



Recommendation of the Council on
Water Resource Management
Policies: Integration, Demand
Management, and Groundwater
Protection

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Date(s)

Adopted on 31/03/1989
Abrogated on 13/12/2016

THE COUNCIL,

HAVING REGARD to Article 5 b) of the Convention on the Organisation for Economic Co-operation and Development of 14 December 1960;

HAVING REGARD to the Declaration by Member Governments on Environment: Resource for the Future of 20 June 1985;

HAVING REGARD to the Recommendation of the Council on Water Management Policies and Instruments of 5 April 1978 [C(78)4(FINAL)];

RECOGNISING that water, a basic natural resource, is in limited supply in many areas and at certain times and the cost of meeting rising demands for all water services (from supply of drinking and irrigation water to amenity uses) of the appropriate quality, in an environmentally acceptable way, is increasing rapidly;

RECOGNISING the fact that the various sources of supply for water are interconnected and their different uses are in competition with each other and therefore improved integration of policy and management will lead to improved management from the economic and environmental point of view;

RECOGNISING that integration of water resources and other policies requires the reconciliation of policy objectives so that decisions in these areas are compatible and consistent;

RECOGNISING that the alternative to responding to rising demand through increasingly expensive provision of new supply, which could have significant effects on the environment, is effective demand management of water services;

RECOGNISING that groundwater is a high-value scarce resource subject to serious over-use in some areas and increasingly threatened by pollution, including cumulative pollution, from many different sources;

On the proposal of the Environment Committee;

I. RECOMMENDS that Member countries review their existing institutional arrangements, comprising administrative, legal and economic systems, in the field of water resources with the view to improving the integrated management of their water resource policies.

II. RECOMMENDS that Member countries develop and implement effective water demand management policies in all areas of water services through making greater use of:

- Forecasting future demand for water;
- Appropriate resource pricing for water services;
- Appraisal, reassessment and transferability of water rights;
- Various non-price demand management measures; and
- Integrated administrative arrangements for demand management.

III. RECOMMENDS that Member countries develop and implement comprehensive policies for the efficient, sustainable development of groundwater resources and for their long-term protection from pollution and over-use.

IV. RECOMMENDS that in developing comprehensive groundwater policies Member countries pay particular attention to:

- The establishment of appropriate administrative and legal arrangements for integrated management with surface water and other resources and sectors;
- The use of pricing and other policies to manage demand;

- The establishment and enforcement of pollution control programmes to protect groundwater from point and diffuse sources of pollution;
- The provision of effective advisory education and professional training services;
- The continuation of research programmes for better understanding of pollution processes.

V. RECOMMENDS that in the implementation of the above policies Member countries take account of the Guidelines for Water Resource Management Policies contained in the Appendix to this Recommendation of which it forms an integral part.

VI. INSTRUCTS the Environment Committee to review action taken by Member countries in pursuance of this Recommendation, and to report thereon to the Council.

APPENDIX

GUIDELINES FOR WATER RESOURCE MANAGEMENT POLICIES: INTEGRATION, DEMAND MANAGEMENT, AND GROUNDWATER PROTECTION

1. The Recommendation and the Guidelines for their implementation have been designed with the aim of improving the management of water resources both from an economic and environmental point of view within each OECD country. At the same time it is recognised that in many countries the existing policies, management practices and institutions are the manifestation of traditional cultural and social systems. While both from the point of view of orderly international trade and internationally consistent allocation of resources, a fairly uniform implementation of pricing policies, charging practices and environmental standards is desirable, it is nevertheless recognised that the cultural and social traditions, and differences in the assimilative capacity of the environment need to be taken into account in the implementation of the Recommendation.
2. The Guidelines set out in this Appendix are based on recent developments in the management of water resources in OECD Member countries. They are in three parts: Guidelines for institutional arrangements for improved integration, Guidelines for improved demand management, and Guidelines for improved protection of groundwater resources. While the Recommendation on these three topics and the Guidelines for their implementation are interconnected and mutually supportive they can be implemented separately according to the severity and the urgency of the problems in the respective countries. It is emphasized that Part I - Improved Institutional Arrangements for Integrated Management of Water Resources and Other Policies - is applicable to both Part II - Improved Water Demand Management - and Part III - Improved Protection of Groundwater Resources - of these Guidelines, especially with regard to pricing policy and administrative arrangements for these aspects of water resource management.
3. In certain cases the implementation of the Recommendation through these Guidelines would require changes in existing legislation, e.g. water rights, or significant alterations in current pricing and charging practices for water services. In these cases a transition period of some duration might be needed to allow these changes to be implemented in an efficient manner. These Guidelines recognise that a transition period could last for several years.
4. The Recommendation and the Guidelines are meant to supplement and strengthen and not in any way to weaken the Polluter Pays Principle.

