remove or improve discharges to the River Umer and will improve the crude discharge. On the occasions of non compliance in the 1994 season, the River Umer is suspected to have contributed to the failure. A further investigation is to be considered on the River Umer after reviewing past surveys and their recommendations.

Ilfracombe (Hele) - Reseweraging at Ilfracombe is taking place. The Ilfracombe Clean Sweep scheme is due to be completed by the end of 1995. The crude outfall at Hele is thought to have caused non compliance on 10/8/94 and 14/9/94. On 17/8/94 the failure may have been caused

by either the stream at Hele or the outfall. This stream has been subject to investigation and further investigations were recommended.

Instow - Non compliance was caused by unsatisfactory discharges to the Taw/Torridge estuary. The improvement scheme is due for completion in 1998.

Broadsands - Investigations are currently being planned to identify the source of contamination at Broadsands. No specific cause can be identified for the 2 occasions of non compliance this season.

Paignton Sands - Non compliance was caused by SWW discharges from outfalls which will be removed under the clean sweep programme.

Teignmouth (Holcombe) - Non compliance was caused by a contaminated stream. An investigation of this stream to identify the source of the contamination is proposed.

Sidmouth (Town) - Influence of the River Sid and the crude outfall are thought to have jointly contributed to the failures at Sidmouth Town beach. An investigation is planned to identify inputs to the River Sid and their impact.

Beer - Non compliance could have been caused by Beer Head outfall or the stream at Beer. The stream is to be monitored and inputs to the stream will be investigated.

Mothecombe - Non compliance was caused by contaminated water from the Erme Estuary. There are many possible sources of contamination. Further survey work on the River Erme is recommended. Holbeton STW is to have secondary treatment under AMP2.

Budleigh Salterton - Non compliance was influenced by unsatisfactory SWW discharges to the sea and estuary. The improvement scheme is due for completion in 1995. Inputs to the River Otter and their impact will be investigated.

Plymouth Hoe East and West - Non compliance was primarily caused by outfalls which will be addressed by the Plymouth Central Clean Sweep Scheme.

Coverack - Non compliance on 31/08/94 could not be attributed to a specific source. The exceedence on 19/09/94 was caused by a contaminated stream. Investigation to identify sources of contamination is programmed to take place in May 1995.

Heliport - Due to works at heliport to build the tunnel for the Penzance/St Ives scheme, access to the beach had been shut off to the public and could not be sampled on many occasions. As a result only 12 samples were taken in the 1994 season. Non compliance on 3/8/94 appears to have been caused by freshwater inputs. Both the Chyandour and Rosemarran streams are scheduled for Task Force in April/May 1995. Non compliance on 27/08/94 was caused by SWW discharges from crude outfalls which will be addressed in the Penzance/ St Ives Clean Sweep Scheme.

Wherrytown - Non compliance was primarily due to SWW discharges from crude outfalls which will be addressed in the Penzance/ St Ives Clean Sweep Scheme. The quality of water in the Newlyn and Larrigan Rivers and their impact is to be investigated once the crude outfall has

been removed.

Penzance - Non compliance was caused by SWW discharges through outfalls which will be removed under the Penzance/ St Ives scheme.

Trevaunance - St Agnes outfall was the cause of non compliance in the 1994 season. This will be addressed in the St Agnes Clean Sweep Scheme. Investigation of stream inputs has taken place and action has been taken for connections. More investigation is planned for next year.

Porthallow - Non compliance was caused by crude private discharges to the stream. Negotiations are taking place to resolve the problem.

Porthleven West - Non compliance was caused by SWW discharges from the crude outfall. This will be addressed in the Porthleven Clean Sweep Scheme.

Porth gwiddden and Porthminster - Non compliance was caused by crude outfalls which will be removed within the Penzance/St Ives Clean Sweep Scheme.

2. The following comments apply for investigations that were carried out following last years failures. None of these beaches failed the directive in the 1994 season.

Sandsfoot Castle - An investigation to identify possible sources of contamination to the bathing waters was undertaken during this years bathing season. As a follow up to this, investigations will be programmed to:

- a) Identify whether the outfalls identified are the actual cause of the bathing water failure.
- b) Locate the exact source of contamination to the sewer storm overflows.

Boscombe Pier - No survey took place during the year because all major discharges along the Bournemouth coast have been fitted with telemetry equipment. These measures taken appear to have resolved the problem. No further work is being proposed.

Clevedon Marine Lake - A Helicopter survey took place this summer to track the passage of plumes in the Severn Estuary. Conclusions from this will be reported by the end of the year. Riverine inputs around Clevedon were investigated and found to be insignificant to the bathing waters failure.

Ilfracombe (Capstone) - The source of contamination to the East and West Wilder Brooks was investigated. Significant crude sewage inputs and farm waste inputs were found and recommendations for improvements have been made in the light of the investigation. Re-seweraging is taking place.

Porthcothan - Data is currently being reviewed and recommendations will be made as to whether an investigation will be necessary.

Mawgan Porth - An investigation is in progress to assess the effects of UV disinfection at St Columb Major STW on the River Menahal and to analyse the effects on bacteria levels.

Maen Porth - The stream adjacent to the beach is thought to be contaminated. Potential sources of contamination were noted on a site inspection.

East Looe - The three main sources of bacterial contamination found as a result of investigation were:

- a) Leakage from the sewerage system at Looe.
- b) Following heavy rainfall the East Looe and to a lesser extent the West Looe Rivers.
- c) Looe STW.

East Looe has been re-seweraged and the pumping station has been uprated to reduce the frequency of storm overflows. Recommendations have been made following this investigation.

3. **Physico-chemical data** - These are derived from positive observations recorded at the time of sampling. There are no laboratory chemical data available to confirm any of the observations.

