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THE RIVER MEON



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THE RIVER MEON

COURSE AND HISTORY

The River Meon is one of the famous Hampshire chalk streams. It rises as a spring 2 km to the South of East Meon, at the foot of Ramsdean Down and Butser Hill. After flowing north-west through West Meon towards Warnford, the river turns South towards the sea, passing through several villages including Droxford and Soberton. Although these headwaters are on the permeable chalk, once South of Mislingford the river begins to flow over less permeable sands, silts and clays of Tertiary age through the villages of Wickham and Titchfield. The river then finds its way to the sea at Hillhead.

The landscape of the Meon catchment was sculpted in the

Titchfield Canal



last Ice Age. Although it is unlikely that the ice sheet reached very far South, the area was certainly very cold and the ground would have been frozen to a considerable depth all the year round. Under these permanent conditions, frost action and very rapid runoff from rainfall shaped the dry valleys that exist today. In common with the other Hampshire chalk streams, the actual line of the river and its tributaries suggests a right angle grid pattern, reflecting the structure of the

underlying chalk.

It has been suggested that the Upper Meon upstream of Warnford was originally a tributary of the River Itchen and was captured by the Meon which had the advantage of a more direct route to the sea.

The Lower Meon and the River Itchen were once tributaries of the ancient Solent River which flowed eastwards from the River Frome to join the sea somewhere near Littlehampton in times when the Isle of Wight was part of the mainland. The Solent River system was dismembered during the Pleistocene Period when the sea made inroads into the catchment to the East and the West of the Isle of Wight.

Historically the steep gradients of the middle and upper reaches enabled the river's water power to be harnessed for iron working, wool processing, paper making, tanning, flour and grist milling as well as for the generation of electricity. The Iron Mill, North of Titchfield was one of the early pig iron manufacturers supplying Portsmouth Dockyard and used water power to drive a drop hammer. The paper mill at Warnford was a one vat mill established in 1618. Although none of the traditional working mills survive today, traces of the iron mill can be seen at Funtley and those of a substantial flour mill at Wickham. Several other mill buildings still exist along the river.

Structures built to harness water power and to improve navigation were also used for the water meadow systems of surface irrigation. Water was led onto the meadows in winter by high level distributaries or carriers (many of which still exist) and then back into the main channel. This kept the ground temperature relatively high and promoted the growth of grass. The process was labour intensive and changes in agricultural practice from sheep to dairy and arable use have been a major factor in the demise of the water meadow systems.

The name Meon is possibly a legacy of the Celtic language. Meon is a word of the same stem as Mene, Menai, etc. For the Domesday survey East Meon was part of the Mene hundred (a part of a shire) and West Meon part of the Menestoches.

GEOLOGY AND HYDROLOGY

It is the very permeable chalk that gives the river its special character. Almost all of the rainfall that falls on the chalk catchment either evaporates or soaks into the ground. In the summer the evaporation always exceeds rainfall, but in winter the rain percolates to the water table and flows underground to springs in the river valley, a process that takes a very long time. The result is that the river flow shows a slow seasonal variation peaking in the spring when the groundwater table is at its highest and receding to a minimum in the late autumn. The maximum flow in any year is typically only four to five times the minimum, unlike rivers of Kent and Sussex where the ratio is often 1 to 100 or more. Natural growth and management of the weed in the river as the flow falls away over the summer months keeps the river always looking full.

The Hampshire chalk is not entirely uniform and is split into three classes, these being the Upper, Middle and Lower Chalk. Over most of Hampshire the Upper Chalk outcrops at the surface but it is in the Lower Chalk that the river rises above East Meon where the groundwater table intercepts the surface and springs occur. Between East and West Meon the river flows over the more permeable Upper Chalk. It is there, that because of the lower water table in dry summers, the river loses water through its bed and can dry up almost as far downstream as Warnford. Here the river is referred to as being 'perched' above the groundwater table.