PART I: GUIDELINES FOR IMPROVED INSTITUTIONAL ARRANGEMENTS FOR INTEGRATED MANAGEMENT OF WATER RESOURCES AND OTHER POLICIES

I. Introduction

1. Part I of the Guidelines presents the lessons and conclusions of the investigation carried out on existing institutional arrangements for water resource management in OECD countries and indicates how these lessons could be used to improve integration within the water sectors and with other areas of government policies.
2. The main water management areas are: 1) water supply (domestic, industrial and agricultural), 2) pollution control and water treatment, involving the establishment, monitoring and enforcement of standards, regulations and incentives, 3) flood control, 4) navigation for commercial and recreational purposes, 5) hydro-power production, and 6) amenities.
3. Water management issues are usually inter-related with other policy areas ranging from agriculture, industry, forestry, energy, transportation, urban and regional development to nature conservation and recreation. Existing institutional arrangements, consisting of administrative organisations, legal regimes and economic instruments, can be conflicting in their objectives or operations, or, insufficiently designed and co-ordinated to achieve integrated management through agreed objectives.
4. These institutional arrangements are undergoing continuous changes and readjustments to respond to changing circumstances and new demands. Opportunities exist in this process to promote

and improve integration. Some Governments have already laid down guidelines for integrated environmental management with other governmental policies. Similarly in some countries water legislation has been revised to facilitate better integration but in most this change to promote integration has not yet been made.

5. The following Guidelines for the three areas of institutional arrangements (administrative, legal and economic) have been developed from the experiences of Member countries in recent years in the field of water resource management. Such institutional changes have often been generated by a catalyst such as a budgetary crisis or an economic restructuring involving a water resource problem.

6. Three aspects of institutional management have been recognised in developing these guidelines: first, style of government, traditions and values vary among OECD countries; second, divided jurisdiction, shared responsibility, overlap and even duplication within organisations inevitably exist; and, third, a mix of multiple strategies has to be employed to reduce the obstacles inhibiting integration. The recognition of these realities is basic to any reform to create favourable conditions for integrated water management.

II. Administrative Principles

1. Four key components have been established as the essential framework within which leverage can be exerted for better integration. These are: credibility and legitimisation through political commitment; organisational structures for management functions; processes and mechanisms operating within administrative organisations; and organisational culture and participants' attitudes regarding co-operation and co-ordination.

Political Credibility and Legitimation

2. A public commitment to integration should be undertaken at the highest government level so that the concept of integration is given political credibility. The Government's policy objectives for water resources and for the other sectors of the economy should be reconciled at ministerial level. The role that each agency has in meeting these integration objectives should then be clearly defined.

3. Each of the agencies involved should be given administrative authority and jurisdiction over their tasks and responsibilities. This should be done unambiguously and, where appropriate, by legislation.

4. To resolve conflicts between participating agencies a mechanism should be established to facilitate quick and decisive arbitration.

Organisational Structures

5. The nature of each administrative organisation involved should be clearly defined in terms of its boundaries of responsibilities and a number of spatial units, based on catchment area, should be created for management purposes. The definition of spatial area units for management is of crucial importance from the environmental point of view.

6. Whenever possible discretion should be accorded to the local level for implementation of integrated management and only when solutions cannot be realised at this level should consideration be given to the next higher level in the hierarchy, i.e. regional, state or national level. There is however often a need to co-ordinate planning and management between agencies and areas at the national or international level.

7. To deal with overlapping responsibilities and interests, designation of a lead agency or establishment of appropriate mechanisms can be used to co-ordinate a set of activities and to fulfil integrated objectives.

8. To respond to changing circumstances and to enable incremental evolution rather than occasional major overhauls, administrative flexibility should be promoted, e.g. through the use of task forces or commissions with specific mandates.