There were 3 occasions where lasting foam was reported and samples from the bathing water were found to contain algae. These were:

Budleigh Salterton - Doe No. 22100, sample taken 18/05/94 at 1420

Dartmouth Castle and Sugary Cove - Doe No. 24700, sample taken 27/05/94 at 1030

Bantham - Doe No. 25700, sample taken 05/05/94 at 1030

There was 1 occasion where the sampler recorded mineral oil and laboratory analysis of a bathing water sample gave a result of < 0.120 mg/l dissolved or emulsified hydrocarbons. Since this result was less than 0.3 mg/l the positive result has been discounted.

4. The names of certain bathing beaches in North Wessex have now been changed. This is summarised below:

DoE NUMBER	SAMPLING POINT NUMBER	SAMPLING POINT NAME	NEW SAMPLING POINT NAME
36000	58902100	Clevedon Swimming Pool	Clevedon Beach
35800	58901210	Weston-S-Mare Tropicana	Weston Main
Non-designated	58901400	Weston Marine Lake	Weston Knightston

If you have any queries please contact Anna Close (Ext. 2616) in the first instance.

NIGEL MORRIS

Principal Officer (Water Quality Planning)

SECTION 2

EC DANGEROUS SUBSTANCES DIRECTIVE LIST I RETURN 1994

SOUTH WESTERN REGION

LIST 1: FAILURES DOWNSTREAM OF REGISTERED DISCHARGES 1994

DISCHARGE	TURN	REASON	CAUSE	NRA ACTION
CARNON CONSOLIDATED CLEMOWS VALLEY	R19E021 R19E003	CADMIUM CADMIUM	As commented in previous years returns, the non-compliance at these sites are the result of the discharges from the Wheal Jane Mine complex.	Trials of Pilot treatment plant continued during 1994.

SOUTH WESTERN REGION

LIST 1: FAILURES AT NATIONAL NETWORK SITES 1994

DISCHARGE	URN	REASON	CAUSE	NRA ACTION
<p>WELLS STW</p> <p>DIMMER WASTE DISPOSAL SITE</p> <p>WALPOLE GROVE WASTE DISPOSAL SITE</p> <p>BRIDGWATER STW</p>	52001450	<p>HCH</p> <p>Total Drins</p> <p>Aldrin</p> <p>Dieldrin</p> <p>Endrin</p> <p>Isodrin</p> <p>ppDDT</p> <p>Total DDT</p>	<p>The sample failures were all reported at abnormally high limits of detection and assessed at half face value. It is difficult therefore to draw any meaningful conclusions.</p> <p>Bridgwater STW has been known in the past to discharge significant levels of HCH, it is considered that it maybe responsible for the HCH exceedence in the River Parrett. Other potential sources could be from two further discharges upstream of this site (BCL British Cellophane and Royal Ordnance Factory), which are monitored under the Red List /PARCOM requirements . Both discharges will be subject to IPC authorisation this year, it is expected that effluent treatment plants will be installed as part of their IPC improvement plans.</p>	<p>Wessex Water has been asked to examine possible sources of the HCH on the Bridgwater effluent.</p> <p>Data is being collated with a view to consenting Bridgwater for HCH.</p> <p>Further investigation into potential sources will be carried out should positive failures be reported during 1995.</p>
CARNON CONSOLIDATED CLEMOWS VALLEY	R19E004	CADMIUM	As commented in previous years returns, the non-compliance at these sites are the result of the discharges from the Wheal Jane Mine complex.	Trials of Pilot treatment plant continued during 1994.

SECTION 3

EC DANGEROUS SUBSTANCES DIRECTIVE LIST II RETURN 1994

SOUTHWESTERN REGION

LIST 2: NON-COMPLIANCE DOWNSTREAM OF REGISTERED DISCHARGES

DISCHARGE	URN	REASON	CAUSE	NRA ACTION
CLATWORTHY FISH FARM	51000600	copper	This exceedence is likely to be attributable to the fish farm discharges.	Wessex Water plc. who own the fish farm will be asked to examine the sources and take appropriate remedial measures.
WHEAL JANE CLEMOWS VALLEY	R19E003 R19E021	iron, zinc, copper, pH	As commented in previous years returns, the exceedences at these sites are the result of the discharges from the Wheal Jane mine complex	Trials of pilot treatment plant continue
SOUTH CROFTY PLANT AND MILL	R23A003	copper, zinc, pH	High metals concentrations issue from the disused mines in the Red River catchment. The river works by Kerrier Ground work Trust(for Kerrier District Council) started in 1993 continued into 1994 and will have caused further sediment and river bed disturbance.	A further investigation is likely to determine if the point source discharges from South Crofty are having a significant impact on river. The NRA has added metals conditions to the consent but this remains under appeal with DoE.
CONCORD MINERALS	R23A062	copper, zinc, pH	High metals concentrations issue from the disused mines in the Red River catchment.	Mines database completed. The possibilities for long term control will now be evaluated.
BODMIN NANSTALLON STW	R25B019	copper, zinc, pH	Initial data review suggests that the main contributor of metals to the R.Camel is the St Lawrence Stream, into which abandoned mines and urban drainage discharge.	Further work is likely to establish polluting inputs to the St Lawrence Stream and possible remedial measures.
DULVERTON STW	WSTW7580B	copper	Cause is not known.	Investigate sources

