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# SEDIMENTS: AT THE FRONTIER OF EARTH AND WATER

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**TOTAL**

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# INTRODUCTION

- **The definition of sediments:** « particles of diverse size and origin, stripped from their original matrix by erosion and carried away by gravity, water, wind or ice. Their deposit on variable surface areas leads to the formation of sedimentary layers »
- The above definition is scientific, not regulatory
- Considered through regulated maintenance or clearing operations of watercourses (*L 215-15 C. Env, May 30, 2008 arrêté*) or as inert waste (*L 541-4-1 C. Env, hazardous sediments moved for water management purposes*)

# INTRODUCTION

- A fortiori, there is no regulatory definition for « polluted sediments » (as there is a definition for « polluted soil »)
- Regulatory thresholds determine the policy governing dredging and clearing works: Installations, structures, works and activities subject to authorization or declaration (the thresholds are defined in the August 9, 2006 *arrêté*)
- However, there is no regulatory nor indicative threshold imposing the removal of sediments

# INTRODUCTION

- Nevertheless, the state of the water courses sediments are more and more preoccupying, as they store the toxic waste poured in aquatic environments, especially from the industrial or agricultural activities
- The management of « toxic sediments » is at the meeting point of several types of regulations
- Complex links between:
  - The water protection policy (deterioration of good ecological status of water and protection against hazardous substances)
  - The methodology applicable to contaminated sites and soils

# INTRODUCTION

- Three approaches may be combined:
  - The « **water approach** »: value purpose, good ecological status of water, environmental quality standards
  - The « **contaminated sites and soils approach** »: decontamination thresholds, risk management with respect to the hazardous character of the polluted sediments as far as the aquatic ecosystems are concerned
  - The « **waste approach** »: management of the dredged or extracted sediments (dredging spoil)

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- Directive 2000/60 of October 23, 2000 the « Framework Directive ») aims at (Article 1):
  - Establishing a framework for water protection (...) in order to prevent further deterioration, protect and improve aquatic ecosystems (...) »
  - Through specific measures, reducing priority substance emissions and gradually prevent hazardous priority substance emissions
- The Framework Directive establishes an **integrated water resource management** providing for the adoption of specific measures for pollution control and the establishment of environmental quality standards (EQS)

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- An environmental quality standard means « *the concentration of a particular pollutant or group of pollutants in water, sediment or biota which should not be exceeded in order to protect human health and the environment* » (Framework Directive, Article 2)
- Directive 2008/105/CE of December 16, 2008 establishes EQS for the priority substances and some other pollutants which are applicable to surface water
- The Directive defers to the Member States the responsibility to implement the necessary measures to reduce the effect of human activities on the ecosystems in order to achieve or maintain by 2015 a good ecological status of the water (deadlines may be postponed to 2021 or 2027)

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- EQS are references, values which allow the assessment of the water status and to tend towards a good environmental status of the water
- EQS are not emission threshold values nor thresholds entailing decontamination obligations
- EQS establishment responsibility is deferred to the Member States for sediments and biota, and must provide for a protection level equivalent to water EQS

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- Implementation into French law:
  - Articles L. 211-1 et seq. of the Code de l'Environnement on general policy and resource management:
    - Indicate that water management aims at its protection and at preventing contaminating emissions
    - Provide for quality standards and the measures necessary to restore and protect such quality
  - Articles R.212-1 et seq. concerning management plans: SDAGE and SAGE (*schéma directeur d'aménagement et de gestion des eaux*, or outline for the organization of the development and management of water resources):
    - Survey of bodies of water (ecological status, chemical status compared to EQS, identification of the water bodies which do not achieve the quality objective)
    - Definition of polluting emission reduction and prevention in order to achieve the quality objective
    - Monitoring plan

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- January 25, 2010 *Arrêté* relating to assessment criteria for ecological status, chemical status and ecological potential of surface water
  - Ecological status classification on the basis of quality items and the application of aggregation principles
  - Chemical status classification on the basis of EQS
  - Specifies that for surface water, EQS may also be established for sediments, biota

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- The achievement of good ecological status objectives for all waters is implemented through action plans:
  - *Programme national d'action contre la pollution des milieux aquatiques par certaines substances dangereuses* (National action plan against the pollution of aquatic environments by some hazardous substances) (April 20, 2005 Decree, June 30, 2005 *Arrêté*)
  - *Action nationale de recherche et de réduction des substances dangereuses dans l'eau* (RSDE) (National plan for research and reduction of hazardous substances in water) (February 4, 2002 and January 5, 2009 *circulaires*, March 23, 2010 and April 27, 2011 *notes*)