9. There should be a clear system of accountability for integration with appropriate rewards or penalties. To assist accountability there should be adequate monitoring of the achievement of objectives and evaluation and review of wider integration performance. Criteria for performance evaluation need to be developed.

10. Public participation should be encouraged both in the planning process and in critical reviews of implementation which would highlight areas where further integration is required.

Processes and Mechanisms

11. The process of integration should be assured through the establishment of highly visible inter-ministerial and inter-departmental councils and committees with responsibility to ensure dialogue and co-ordination in a substantive manner. These bodies could also be responsible for final negotiation and bargaining together with performance evaluation on the achievement of integrated management of natural resources.

12. Planning is one of the main instruments for integration and in the case of water resource management it is fundamental that land use planning and water planning are closely co-ordinated. All Governments practise some degree of planning in resource management and in other areas of policy making; these plans should take account of and be taken into account in water resource planning. Environmental and social impact assessment should form an integral part of the planning process.

13. Well defined regulatory and economic instruments to control pollution are essential components of the mechanism to integrate environmental considerations with water management objectives. The quality and/or discharge standards and other controls should be clearly stipulated to facilitate an easy understanding of the environmental objectives by all the parties involved.

14. Rational economic evaluation should be an integral component of all aspects, including the environmental aspect, of all water resource management projects. Appropriate economic analyses include cost-benefit evaluation, the assessment of the marginal cost of supplying water services and assessment of environmental damages.

15. Adequate enforcement powers, sanctions and penalties should be given to management agencies to ensure that all aspects of their responsibilities can be implemented.

Organisational Culture and Participant Attitudes

16. Ministers and senior administrators of the agencies involved should actively and openly promote integration as part of a strategy.

17. Governments and agencies should actively encourage in the public and private sectors the broadening of education, training and work experience amongst staff to develop skills such as inter-agency communication, negotiation and bargaining, which are crucial for successful inter-agency co-operation.

18. Staff recruitment for all agencies should aim at employing personnel with an understanding of these skills and with a willingness towards broader inter-agency co-operation. Formal and informal inter-agency contact should be promoted to assist the process of integration.

III. Legal Guidelines

19. Legislation concerning all aspects of water rights provides the general legal framework for water resource management. It defines water rights and control over the use of water, sets out generalised policy objectives for administrative agencies, defines their responsibilities and sometimes prescribes the consultation procedures both between authorities and with the public. All this legislation should be reviewed from time to time and reformed along the lines set out in these Guidelines. Contradictory legislation between water and other resources should, as far as possible, be eliminated.

20. The character of water resource legislation in Member countries is dependent on a number of factors which in turn produce significantly different legal systems. These characteristics are: the nature

of the governments, the type of water ownership, and the socio-political and historical background. Any reform of the legal system must recognise and take into account these factors. In addition reforms should be targeted to attain maximum economic efficiency of water use compatible with environmental interests and with equity considerations.

21. Legislation dealing with water resources, including water rights, quantitative allocation, quality control relating both to surface and groundwater, and environmental protection, should be compatible and consistent. Both surface and groundwater could be governed by comprehensive legislation.

22. Legislation should incorporate measures for cases where potential or actual damage may occur, resulting in irreversible losses, or where the responsible party cannot be identified.

23. Irrespective of ownership rights there should be sufficient powers for Governments and other relevant bodies to ensure efficient management of water and related resources. These powers are particularly important for an effective operation of water pricing policies and for environmental protection.

24. To reduce the rigidity of the existing water rights system and to satisfy demand for water services in an efficient way, permit systems for allocation of water should provide flexibility; this could be achieved through an appraisal and reassessment of permits including their transfer between users. The reassessment should in particular aim at improving regional development and economic efficiency.

25. Legislation should delineate clearly the respective roles and responsibilities of different levels of authority with regard to the management of water resources.

IV. Economic Instruments

26. Sound economic management of water resources will, through correct economic analysis and proper economic signals, ensure improved integration not only within the water sector but also with other policies. In principle economic instruments require less administration than regulatory instruments when dealing with situations where the main factors can be reasonably described in economic terms. Governments should as far as possible promote the use of economic instruments to help integration and at the same time promote efficiency.