DISCHARGE	URN	REASON	CAUSE	NRA ACTIONS
HEATHFIELD TIP	R06B053	copper, zinc	Initial review of the limited historic data (pre 1994), concluded that the copper exceedences were not caused by the intermittent landfill discharge. Elevated zinc and copper was recorded above the discharge, suggesting upstream influences. The discharge was within its consent conditions and is now tankered away, and soon to be discharged to the Teignmouth outfall.	No further action
HEATHFIELD STW	R06D004	copper, zinc	Initial review of the limited historic data set (pre-1994), concluded the exceedences were caused by elevated upstream concentrations, resulting from natural geology/historic mining. However, on one occasion the effluent recorded total copper levels twice the consented EQS for dissolved copper. This may indicate the STW's is adding to the EQS non-compliance.	Monitor the effluent and receiving waters for appropriate determinands and review.
BUCKFASTLEIGH STW (KILBURY)	R07B053	copper, zinc, lead	Stringent EQS apply ie. low hardness band, resulting in a borderline exceedence. Upstream levels were also elevated which is related to catchment geology. There have been historic problems with this STW in regard to organics. However, recently a new works was completed and performance trials have been undertaken. A general improvement in effluent quality has already been noted.	No further action
GREAT TORRINGTON STW	R29B004	copper, zinc	Stringent EQS applies ie. low hardness band, resulting in a borderline exceedence.. The upstream levels were also elevated which is related to local geology and influence of historic mining in the catchment. No other cause is known.	Investigate sources

DISCHARGE	URN	REASON	CAUSE	NRA ACTION
SOUTH MOLTON STW	WSTW3280B	copper, zinc	A review of historic data (pre 1994) concluded it was impossible to attribute the failure to the STW, although the discharge recorded elevated levels of copper (currently unconsented) There is known to be at least 7 abandoned mines upstream, supporting the theory that the local geology and historic mining are primarily the cause. The STW may be exacerbating the problem, however, investment by SWWSL at the works has yet to be fully implemented. Further fine tuning of the system will optimise the flow going to full treatment.	Monitor effluent and receiving waters for appropriate List II's and review with a view to consenting if necessary
MELDON QUARRY	R29D030	copper, zinc	The Quarry discharge is known to be the main source. The appeal with DoE remains outstanding.	Some operational changes are taking place, which necessitates the NRA reviewing the consent. Area Water Quality Officers have suggested, in view of the outstanding DoE appeal and the reduction in consented discharge volume, that a compromise solution maybe possible with regard to the discharge conditions. This approach has not yet been agreed with Regional Consenting staff. The NRA are continuing to liaise with the Quarry owners to seek a solution.

DISCHARGE	URN	REASON	CAUSE	NRA ACTION
HILLS OF SWINDON	08480243	nickel	A new consent was issued in Nov 1993, including conditions for nickel and zinc. A new reed bed has been installed since and it appears the system took a while to establish, as all the sample failures occurred early in the year. No consent breaches are known of.	Monitor the effectiveness of the reed bed system.
HAYLE STW	WSTW0084C	zinc, copper	Outfall now relocated to Gwithians which has much improved dilution.	No further action
REDRUTH STW (Porthtreath)	OUT0579C	copper	There is one trade effluent consented for copper, lead and zinc, however the SWWSL outfall is not consented for any of these substances.	Investigate with the view to consenting List II metals.
HINGSTON DOWN QUARRY	R12E042	copper	Investigations have shown only a small copper loading(2%) discharging from the Quarry. Discharges from old mine working adjacent to the R.Tamar in the lower reaches , are considered to be the major source of copper loadings. The monitoring point has been found to be within the mixing zone and therefore inappropriate and unrepresentative. However, it is considered that moving the site will not affect compliance.	This problem will be addressed via the Catchment Management Planning process. It is likely that the sampling point will be relocated further downstream to the edge of the mixing zone.
FALMOUTH DOCKYARDS COMBINED OUTFALL	P19A/P/P/IC	TBT, copper	The NRA has been aware of the TBT problem in the docks. Past use in docks of TBT means EQS compliance is unlikely in short to medium term. The copper failure is marginal and likely to be a result of high background levels.	The docks are to come under IPC authorisation during 95/96 and this will mean better control can be maintained over the discharge. NRA are currently evaluating the possibility of an investigation in the Falmouth Estuary. Under IPC control any investigation in the docks area will come under the responsibility of Falmouth Docks. They are aware of the TBT problem.

DISCHARGE	URN	REASON	CAUSE	NRA ACTION
INTERNATIONAL PAINTS	P10A/P/20C	TBT	International Paints are the most likely source, as effluent data showed significant levels of TBT.	NRA will be reviewing the consent this year.

SOUTHWESTERN REGION

LIST 2: NON-COMPLIANCE DOWNSTREAM OF REGISTERED DISCHARGES

CHINA CLAY AND BALL CLAY DISCHARGES

DISCHARGE	URN	REASON
LEE MOOR PLANT 38/6	R11A025	pH
SHAUGH LAKE EASTERN CONTROL	R11B003	pH
WHEAL HENRY 20/9	R16A011	copper pH
WHEAL PROSPER MICA DAM	R16A018	zinc
INNESMOOR MICA LAGOON	R16A022	pH
ROCK DRIERS 20/6	R16A025	zinc pH
BLACKPOOL DRIERS 18/14 & BLACKPOOL PLANT 18/P	R18A021	pH
KERNICK MICA DAM 7/24	R19C011	zinc
GOSVERSETH PLANT 12/14	R19C017	zinc pH
PARKANDILICK	RR19C018	copper zinc pH
DRINNICK POWER STATION 12/7	R19C022	zinc

DISCHARGE	URN	REASON
CURRIAN CATCH PIT	R19C023	pH zinc
BURNGALLOW TUBE PRESS 13/7 & DRIERS 13/2	R19C024	zinc pH
TRELAVOUR KILNS 7	R19C026	pH
MELBUR DRIERS 7/9 & MELBUR PLANT 3/1	R19C028	zinc
MACLARENS 1/1	R19C029	zinc
DUBBERS CATCH PIT & DUBBERS PIT 11/4	R19C030	zinc pH

GENERAL COMMENT

The low hardness of these waters make compliance with the stringent EQS's almost impossible to achieve, the entire River Fal, Par, Crinnis and St Austell catchments have been subjected to China clay excavations and mining for centuries. Watercourses over the years have often been diverted, particularly if they run through ECC or quarry land. There are often drainage and seepage channels intercepting the streams making sampling and access difficult.

