Teagasc Submission

on the

Draft European Communities Environmental Objectives (Groundwater) Regulations Consultation Paper

Teagasc
Agriculture and Food Development Authority
Oak Park, Carlow
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1. Clarification on threshold values

Teagasc has noted that the draft European Communities Environmental Objectives (Groundwater) Regulations (hereafter referred to as: draft Groundwater Regulations) introduce the concept of threshold values (Schedule 4) *in addition to* the established Groundwater Quality Standards (Schedule 3). In July 2009, the Department of Environment, Heritage and Local Government (DEHLG) provided Teagasc with further clarification on the concept of threshold values, with particular reference to nitrate concentrations:

> "The figure of 37.5 (average) has been selected as a threshold value to allow for the fact that you will always get some variation (a range) in the measured values within a particular borehole and/or across a whole groundwater body. This means that, with an average of 37.5, some individual values will be higher and others will be lower. However, we also have to ensure that we stay within the drinking water standard which is 50. This is expressed as a MAC (maximum) value in the drinking water Regulations. An average threshold of 37.5 is judged (in Irish conditions) as a value that will likely ensure that the MAC value will stay below 50 to meet the drinking water standards. If we used the value of 50 (average) as a threshold value for assessment purposes, we would be certain to get a certain percentage of monitoring sites and/or groundwater bodies failing the mandatory drinking water standard.
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> A similar overall approach (of using a threshold value of less than 50 for assessment purposes) has been adopted in other countries also e.g. England, Scotland etc but the exact threshold value used will vary from place to place reflecting the different hydrogeological conditions in the different countries."

From paragraph 5-16(iv), we understand that the threshold level of nitrate was set at 75% of the Groundwater Quality Standard.

From paragraph 5-12, we understand that nitrate concentrations in excess of the threshold value (37.5 mg l^{-1}), but below the water quality standards (50 mg l^{-1}) will merely trigger intensification of the monitoring regime for the groundwater body concerned, to ensure that the waterbody is correctly classified as either "good status" (<50 mg l^{-1}) or "poor status" (>50 mg l^{-1}). Teagasc does not see cause for concern with this interpretation of the threshold values.

However, Teagasc is concerned that an alternative interpretation of the draft regulations and the clarification provided by DEHLG could be that all groundwater bodies with a mean nitrate concentration in excess of the threshold value (37.5 mg l^{-1}) would be classified as "poor status", to ensure that no individual observations would be in excess of the water quality standards (50 mg l^{-1}). Teagasc would have significant concerns about this potential interpretation, as it would effectively make the current groundwater quality standards more stringent. We have investigated, but failed to establish unambiguously, whether at European level the MAC refers to the mean of observed nitrate concentrations, the maximum observed

concentration, or a specified percentile of observed concentrations. We expect that the relationship between the mean observed concentration and the maximum observed concentration is catchment specific, and will depend on water residence time and the local hydrogeological context. Therefore, if this interpretation would be used, Teagasc is concerned that the groundwater quality standards may effectively be lowered for some catchments in absence of evidence that this is required to ensure that nitrate concentrations do not breach MAC.

In conclusion, Teagasc seeks confirmation from DEHLG that our interpretation (the first one above) of the concept of threshold values is correct, and that the alternative interpretation is incorrect.

2. Future lowering of threshold and water quality standards

The draft Groundwater regulations facilitate the explicit lowering of threshold values and water quality standards, as outlined in Part IV.42 (page 54) and Schedule 3.3 (page 69). Teagasc is concerned about the high levels of uncertainty that exist in nutrient/ecology relationships, including surface waters dominated by groundwater inputs. This point was discussed at the EPA's recent workshop 'Ecological responses of streams to nutrient enrichment' (February 2009, University College Cork), and Teagasc elaborated extensively on this issue in section 1.3 of our recent submission to the draft River Basin District Management Plans and the draft Fresh Water Pearl Mussel Sub-Basin Management Plans, which we have attached for your information. This uncertainty should be accounted for in establishing chemical threshold and water quality standards relating to ecological standards.

3. Potential future measures to protect groundwater

Teagasc notes that the draft Groundwater Regulations allow for the potential introduction of supplementary measures to achieve or protect "good status", e.g. Part IV.26 (page 49). While Teagasc acknowledges and subscribes to the precautionary principle, we are concerned that there is a significant body of international scientific evidence that demonstrates that significant time (on the scale of years to decades) is required for the effectiveness of current agri-environmental measures to become apparent in improvements in water quality. This lag-time does not merely include first appearance (vertical and horizontal travel time) of pollutants at a water body, but should also consider flushing of the entire pollutant out of the aquifer system, resulting in a range of timescales. In this light, supplementary measures should only be considered once the lag-time between implementation of agri-environmental measures and the improvement of water quality has been sufficiently accounted for, in order to prevent scenarios where the draft Groundwater Regulations prematurely accommodate the implementation of unnecessarily stringent supplementary measures for the agricultural sector. Teagasc elaborated extensively on this issue in sections 1.1 and 1.2 of our recent submission to the draft River Basin District Management Plans and the draft Fresh Water Pearl Mussel Sub-Basin Management Plans, which we have attached for your information.

Furthermore, it is Teagasc's position that, where supplementary measures are required, that these are:

- targeted
- developed in consultation with stakeholders
- evaluated for cost-effectiveness.

Teagasc elaborated extensively on this issue in sections 3.2 and 3.3 of our recent submission to the draft River Basin District Management Plans and the draft Fresh Water Pearl Mussel Sub-Basin Management Plans, which we have attached for your information.

4. Apparent technical discrepancy

On a technical note, Teagasc seeks clarification on an apparent technical discrepancy between Part IV.37(ii) (page 53) and Schedule 6 Table 4 (page 76).

Whereas Part IV.37(ii) states that:

> "Where ***one or more*** of the criteria for poor chemical status are met for any of the test procedures in Schedule 6, then the Agency shall classify a body or a group of bodies of groundwater as being at poor chemical status"

Schedule 6 Table 4 states that:

> "**Criteria for poor groundwater chemical status**
> (a) An applicable chemical or physicochemical threshold value has been exceeded for a drinking water protected area (or the threshold value is projected to be exceeded in the next RBMP cycle); ***and***
>
> (b) There are statistically significant or sustained upward trend in the concentration of this parameter."

Teagasc seeks clarification on the following: will a body or a group of bodies of groundwater be classified as being at poor chemical status if ***either*** criteria (a) or (b) has been met, or only if ***both*** criteria (a) and (b) have been met?