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- *Programme national d'action contre la pollution des milieux aquatiques par certaines substances dangereuses (PNAR)* (National action plan against aquatic environment pollution by some hazardous substances) :
  - Provides for a survey of aquatic environments (environment status, relevant substances, emission origin)
  - Specifies the relevant substances, for which it establishes quality standards (Framework Directive definition)
  - Establishes national reduction objectives for the relevant substances; such objectives may be categorized (on the basis of those taken into account in the SDAGE)
  - Establishes a framework for hazardous substance emissions (emission authorizations, emission threshold values (February 2, 1998 *arrêté*) – implementation within the framework of the RSDE)
- Complemented by the *Plan national d'action contre la pollution des milieux aquatiques par les micropolluants 2010-2013* (National action plan against aquatic environment pollution by micropollutants 2010-2013)

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- *Action nationale de recherche et de réduction des micropolluants dangereux dans l'eau (RSDE)* (National action for research and reduction of hazardous micropollutants in water) :
  - Applicable to emissions in the water by the classified installations (subject to authorization) of certain industries and sewage treatment plants
  - Voluntary (2002 *circulaire*) then mandatory (2009 *circulaire*) monitoring scheme of hazardous substance emissions and for the respect of emission limit values (ELV)
  - Monitoring may have to be continued (on the basis of substance type, concentration, flow)
  - Emission reduction or even gradual prevention plan for some substances defined as priority substances within the framework of an action plan, possibly after the realization of a techno-economical study

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- Thus, these schemes aim at the reduction or even the prevention of substance **emissions** in aquatic environments
- The Emission Limit Values (ELV) are established in order to achieve the EQS (February 2, 1998 *arrêté*, articles 21 and 31)
- However, **the management of historical pollutions, and especially sediments,** is not taken into account by any of these provisions or action plans

# I. SEDIMENT MANAGEMENT WITHIN THE WATER REGULATION POLICY FRAMEWORK

- The Ministry of Environment is setting up a workgroup responsible for drawing up EQS for sediments
- These new EQS applicable to sediments shall be taken into account in the ELV and the reduction/prevention plans governing polluting substance emissions
- However, these EQS shall not be considered as thresholds above which the contaminated sediments shall have to be dredged/extracted
- **Under current regulations, there is no provision allowing to define criteria for the management of contaminated sediments.**

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- *« Les problèmes posés par la réparation des dommages et surtout la détermination des responsabilités du fait des phénomènes de pollution survenus à la suite de l'accumulation de produits toxiques ou dangereux ou de boues nocives dans les cours d'eau, qui peuvent se développer soit spontanément, soit du fait de la présence de ces éléments toxiques , ou soit à la suite d'une opération déterminée, sont extraordinairement complexes pour les juristes ». C. Huglo (Colloque Bouvines 24 et 25 09 1992).*
- From a « soil » point of view, can we go back to the fundamentals in order to define sediments?
- In property/estate law, a (legal) characterization of sediments? Sediment: movable? Immovable?

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- Art. 516 of the Civil Code : « *Tous les biens sont meubles ou immeubles* ».
- Art. 518 of the Civil Code : « *Les **fonds de terre** et les bâtiments sont **immeubles par leur nature*** ».
- Art. 528 of the Civil Code : « *Sont meubles par leur nature ... les corps qui peuvent **se transporter d'un lieu à l'autre**, soit qu'ils se meuvent par eux-mêmes, soit qu'ils ne puissent changer de place que **par l'effet d'une force étrangère*** ».

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- Art. 556 of the Civil Code : « *Les atterrissements et accroissements qui se forment successivement et imperceptiblement aux fonds riverains d'un fleuve ou d'une rivière, s'appellent **alluvion**. L'alluvion profite au propriétaire riverain...* ». To be put in parallel with art. L.215-2 of the Environment Code.
- Impasse? Note (lead) that the transfer of the right to extract sand, gravels, materials (from a quarry), can constitute a sale of materials considered in their **future state as movables** (Cass. Civ. 3è 30/05/1969).
- **The sediment could then be an immovable by nature (« fonds de terre »), but will become a movable as soon as it is extracted/removed?**
- **No legal definition of the sediment in this research by property law**

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- Hence: **A more pragmatical approach, through the (legal) obligation to **upkeep** the stream**

- Obligation and responsibility of the resident owners (non national streams)