In the Warnford area the river flows again over the Lower Chalk, where the water table is much higher. Here there is a large increase in spring flow and the river rises accordingly. Then to the South the river crosses the Upper Chalk again and some flow is lost, though because the river is larger, the loss is less noticeable.

As with the majority of Hampshire Chalk rivers the flow is split between a number of channels over many sections of the river's length. This is often a relic of the old milling and water meadow systems, but also means that there are

not many sites with a fall in water level, where gauging weirs could be installed without interfering with hatches and levels that are in private ownership. However, the National Rivers Authority measures flow at a continuous gauging weir at Mislingford on the Chalk to Tertiary boundary where flow records go back to 1957. The catchment area above this weir is 32.8 sq km and the average flow recorded is 1.024 cu m/sec. There are also more limited records of flow in the Titchfield, Warnford and West Meon area.

The Thomas Lord, West Meon



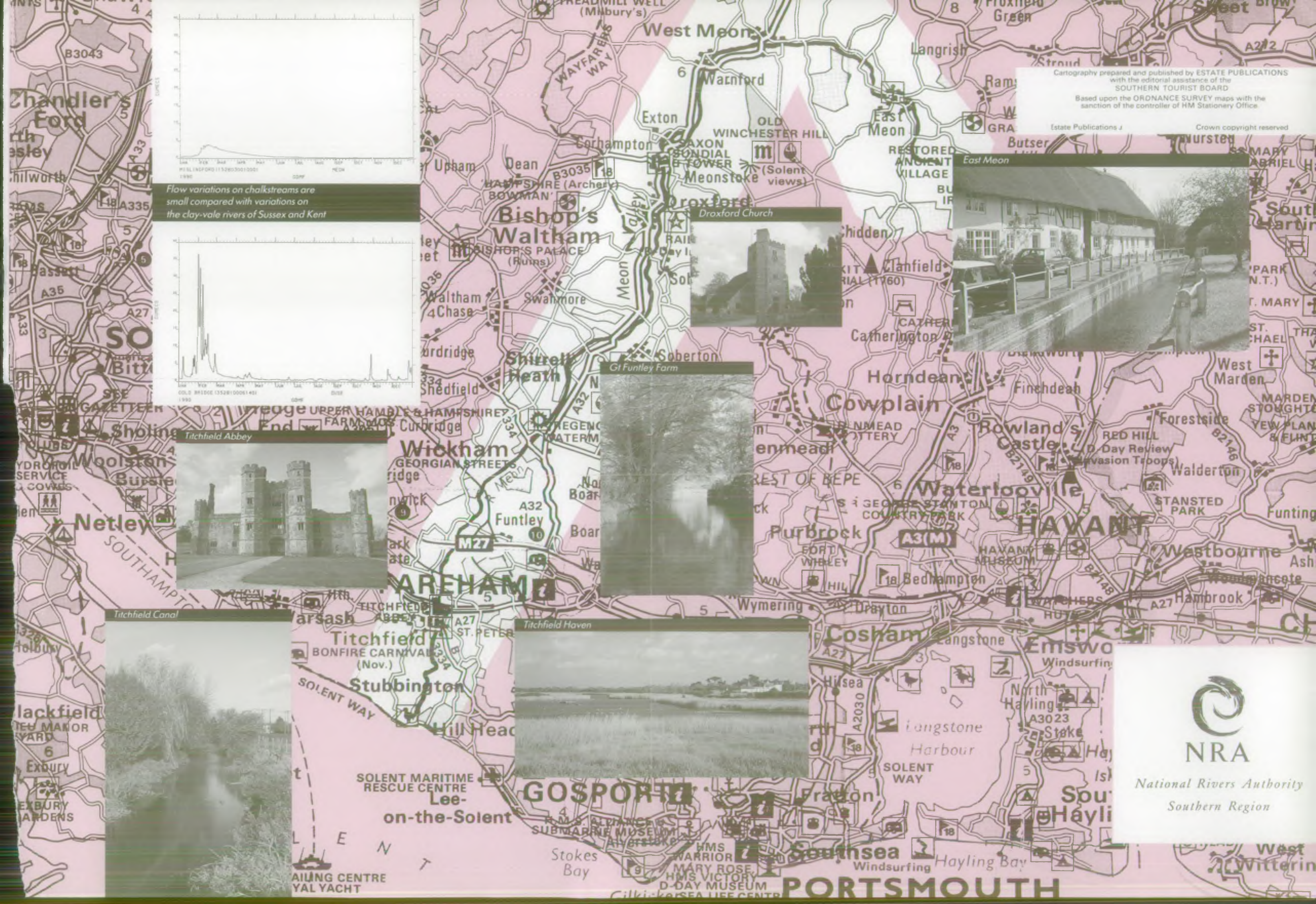
In addition to measuring flow, the NRA regularly monitors over 50 wells and boreholes to gather data about underground reserves of water. This data enables the extent of the groundwater table to be plotted. The true groundwater catchment area contribution to the Meon is slightly larger than the surface catchment.