Control of pH levels via the consenting process may be limited. The source water used for china clay extraction is often poorly buffered.

1994 non-compliance

Since 1993 a number of copper failures have become evident, these will need investigation. Work carried out by Area Water Quality staff has shown that a zinc based chemical was used in the past for the chemical whitening of the clays (by removal of iron). Reworking and other operational activities appear to be releasing the zinc back into the environment. There are few practical ways of reducing this problem in the short term due to the way the Company recycles process water.

Most China Clay consents are being progressively reviewed to meet current operational performance standards, this should result in improved plant operations in order to remain within the consent conditions. In addition, some discharges that were previously not consented have now been consented, ensuring better control of these discharges.

ACTION:

In order to quantify the impact of these discharges on the various receiving waters, it is considered that a detailed investigation may be necessary. Before further reviews of consents is practical more evidence would need to be collated, demonstrating a significant impact. Due to the nature of the industry and potential costs involved, it would be doubtful if improvements could be made in short to medium term. In the long term, particularly with the intended introduction of SWQO's, it maybe appropriate to apply for derogations of relevant parameters or perhaps seek to de-register some of these discharges.

SECTION 4

EC SURFACE WATER ABSTRACTION DIRECTIVE RETURN 1994

**NRA SOUTH WESTERN REGION
SURFACE WATER ABSTRACTION DIRECTIVE 1994**

NON COMPLIANT SITES 1994

1.0 COLOURATION NON COMPLIANCE WHERE WAIVERS APPLY

TABLE 1

The following sites were identified as failing the colouration standard in 1994 and have waivers applied to them (since 1993):

LOCATION	URN	EQS (hazen)	No. FAILING	No. SAMPLES
Fernworthy Reservoir	R06C064	20	2	12
Avon Reservoir	R08B023	20	11	12
Bala Brook Intake	R08B025	20	3	13
River Erme Intake	R09B025	20	4	12
River Yealm Intake	R10B025	20	3	12
Broadall Lake Intake	R10B026	20	3	12
Devonport Leat Intake, Dousland	R11B032	20	4	12
Colliford Reservoir	R15B050	20	10	12
R. Fowey, Trekievesteps	R15B053	20	2	12
R. Fowey at Restormel	R15B054	20	3	12
College Reservoir	R19A048	20	1	12
Drift Reservoir	R21A032	20	3	12
Crowdy Reservoir	R25B056	20	9	12
De Lank River Intake	R25C003	20	3	12

Four further sites were identified as not complying with the colouration standard in 1994. Waivers do not apply to these sites at present. The sites are set out in Table 6.

2.0 DISSOLVED IRON NON COMPLIANCE WHERE WAIVER APPLIES

TABLE 2

The following site did not comply with the dissolved Iron standard in 1994, a waiver applies to this site (since 1993):

LOCATION	URN	EQS (mg/l)	No. FAILING	No. SAMPLES
Crowdy Reservoir	R25B056	0.3	1	4

There were 3 further sites which failed to comply with the Dissolved Iron standard in 1994. Waivers do not apply to these sites. The sites are set out in Table 6

3.0 TOTAL PHENOL FAILURES

TABLE 3

The following sites were identified as failing the total phenols standard in 1994:

LOCATION	URN	EQS (mg/l)	No. FAILING	No. SAMPLES
Dawlish Water, Thorns Intake at Kenton	R05A030	0.001	1	3
Wimbleball Reservoir	R05G017	0.001	1	4
Avon Reservoir	R08B023	0.001	2	4
Bala Brook Intake	R08B025	0.001	1	5
River Erme Intake	R09B025	0.001	2	4
River Yealm Intake	R10B025	0.001	3	4
Broadall Lake Intake	R10B026	0.001	2	4
Ford Brook Intake	R10B027	0.001	2	4
Burrator Reservoir	R11B030	0.001	2	4
Devonport Leat Intake, Dousland	R11B032	0.001	2	4
Colliford Reservoir	R15B050	0.001	1	4
R. Fowey, Trekeivesteps	R15B053	0.001	2	4
R. Fowey, Restormel	R15B054	0.001	2	4

TOTAL PHENOL FAILURES**TABLE 3 Continued...**

LOCATION	URN	EQS (mg/l)	No. FAILING	No. SAMPLES
Drift Reservoir	R21A032	0.001	1	4
R. Porth at Rialton	R25A025	0.001	2	4
Crowdy Reservoir	R25B056	0.001	2	4
De Lank River	R25C003	0.001	1	4

The high levels of phenols are considered to be natural. No action is proposed as this will be taken up at national level.

4.0 DISSOLVED & EMULSIFIED HYDROCARBON NON COMPLIANCE**TABLE 4**

The following sites were identified as not complying with the Dissolved & Emulsified Hydrocarbon standard in 1994.