27. Resource pricing should be the main economic instrument and should be followed, wherever possible, in the pricing of water resources unless good reasons dictate otherwise. The concept of resource pricing provides the basis for charging for all types of uses and the price of water services should at least cover the opportunity costs of these services: the capital, operation, maintenance and environmental costs. These opportunity costs should reflect the long-run incremental costs to the community of satisfying marginal demand; such a charging system is usually known as long-run marginal social cost pricing¹.

28. The application of resource pricing requires close co-operation between most agencies, suppliers, consumers and dischargers involved in water management and will improve the effectiveness of their interaction. All agencies involved in water resource management should participate in determining the relevant costs.

29. To ensure political acceptability and social equity, consumers, dischargers and other interested groups should also be consulted in the process of implementing the principle.

30. Unless there are good reasons for implementing other policies, such as favouring particular groups of consumers or regions or over-riding long-term environmental goals, the resource pricing concept should be observed and promoted. Subsidies for the costs of water service provision, which have economic, financial and environmental disadvantages, should be avoided and in the cases of exception the reasons should be explicitly stated.

31. A relevant agency should review the implementation of resource pricing both in the public and the private sectors, as appropriate. Unnecessary intervention in commercial decision-making processes should be avoided.

PART II: GUIDELINES FOR IMPROVED WATER DEMAND MANAGEMENT

I. Introduction

1. Water demand forecasts for Member countries indicate that demands for basic, core water services have been steadily increasing and are expected to continue to increase. Supplies are limited and rising costs of increased provision are only partly offset by increased knowledge of available options and improved technology. Increasing pollution and deterioration of water resources are no longer tolerated by society. In response to increased demands the traditional solution has been to increase supplies. As the economic and environmental implications of such a policy are increasingly unacceptable on efficiency and environmental grounds, two other broad types of policies should be given a greater role in achieving a supply and demand equilibrium: supply re-allocation and demand management.

2. Supply re-allocation means that existing supplies are made subject to occasional or continuous re-allocation so that the less beneficial uses or environmentally more costly abstraction and discharge requirements are given low priority and may not be satisfied. At present this approach is used only to resolve short-term crisis situations, such as temporary drought, but could be applied to everyday water use through, for example, the reassessment and transfer of water utilisation rights.

3. There is significantly more scope for policies to implement demand management than for supply re-allocation. At present two main forms of demand management are practised in a limited way in OECD countries: pricing and non-price demand management. Demand management should mean that consumers are provided with a set of signals to which they can respond in their use of water services. These signals consist of a set of prices and charges, supplemented by permits and regulations. This approach is in contrast to present day practices in many areas where provision of water services is based on perceived consumer needs rather than to price related demand, such that consumers cannot respond to price signals indicating scarcity and environmental degradation.

II. Water Demand Forecasting

4. Demand management policies should be based on long-term forecasts for the major types of water services. For this purpose authorities should prepare coherent demand forecasts based on explicit price and other assumptions and incorporate sensitivity and risk analysis.

5. Technical, economic, environmental and financial appraisal of alternative supply-expansion, supply-reallocation and demand management policies should be carried out to determine optimal water resource strategies.

III. Pricing of Water Services

6. Resource pricing, (as outlined in Part I, Section IV), should be adopted and employed as the major economic instrument of demand management wherever possible. This will reduce wasteful consumption, reduce pollution and facilitate more rational and environmentally desirable management and use of all resources.

7. Since, when it is adopted, the concept of resource pricing requires that the consumer and the discharger should pay according to the quantity and quality used for abstraction and in discharge, usage should be metered or measured in the appropriate way. The desirability of metering should be assessed by social cost-benefit analysis using the resulting efficiency and equity gains as the criteria for the introduction of metering.

8. Under a resource pricing strategy, administrative allocation and permit systems for direct abstractions and effluent discharges should, wherever possible and appropriate, be supplemented by volumetric and quality-related pricing.

IV. Non-Price Demand Management

9. Governments should encourage the implementation of more stringent plumbing codes and local regulations on water installations, where they can successfully have an impact on domestic and industrial water consumption and bring about more efficient water supply and resource use.

10. Permit standards for the piped and direct discharge of effluents and controls for diffuse pollution should be established at an appropriate level. These standards and controls should be monitored and also contain both quality and quantity dimensions.

11. Water authorities and agencies should make available comprehensive information about water use and seek to educate all consumers on the financial benefits that would accrue from the use of water-saving devices and appliances.