Both the Mid Southern and Portsmouth Water Companies abstract water for public water supply at a number of points in the catchment. The major ones being at East Meon, West Meon, Soberton and West Street. These are all groundwater abstractions and there are no direct water supply abstractions from the river. The water is mostly used within the immediate catchment but there is some export towards the Portsmouth area.

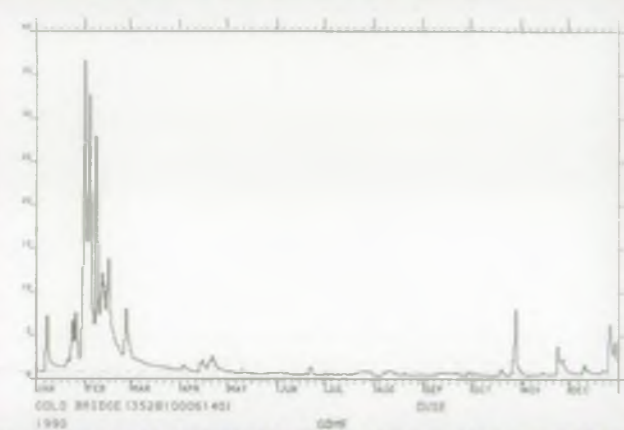
There is also a significant number of private abstractions in the Meon Valley, many of which are for spray irrigation, particularly in the Titchfield area, but there are also agricultural abstractions to the North of Droxford.

All abstractions are licensed by the NRA to ensure that the water is only taken at the right times and from where it can most be spared.

Average annual rainfall is 838 mm.



Flow variations on chalkstreams are small compared with variations on the clay-vale rivers of Sussex and Kent



Titchfield Abbey



Titchfield Canal



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National Rivers Authority Southern Region

WATER QUALITY

Because of the long residence time of the river water in the chalk and the unique cleansing properties of chalk rock, water of high quality that is hard, alkaline and of relatively constant temperature flows beneath the ground into the river.

This high quality water has given rise to a thriving cress industry in the Warnford area where a good proportion of Hampshire cress is produced. It also supports a medium sized trout farm which is sited downstream of Warnford Village adjacent to Warnford Lake.

The river above Funtley is designated as a Salmonid Fishery under the EC Freshwater Fisheries Directive which requires the water to be maintained at a high standard. Accordingly, the National Rivers Authority has set the objective that the River Meon should be of good quality and suitable for high class game and coarse fisheries (Class 1B). The river meets this objective for all 32 km of its length.

Within the Meon Valley there are only three small sewage treatment works that discharge into the river. Two of these works are operated by Southern Water Services Ltd. and serve the communities of East Meon and Wickham. The consented dry weather flows of these discharges are 127 m³/d and 750 m³/d respectively. The third sewage treatment works serves Knowle Hospital which is sited to the South of Wickham. This sewage works has a dry weather flow of 685 m³/d and is the largest sewage works discharge

The river above Wickham



not operated by Southern Water Services Ltd., in Hampshire. To ensure that the water quality of the river is protected, the NRA sets limits on all permitted

discharges restricting the strength and quality of the treated effluents that may be discharged. The discharges are regularly monitored to ensure that they meet their required quality standards.