LOCATION	URN	EQS (mg/l)	No. FAILING	No. SAMPLES
Otterhead Reservoir	R04B052	0.2	1	4
Dawlish Water, Thorns Intake	R05A030	0.05	3	3
R. Exe at Bolham	R05E033	0.2	1	4
Wimbleball Reservoir	R05G017	0.05	3	4
Trenchford Reservoir	R06C060	0.05	5	5
Fernworthy Reservoir	R06C064	0.05	2	4
Kennick Reservoir	R06C066	0.05	3	4
Venford Reservoir	R07B059	0.05	11	15
R. Dart at Littlehempston	R07B063	0.2	1	4
Avon Reservoir	R08B023	0.05	3	4
Bala Brook intake	R08B025	0.05	3	5
River Erme intake	R09B025	0.05	3	4
River Yealm intake	R10B025	0.05	3	4
Broadall Lake intake	R10B026	0.05	2	3

DISSOLVED & EMULSIFIED HYDROCARBON NON COMPLIANCE
Table 4 Continued...

LOCATION	URN	EQS (mg/l)	No. FAILING	No. SAMPLES
Ford Brook intake	R10B027	0.05	3	4
Burrator Reservoir	R11B030	0.05	2	3
Devonport Leat intake, Dousland	R11B032	0.05	3	4
R. Tavy at Lopwell	R12C027	0.05	1	4
Roadford Reservoir	R12G092	0.2	1	4
Colliford Reservoir	R15B050	0.05	3	4
R. Fowey at Trekeivesteps	R15B053	0.05	4	4
R. Fowey at Restormel	R15B054	0.05	2	3
Argal Reservoir	R19A045	0.05	3	4
College Reservoir	R19A048	0.05	3	4
Stithians Reservoir	R19E024	0.05	3	4
Drift Reservoir	R21A032	0.05	4	4
R. Hayle at St Erth	R22B023	0.05	3	4
Boswyn Reservoir	R23A060	0.05	3	3
R. Porth at Rialton	R25A025	0.05	4	4
Crowdy Reservoir	R25B056	0.05	3	4
De Lank River	R25C003	0.05	3	3
West Okement River	R29D054	0.2	1	4
Meldon Reservoir	R29D058	0.05	1	4
R. Taw at New Bridge	R30B017	0.2	2	5
R. Bray at Leehamford	R30G016	0.05	4	5
Brockemburrow Intake	R30G017	0.05	4	5
Bratton Stream Intake	R30H017	0.2	1	4

DISSOLVED & EMULSIFIED HYDROCARBON NON COMPLIANCE

Table 4 Continued...

LOCATION	URN	EQS (mg/l)	No. FAILING	No. SAMPLES
Wistlandpound Reservoir	R30H021	0.05	2	4
Lower Slade Reservoir	R31A019	0.05	3	4
River Avon at Matchams	30219000	0.2	3	11
River Avon at Knapp Mill	30218000	0.2	2	10
River Stour at Longham	30423000	0.2	1	10
Nutscale Reservoir	50010250	0.2	1	9
Clatworthy Reservoir	51000550	0.2	3	8
Durleigh Reservoir	52270150	0.2	2	7
Hawkridge Reservoir	52330590	0.2	1	7
Cheddar Yeo at Cheddar Springs	57070150	0.2	1	5
Barrow Reservoir	58300050	0.2	2	21

No action is proposed for this non compliance. The large number of failures is to be taken up at National level.

5.0 POLYAROMATIC HYDROCARBON NON COMPLIANCE

TABLE 5

The following sites were identified as failing the Polyaromatic hydrocarbon standard in 1994:

LOCATION	URN	EQS (mg/l)	No. FAILING	No. SAMPLES
East Budleigh Brook Intake	R04A001	0.0002	1	4
River Exe Intake at Pynes	R05D012	0.0002	1	4
River Fowey intake at Restormel	R15B054	0.0002	1	3
River Avon at Matchams	30219000	0.0002	1	10

No action is proposed for this non compliance. The large number of failures is to be taken up at National level.

6.0 1994 NON COMPLIANCE WHERE THERE ARE NO WAIVERS. NOT INCLUDING TOTAL PHENOLS, POLYAROMATIC HYDROCARBONS AND DISSOLVED & EMULSIFIED HYDROCARBONS.

TABLE 6

SITE	CAUSE	REASON	NRA ACTION
Dawlish Water, Thorns Intake at Kenton R05A030	Colouration Dissolved Iron	The site is in an upland area with peaty soil overplanted with conifer plantations. Consequently the river is prone to natural colouration during rain. There was substantial rain during the day of 19.10.94 when the most significant failure occurred. The dissolved iron result on the same day is considered to be due to natural runoff.	No further action
Avon Reservoir R08B023	Dissolved Iron	The dissolved iron failure on 8.11.94 corresponded with high rainfall. The iron may originate from old earthworkings upstream of Avon Dam.	The source of the iron is to be confirmed by investigation.
Burrator Reservoir R11B030	Dissolved Iron	The failure was due to low pH moorland water leaching out metals from the natural soil of the catchment.	No further action

SITE	CAUSE	REASON	NRA ACTION
River Bray at Leehamford R30G016	Colouration	This is an upland site. The exceedence occurred during rainfall. Humic acids leached from surrounding peaty soils leading to colouration non compliance.	No further action.
Brockemburrow Intake R30G017	Colouration	Colouration failure is due to leachate from marshland around the abstraction point during rainfall.	No further action
Ivy Lake, Blashford 30067000	Total Mercury	No known sources of mercury in the catchment.	Historical data is to be reviewed and an investigation will then be considered.
River Stour at Longham 30423000	Cyanide	No known sources of cyanide in the catchment.	Historical data is to be reviewed and an investigation will then be considered.
Hawkridge Reservoir - 52330590	Total Lead	No source known. This is suspected to be a one-off failure.	If non compliance occurs again, further investigation will take place.
Sutton Bingham Reservoir 54141103	Colouration	The colouration failure cannot easily be accounted for. There is an algal problem within the reservoir.	Should non compliance for colouration occur again an investigation will be considered.
Cheddar Yeo, Cheddar Springs 57070150	Total Lead	The most likely source of lead would be from the limestone outcrop of the Mendips, which is naturally high in lead.	An investigation will take place to investigate the source of lead.