12. Operational controls should be used for leak detection and for the reduction of losses in water supply and sewerage system. Optimal leak detection and alleviation should be established through cost-benefit analysis to obtain the maximum economic, environmental and financial benefits.

V. Water Rights Appraisal, Reassessment and Transfers

13. Effective water demand management requires the appraisal, reassessment and transferability of water rights, for instance in the field of agriculture and for this purpose, legislation could be enacted to facilitate water rights transfers between users and, where practicable, catchments.

PART III: GUIDELINES FOR IMPROVED PROTECTION OF GROUNDWATER RESOURCES

I. Introduction

1. Groundwater is a highly valued resource, not only as an important source of drinking water, but also, in a number of countries, as a major source of irrigation and industrial water. Groundwater is also an important contributing source to river and lake ecosystems and to wetlands. For these reasons it is important that groundwater is managed efficiently both from a quantity and quality point of view.

2. There are cases of serious over-use of groundwater resources and there is widespread misuse of high quality groundwater. There is evidence in many Member countries that some groundwater supplies are already seriously polluted and that unavoidable significant increases in pollution can be expected in many areas.

3. Groundwater is vulnerable to pollution from a wide range of sources including: agricultural pollution by fertilizers; animal wastes and pesticides; septic tanks; underground storage tanks; waste sites; underground injection wells; surface impoundments; materials storage and transport; urban runoff; chemical and other processing plants and mining and saline intrusion.

4. The characteristically slow movement of groundwater and the high cost of assessing its quality make it particularly vulnerable to long-term, cumulative pollution and raise substantial uncertainties regarding its current and future condition.

II. Groundwater Specific Strategies

5. As the problem of groundwater pollution is increasing and serious cumulative effects are becoming evident, programmes and laws should be adopted that directly address the specific requirements of groundwater management. Policy under these programmes and laws should aim at efficient sustainable use and protection of groundwater from pollution. These policies should be flexible to enable a response to changing conditions and various regional and local situations.

6. Because of certain characteristics of groundwater, such as the difficulty of monitoring cumulative long-term pollution and the high cost of treatment, its protection requires active management in an anticipatory manner rather than post-pollution "clean-up" measures.

III. Comprehensive Management

7. Groundwater management programmes should be comprehensive, integrating both the management of the resource and controls over activities which are potential sources of pollution. Countries should enact programmes to remedy existing groundwater pollution.

8. In particular, comprehensive management should be aiming at long-term efficiency and a wide-range of environmental objectives and it should consist of: co-ordinated management of surface and ground water; co-ordinated management of use, prevention, protection and clean-up, taking into account all potential sources of pollution; and integrated management of groundwater with other natural resources and other policies.

IV. Managing Groundwater Use

9. Groundwater supplies should be directed to their most appropriate use through the conjunctive use of surface and groundwater and proper pricing. Consumers of, and dischargers into, groundwater should pay for its use according to the resource pricing principle (as outlined in Part I, Section IV).

10. To avoid long-term groundwater depletion and the possible degradation of groundwater, permit systems for abstraction should be established that reflect the characteristics of groundwater in different regions and the need for flexibility, reassessment and transferability. Whatever the nature of public control or private rights to water use, abstraction permit systems should incorporate means to determine quantity and terms of use (including priority, if any, of time or type of use), terms of reassessment, transfer and foregoing of permits, and extent of public authority control.

11. Any groundwater classification scheme should contain appropriate gradation in its permit system so that any controls imposed as a function of location are reasonably related to such characteristics as hydrogeology, water quality, and groundwater use at affected sites.

V. Prevention and Clean-Up

12. Currently used measures to deal with groundwater problems should be examined with the view to implementing long-run oriented preventive and remedial strategies.

13. Preventive strategies should include the development of low and non-waste technologies, programmes for modifying agricultural practices and reconsidering price support mechanisms, programmes of cleaning affected soil, much stricter use of controls on production, transport, use and discharge of dangerous substances, control of point and non-point sources of pollution, zoning for groundwater protection areas, local, regional or country wide, and measures to prevent avoidable but uncertain impacts.

14. Remedial strategies should include: action at the surface, management of pollution at the aquifer, treatment of contaminated water and, in cases of previously existing pollution, abandonment of heavily and irreversibly polluted sources and the search for new supplies.