Article L.215-14 of the Environment Code: "... *le propriétaire riverain est tenu à un entretien régulier du cours d'eau. Il a pour objet de maintenir le cours d'eau dans son profil d'équilibre, de permettre l'écoulement naturel des eaux et de contribuer à un bon état écologique, ou, le cas échéant, à un bon potentiel écologique, notamment par enlèvement des embâcles, débris et atterrissements, flottants ou non, par élagage ou recépage de la végétation des rives* »"

- See in parallel R. 215-2 of the Environment Code

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- The maintenance obligations weighing on the non-public stream residents aim at maintaining the natural water flow, ensuring the maintenance of the banks and protecting wild life and plants while respecting the functioning of the water systems (CAA Marseille 05/02/2004 n° 00MAA01884)
- According to circular dated 04/07/2008, this article only aims at « *l'entretien régulier* » « *prohibe de fait une opération de type dragage* » et les « *légères opérations d'enlèvement de sédiments que le riverain est autorisé à réaliser dans le lit ... ne sont soumises à aucune prescription particulière*»
- Article L. 215-16 of the Environment Code : Should the owner fail, **possibility of automatic intervention from the town council, the group of town councils or of the competent syndicate**, following an unsuccessful formal demand

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

➤ In the case of the joint operations of regular maintenance of the stream:

- Art. L.215-15 I of the Environment Code : Nécessité d'un plan de gestion (PG) à l'échelle d'une « *unité hydrographique cohérente et compatible avec les objectifs du SDAGE lorsqu'il existe* ». The authorization to undertake the **management plan** has a long-term validity
- **Debtor:** territorial collectivities, their groups or mixed syndicates (cf. L. 211-7 of the Environment Code). The DIG, preceded by the public enquiry will be valid for 5 years

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- The PG « ... can include a restoration period including specific interventions, such as **cleaning-out ... The cleaning-out must then be limited to the following purposes:**
  - Solve the problems of the natural transportation of the sediments ...; (use of the word, non defined)
  - Fight against the eutrophication
  - Adjust a part of the stream, ... with a view to creating or reestablishing a structure or making an adjustment
- The deposit or the spreading of cleaning products is subject to the assessment of their **harmlessness with respect to the protection of the soil and the water**

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- **Report:** the « *soil* » approach to sediment, but only in a **curative way**, within the **general obligation of the maintenance of the stream**; the question of the administrative supervision of the « management » of the « sediment » appears only during the (legal) maintenance operations of the stream, including a dredging or a cleaning-out
- **In principle, no preventive soil approach for sediment pollution**
- **Ex post:** A supervision of the dredging/cleaning-out operations within the AP authorization, the AP general prescriptions in the case of a simple declaration, of an APC to the AP authorization or declaration (art. L.214-1 à L. 214-6; R. 214-1 et s. of the Environment Code) under list ICPE 3.2.1.0, concerning streams and canals

## •II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- Circular of July 4, 2008 (+ decree of April 13, 2010 and circular of December 24, 2010): alternative of **putting back in suspension** (or in immersion) **or of the managing on the ground**, except in possibility of sale
  - **Putting back in suspension/immersion:** if this technique is possible/desirable, regulation clear, under regime A or D. See in particular S1 contamination levels (order of August 9, 2006)
  - **Eventual sale** of materials if absence of contamination
  - **If necessity of management of the ground:** either sediments recovery (inert + harmless sediments), or elimination (hazardous sediments)

- It would thus be through questions re: dredging/cleaning out that a « *waste* » approach concerning polluted sediments would be/is currently done. It is, ex post, and taking into account the « *sediment/soil* » criteria, more the question of the management of the **extracted** sediment than the question of a risk management due to the presence of polluted sediments, in situ? Except for the NQE, which are not depollution thresholds
- To give a brief summary: A scientific approach of the polluted sediments, an organized administrative framework as regards the obligation of maintenance, the beginning of a framework for the « waste » issue; but probably not (yet) any « risk » approach and no clear identity between the excavated sediment **because it is polluted** and the hazardous sediment

## II. SEDIMENT MANAGEMENT: THE « SOIL » APPROACH

- **An approach to the « *polluted sites and soils* »?**
  - No equivalent of the methodology guides *versus* the circulars of February 8, 2007 in this matter
  - An approach to the « *polluted sites/soils* », in the acception of the ICPE police? But this approach is valid in the logic of a developer = first rank debtor, with a criteria of direct link (CE 11/04/1986 Sté PCUK). **Which debtors are identifiable/identified here?**

# CONCLUSION

- Harmonization of the necessary texts
- Real necessity of a global approach, by the risk?
- Is a methodology (preferably regulatory) necessary?