SITE	CAUSE	REASON	NRA ACTION
Porth at Rialton R25A025	Colouration	Investigaitons indicate non compliance in 1993 and 1994 is be due to natural colouration caused by humic acids in the peaty soils.	Apply for waiver

SECTION 5

EC SHELLFISH WATERS DIRECTIVE 1994 RETURN

MEMORANDUM

To: Peter Bird, EC Directives Officer, Bristol.

From: Rosanne Broome, Senior Scientist (Quality Assessment)
NRA South Western Region

Extn: 2622

Your reference:
Our reference:

Date: 13 March 1995

SOUTH WESTERN REGION SHELLFISH WATERS DIRECTIVE RETURN 1994

Please find attached the 1994 EC Shellfish Waters Directive return for the South Western Region. This shows the number of samples taken at each of the nine sites and the number of exceedences of standards for each parameter.

1. The sum of pp'DDT and op'DDT was used for the DDT column compliance.
2. There are no discharges known to be close enough to any of the South Western Shellfish sites to affect their compliance with the directive. Standards for Temperature, Colour and Suspended Solids cannot be checked against the differential limits as there are no relevant discharges.
3. There are no results for the South Western Region for Silver or Chromium as Laboratory analytical techniques have not yet been developed for these determinands.
4. There are no results for Parathion at any of the sites in Poole or Portland Harbour.
5. There are only three results available for Salinity at each of the Poole and Portland Harbour sites as unfortunately no measurements for Salinity were obtained on the survey carried out 30 November 1994. This sampling shortfall will be corrected for the future.
6. No Dissolved Oxygen result was obtained at Poole Harbour Six on the survey carried out 30 November 1994.
7. No pH result was obtained at Poole Harbour Six on the survey carried out 30 November 1994.

SAMPLING FREQUENCY

As in previous years, sites in the Fal and Helford Estuaries have been visited on two occasions during the year. On each occasion eight samples were taken at half hourly intervals.

STANDARD EXCEEDENCES

There was one exceedence at the Poole Harbour Three site for Dissolved Copper as follows:-

POOLE HARBOUR THREE 32103000 - SALINE COPPER (DISSOLVED)

Date	Time	UG/L
02-Mar-94	1255	11.2

From the available data it is thought likely that this part of the harbour experienced elevated levels of metals during the March period but this seems to have been only transitory in nature; the origin of the the problem is not known at this stage.

Additional samples have recently been taken for metals by the Investigations team to re-investigate the problem. The spring shellfish sampling is due this month and if further elevated levels are found a more structured investigation will be carried out to establish the cause.

There were three exceedences of the limit for Saline Zinc at the Fal Estuary (Turnaware Bar) site as follows:-

FAL ESTUARY (CARRICK ROADS) SURVEY E19B - SALINE ZINC (DISSOLVED)

Date	Time	UG/L
01-JUL-94	0900	44.00
01-JUL-94	1000	40.60
01-JUL-94	1130	57.00

These exceedences of the limit for Saline Zinc are thought to have occurred due to the proximity of this site to the Carnon River which takes the discharge from the abandoned Wheal Jane mine. It is unlikely that this situation can be resolved in an area which is associated with past mining activity.

ROSANNE BROOME
Senior Scientist (Quality Assessment)

SAMPLING POINT NAME	POINT REF.	PH		TEMP		COLOUR		SUS.SOLIDS		SALINITY		DO% SAT		HYD.CARBS		LINDANE		DIELDRIN		DDT	
		S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
POOLE HARBOUR 3 (HUTCHINS BUOY SY9950089500	32103000	4	0	*N/A*		*N/A*		*N/A*		3	0	4	0	VISUAL		4	0	4	0	4	0
POOLE HARBOUR 8 (SALTERNS) SZ0350089300	32106000	3	0	*N/A*		*N/A*		*N/A*		3	0	3	0	VISUAL		4	0	4	0	4	0
POOLE HARBOUR 10 (ENTRANCE) SZ0370088900	32110000	4	0	*N/A*		*N/A*		*N/A*		3	0	4	0	VISUAL		16	0	16	0	16	0
POOLE HARBOUR 12 (GOATHORN POINT) SZ0140088800	32112000	4	0	*N/A*		*N/A*		*N/A*		3	0	4	0	VISUAL		4	0	4	0	4	0
PORTLAND HARBOUR 1 SY8790075000	32115000	4	0	*N/A*		*N/A*		*N/A*		3	0	4	0	VISUAL		4	0	4	0	4	0
PORTLAND HARBOUR 2 SY8900078300	32116000	4	0	*N/A*		*N/A*		*N/A*		3	0	4	0	VISUAL		4	0	4	0	4	0
HELFORD ESTUARY (FRENCHMENS CREEK) SW7985026000	E19A	16	0	*N/A*		*N/A*		*N/A*		16	0	16	0	VISUAL		16	0	16	0	16	0
FAL ESTUARY (TURNWARE BAR) SW8350038300	E19B	16	0	*N/A*		*N/A*		*N/A*		16	0	16	0	VISUAL		16	0	16	0	16	0
FAL ESTUARY (PERCUIL RIVER) SW8570033500	E19P	16	0	*N/A*		*N/A*		*N/A*		16	0	16	0	VISUAL		16	0	16	0	16	0