15. A comprehensive set of instruments should be used to implement strategies; these instruments should consist of legal, regulatory, economic, and educational measures, as well as research and monitoring measures.

16. The regulatory measures should include the establishment of standards and guidelines, controls on land-use, controls on discharges, controls on the use of chemicals and limitations on abstractions.

17. The economic measures should include charges, fines and targeted taxes, proper pricing on groundwater use and limited and temporary use of subsidy measures to finance pollution control.

VI. Dealing with Diffuse Pollution

18. The reduction of groundwater pollution from diffuse and small point sources is an important aspect of water resource management. In order to reduce groundwater pollution greater weight should be given to:

- i) Controls on production, sale and use of chemical products which are potential pollutants, e.g. fertilizers, pesticides, solvents, disinfectants;
- ii) Control of emissions to the atmosphere which are carried back directly or indirectly to the aqueous environment by precipitation and fall-out;
- iii) Improved management of dumping, containment and treatment of domestic or agricultural and industrial wastes from old and new sites;
- iv) The development, testing and application of charging systems and other economic measures consistent with resource pricing (as outlined in Part I, Section IV).

VII. Dealing with Uncertainty

19. Because currently available information will rarely resolve all uncertainties in decision-making for groundwater management, policies should encourage precautionary decisions, particularly with the most valuable or vulnerable aquifers. Policy should also provide for effective interim protection measures to proceed concurrently with any further research, and should include planning strategies that allow flexibility in implementation.

20. When control measures are set under conditions of substantial uncertainty, a general assessment should be made to ensure that the costs of control are not highly disproportionate in view of the potential risks imposed on society.

VIII. Integration

21. For the effective management of groundwater resources an integrated policy framework should be developed. Such a framework should integrate water management policies with those of related sectors. Examples of integration include surface and groundwater, quantity and quality; groundwater and other natural resources, e.g. land, forests and wetlands; and groundwater and economic development (agricultural, industrial, urban, rural and regional activities).

22. The integrated policy framework would establish an improved institutional framework consistent with the administrative, legal and economic arrangements as described in Part I - Improved Institutional Arrangements for Integrated Management of Water Resources and Other Policies.

23. Integration strategies should incorporate the recognition that the cumulative, long-term character of groundwater pollution and the high cost of remedial action requires that a precautionary approach be taken to protect groundwater.

24. Regardless of which level of government holds the greatest degree of discretion and authority, there will be a need at the national level for a sharing of technical knowledge and administrative experience.

25. A lead agency or other appropriate mechanisms could be established with responsibility for the integration of groundwater protection and other programmes, consistent with the degree of centralisation and integration in the national programme for groundwater management.

IX. Balance Among Roles of Different Levels of Government

26. Government programmes to manage groundwater should provide sufficient guidance from central or regional government to ensure an effective level of protection for all citizens; stimulate or mandate consistent local action; outline a policy framework for controlling potential sources of pollution; and co-ordinate research and monitoring efforts.

27. Government programmes to manage groundwater should permit sufficient regional and local flexibility to respond to local hydrological and economic conditions consistent with national and international directions and goals.

X. Advisory and Education Campaigns

28. Because regulatory and financial measures can be technically and politically difficult to implement, full use should be made of advisory schemes, including codes of good practice.

29. Educational campaigns should be initiated, for both the general public and for those engaged in activities that may result in groundwater pollution, as a necessary supplement to regulatory programmes.

XI. Research Priorities

30. In the light of the great variability in the occurrence, characteristics, uses of and knowledge about groundwater and consequently the conditions of uncertainty in which groundwater management must operate, more information is needed on several aspects of groundwater hydrology.

31. Greater understanding of pollution processes is needed to improve forecasts of groundwater quality and to provide the technical basis for developing control measures.

32. Research efforts should include programmes for the collection of information most needed for informed decision-making such as the identification of more effective and less expensive techniques to deal with existing pollution. In recognition of the benefits to groundwater quality and quantity from water conservation, Member countries should sponsor and encourage research into the development of production technologies and agricultural practices to reduce or, as far as possible, eliminate waste in water use, and should consider the use of incentives and other measures to stimulate the development of such technologies and practices. Research programmes should pay attention also to the health and economic aspects of groundwater contamination.

¹ A description of the calculation of these costs and related problems is made in the OECD publication, *Pricing of Water Services* (OECD, Paris, 1987).

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