Houses in the other smaller villages that are sited on the chalk but are not served by mains foul drainage, tend to use septic tanks which are soakaway systems for foul drainage. Septic tanks are permitted, subject to NRA licences which impose conditions on standards and quantity. Their use is only consented where there is no risk of contamination to water supply.

No industrial discharges are made into the river or its tributaries, apart from one very small cooling water discharge of 9 m³/d in Titchfield which is monitored by the NRA as a part of its routine effluent monitoring programme.

In view of the highly rural and agricultural nature of the Meon Valley, it is not surprising that the majority of the more serious pollution incidents tend to be of agricultural origin. Such incidents are rare but have arisen from the loss of silage liquors or cow slurry either by accident or due to vandalism.

The small number of incidents reflect the high degree of co-operation that exists between the NRA and the agricultural community in maintaining the quality of the river.

FISHERIES

The hard chalk water and abundance of weed have made

the river ideal for trout, and fishing takes place throughout its length. Sea trout are particularly important in the lower river with brown trout in the

middle and upper reaches. The National Rivers Authority has built fish passes at Titchfield, Funtley and Wickham to ease the upstream passage of sea trout to their spawning grounds.

In the lower reaches dace are the predominant coarse fish. Mullet enter the first mile or so of the estuary.



The high quality alkaline water in the river has made the Meon Valley suitable for the limited development of trout farms. Rainbow trout are grown for the table and for restocking rod fisheries. The main farm is in the Warnford area. Each requires an abstraction licence from the NRA which regulates the amount of water that may be taken from the river. Used water returned to the river is subject to consent conditions imposed by the NRA which ensure that the river water quality is safeguarded.

FLOOD DEFENCE

The Flood Defence Department of the National Rivers Authority is responsible for improving land drainage and protecting people and property from flooding.

Generally, because of the permeability of the chalk heavy storms only affect the river flow where the rain falls on the river itself or on paved areas that drain direct to the river.

However, severe flooding occurred at East Meon and to a lesser extent at West Meon, in 1951 and 1953. Roads and

houses were seriously affected. As a result, extensive flood relief works were carried out in 1954-56. Six small arch bridges were replaced by clear span structures and the stream was widened and deepened to improve its flood capacity.

Flooding such as this is uncommon on chalk streams but the floods in the upper river in the Fifties reflected the underlying geology. In the East Meon and Warnford areas inliers of Lower Chalk reach the surface. This chalk is much less permeable than the Upper Chalk, allowing heavy rain to run-off rather than soak into the ground. Consequently the Meon has a greater range of flows than other Hampshire chalk streams where winter flows are only three to four times the minimum.

There are mills with control structures at Titchfield, Wickham, Soberton, Droxford, Corhampton and the sluice of a former corn mill at Exton.

There are also sluices at Iron Master's House, Funtley, Bridge Cottage, Titchfield and at South Farm. The sluice at Bridge Cottage is maintained and operated by the NRA whereas the other sluices and structures on the river are in private ownership.

At Hillhead, the outfall to the sea is controlled by four tidal flaps which prevent the ingress of sea water and have allowed agricultural use to be made of the valley to Titchfield. Prior to this the river was navigable to small sea going ships as far as Titchfield. The first obstruction

Hill Head Harbour



East Meon Church



of the estuary took place in 1611 when the Earl of Wriothlesley built an outfall bypassed by a large canal. The structure has been rebuilt several times since then but the last major repairs were carried out by the former Catchment Board in 1947. The canal, which can still be traced by the navigation, was a failure and the port died.