SAMPLING POINT NAME	POINT REF.	PARATHION		SILVER		ARSENIC		CADMIUM		CHROMIUM		COPPER		MERCURY		NICKEL		LEAD		ZINC	
		S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
POOLE HARBOUR 3 (HUTCHINS BUOY SY9950089500	32103000	NO RESULT		NO RESULT		4	0	4	0	NO RESULT		4	1	4	0	4	0	4	0	4	0
POOLE HARBOUR 8 (SALTERNS) SZ0350089300	32106000	NO RESULT		NO RESULT		4	0	4	0	NO RESULT		4	0	4	0	4	0	4	0	4	0
POOLE HARBOUR 10 (ENTRANCE) SZ0370088900	32110000	NO RESULT		NO RESULT		16	0	16	0	NO RESULT		16	0	16	0	16	0	4	0	4	0
POOLE HARBOUR 12 (GOATHORN POINT) SZ0140088800	32112000	NO RESULT		NO RESULT		4	0	4	0	NO RESULT		4	0	4	0	4	0	4	0	4	0
PORTLAND HARBOUR 1 SY8790075000	32115000	NO RESULT		NO RESULT		4	0	6	0	NO RESULT		6	0	4	0	6	0	6	0	6	0
PORTLAND HARBOUR 2 SY8900078300	32116000	NO RESULT		NO RESULT		4	0	6	0	NO RESULT		6	0	4	0	6	0	6	0	6	0
HELFORD ESTUARY (FRENCHMENS CREEK) SW7985026000	E19A	16	0	NO RESULT		16	0	16	0	NO RESULT		16	0	16	0	16	0	16	0	16	0
FAL ESTUARY (TURNWARE BAR) SW8350038300	E19B	16	0	NO RESULT		16	0	16	0	NO RESULT		16	0	16	0	16	0	16	0	16	3
FAL ESTUARY (PERCUIL RIVER) SW8570033500	E19P	16	0	NO RESULT		16	0	16	0	NO RESULT		16	0	16	0	16	0	16	0	16	0

S = Number of samples analysed for that parameter between 1-Jan-94 and 31-Dec-94

F = Number of exceedences of the standard for that parameter between 1-Jan-94 and 31-Dec-94

* TEMPERATURE :

No discharge to check against differential limits

* COLOUR :

No discharge to check against differential limits

*SUSPENDED SOLIDS :

No discharge to check against differential limits

SILVER :

Laboratory analytical technique not yet developed

CHROMIUM :

Laboratory analytical technique not yet developed

SECTION 6

EC FRESHWATER FISHERIES DIRECTIVE RETURN 1994

NATIONAL RIVERS AUTHORITY-SOUTH WESTERN REGION

EC FRESHWATER FISH DIRECTIVE RETURN 1994

NON-COMPLIANCE FOR SITES WITH NO CURRENT DEROGATIONS

RIVER	SITE	REASON	CAUSE	NRA ACTION
R. Bristol Avon	01011701	unionised ammonia	<p>The sample failure on the 10 May was attributed to elevated levels of unionised ammonia occurring in the Berrifield Stream, a tributary of the Avon. Bowerhill STW which discharges into the Berrifield Stream has been identified as the cause.</p> <p>The sample failure on 24 May was found to be linked to elevated unionised ammonia in the South Brook. Although Melksham STW; which discharges to the Brook; did not record high ammonia, the effluent temperature was high(20°C) which would result in a greater proportion of unionised ammonia present as ammonia in the receiving waters. A similar effect seems to have occurred in the Berrifield Stream. However, in this case a pumping station at Holbrook was known to have overflow problems over this period, this problem is now resolved. As Melksham STW indirectly discharges the greater volume into the affected stretch, it is the most probable primary contributor to the failure. At times Bowerhill STW may have an impact in this area when discharging high temperature effluent with elevated ammonia.</p>	<p>The upgrading of Melksham STW and relocation of Bowerhill STW outfall are in the AMP2 programme for discretionary spend, though well down the list.</p> <p>Some further investigation is likely to substantiate the comments.</p>

RIVER	SITE	REASON	CAUSE	NRA ACTION
R.Bristol Avon	01012101	unionised ammonia	Data confirms that Blackwell Hams STW is the cause, as the failure coincided with high ammonia levels in the effluent.	Blackwell Hams STW is not covered within AMP2. However the NRA are concerned and will be discussing the problem with Wessex Water in order to seek adequate protection for the water course. Some further investigation may be required to support any future consent review.
South Drain	56000700	dissolved oxygen	This site failed in 1992 and was attributed to the pumping out of peat diggings, which can cause water quality deterioration. This is now declining and soon the pumping will cease. None of these discharges were consented.	Review quality after pumping has ceased. Confirm no other polluting inputs.
R.Axe	57000500 57010200	unionised ammonia total ammonia	Both these sites are downstream of the Inveresk Paper mill . Problems are known to have occurred with the effluent failing to meet consent standards for ammonia . High ammonia levels have been recorded in the river during the summer months, when there is least dilution. The degree of failure was worst at the 57000500 site, which is closest to the paper mill discharge point.(500m d/s)	Area Water Quality staff are vigorously pursuing Inveresk paper mill, with respect to an improvement in consent compliance An improvement in water quality is anticipated at both sites during 1995.
King Sedgemoor	55006500	total ammonia	This site failed in 1993 and in the past. It is a penned watercourse on the Somerset levels with numerous interconnecting drains . As with the North Drain releases of nutrient rich water after periods of penning can cause water quality problems in the main river.	A campaign of farm visits is to be undertaken this year(beginning in April), to identify the polluting inputs and to heighten awareness of the MAFF Code of Good Practice. The NRA does not control the minor drain-sluiques, but can use its influence to persuade the local sluice operators to manage the release of water to avoid water quality problems.