An NRA biologist examining river life

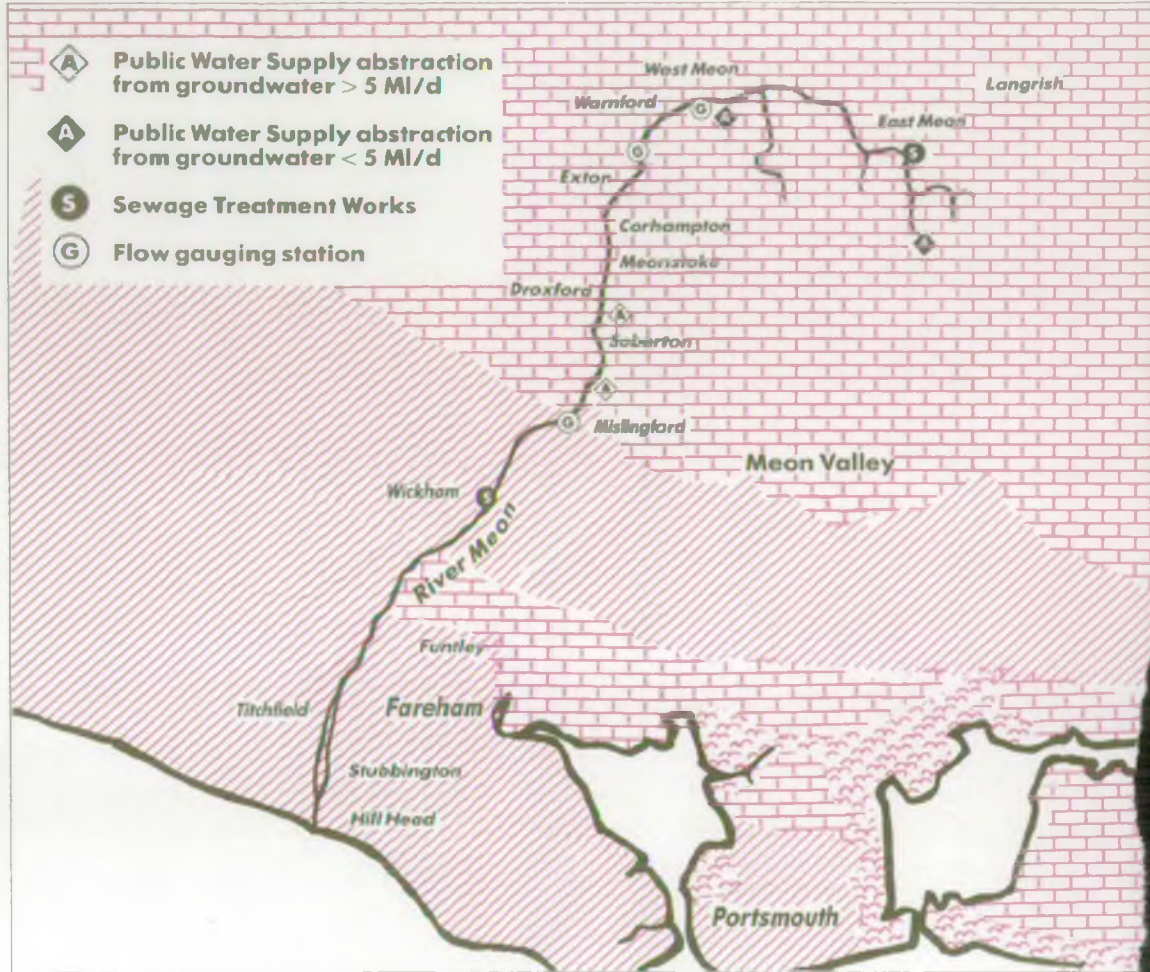


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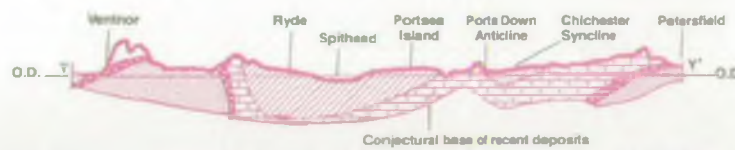
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Sections showing the general relations of the rocks along the lines Y-Y' drawn on the map



Vertical Scale about ten times the Horizontal



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