RIVER	SITE	REASON	CAUSE	NRA ACTION
R.Kenn	58200400	total ammonia dissolved oxygen	Investigation into the 1993 failure at this site has concluded that the sampling point is not appropriate for the purpose of monitoring the designated stretch. Sampling point rationalisation some years ago resulted in confusion regarding the Kenn Pier site. As consequence of this the existing site is on the inland lower Kenn, which is penned and cut off by a sluice. The quality recorded at this site is not typical of the majority of the designated stretch.	Monitoring will recommence in 1995 at the Upper Kenn site ie. the original Kenn Pier. This is a flowing section through which the majority of the water flows to the sea.
North Drain	56310700	total ammonia dissolved oxygen	<p>This site failed in 1993 and in the past. The stream is located on the Somerset levels with many minor connecting drains, these are not controlled by NRA. These minor drains are penned between April and October, after which the nutrient rich water is released into the main watercourses. This can result in deterioration in water quality.</p> <p>Pumping out of peat diggings can cause high ammonia's, this is now declining and soon the pumping will cease. None of these discharges were consented.</p> <p>This is a notable fishery, owned by NRA and the North Drain, runs through Tealham and Tadham SSSI's. There are no known particular pollution problems and its high conservation and fishery value makes this failure a concern.</p>	<p>Review situation after peat pumping has ceased.</p> <p>Use NRA influence to persuade the local sluice operators to manage the release of water to avoid water quality problems</p>
R.Lydden	30368000	total ammonia	The failing sample was taken following heavy rainfall. Suspended solids and BOD were also elevated. This catchment is currently undergoing intensive farm inspections. The Caundle Brook, a main tributary is also being surveyed during this year.	Continue with catchment inspections to ensure best practice is used and take enforcement action where necessary.

RIVER	SITE	REASON	CAUSE	NRA ACTION
Huckles Brook	30291000	dissolved oxygen	This stream headwaters are in a forested catchment running off a sandy escarpment. The low D.O. was recorded on a day when the upstream site at Ogden had no flow. The stream is essentially a winterbourne used by fish for spawning and migration fish tend to move out in the summer.	No further action, as a natural phenomenon.
R.Tavy	R12C023	total ammonia	This site is immediately downstream from Crowndale STW. Investigations in 1991 and last year suggest the STW significantly impacts the receiving waters under certain flow regimes (both chemically and biologically). The river is subject to hydro electric power abstractions by Power Gen. This results in pulsed and variable river flows. Area Water Quality Staff have not as yet fully determined the exact nature of the problem. It has been recommended that further work is carried out as part of the on going River Tavy Alleviation of Low flows Project. Crowndale STW was identified as a 'high profile' scheme requiring discretionary spend under AMP2. But no money has been made available for any SWWSL discretionary schemes and it was too late to be included in the investment programme to ensure meeting the EC Fresh Water Fish Directive requirements.	Further investigations will take place this year and depending on the outcome. Action will be taken to resolve the situation as far as possible within the NRA powers
R.Tamar	R12L001	total ammonia	This failure is thought to be related to poor agricultural practice in the fairly intensively farmed catchment. A review of the past 5 years of ammonia data indicates a pattern showing high ammonia levels occurring in September and October. It is considered that this is due to farm waste run-off from arable land. It is likely that waste is being spread on land which is cropped during these particular months. Problems may be a result of poor farming practices and not following MAFF Code of Good Practice guides lines	Investigations to determine the extent of the run-off problems have commenced. A remote logger will be installed to monitor levels and provide early warning. A survey of land usage will be instigated to evaluate cropping practices and enable run-off predictions to be made. Enforcement action will be taken where found to be necessary

RIVER	SITE	REASON	CAUSE	NRA ACTION
Grand Western Canal	R05C021 R05E013	dissolved oxygen high pH	Poor water quality in the canal has been an on going historical problem, particularly at the basin end. The canal has very little flow, with only a small feeder spring. Area Water Quality staff believe the problem is being exacerbated by enriching inputs from intensive duck feeding(basin end) and fishing(bait). These activities have been known to contribute to algal blooms which result in DO and pH problems.	There is no foreseeable practical solution which the NRA could take to reduce or eliminate the inputs(as this would require limiting recreational use) and facilitate improvements.

<u>Region</u>	<u>Sampling point</u>	<u>Stretch details</u>	<u>Exceeding parameter.</u> <u>Reason for exceedence.</u> <u>NRA Action plan.</u>
South West	R08A019 SLAPTON LEY 2	THE GARA ; SLAPTON LEY Class C 0 km 90 ha	<u>pH</u> High summer pH- eutrophic conditions-eutrophication No further action
	R08B031 AVON DAM SURFACE	RIVER AVON ; AVON RESERVOIR Class S 0 km 20 ha	<u>pH</u> Acidic run-off from upland moorland catchment No further action
	R11B003 CADOVER BRIDGE	RIVER PLXM ; DITSWORTHY - CADOVER BRIDGE Class S 5.1 km 0 ha	<u>pH</u> low pH due to natural geology and upland moorland catchment none
	R12C001 HILL BRIDGE	RIVER TAVY ; WILLSWORTHY - HILL BRIDGE Class S 1.6 km 0 ha	<u>pH</u> Low pH -natural geology and upland moorland catchment
	R19D006 CALENICK BRIDGE	CALENICK STREAM ; TREYEW - NTL Class S 1.8 km 0 ha	<u>Total zinc</u> Natural geological conditions and discharges from abandoned mines No further action, mines database completed
	R19A013 GAMMATON RESERVOIR	GAMMATON STREAM ; GAMMATON RESERVOIR Class S 0 km 2 ha	<u>pH</u> Algal activity resulting in eutrophic conditions No further action