The Management of Manure and Non-Point Source Contamination of Water Quality In Ontario

Review of the Walkerton Inquiry Issue # 6 Reports by Goss and Johns

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TABLE OF CONTENTS

I. INTRODUCTION

The Walkerton Inquiry - Part II - includes examination of what should form part of the future system for provision of safe drinking water in Ontario. Among the areas the Commission has examined through a series of Issue Papers is Issue # 6: Water Pollution and Sources of Contamination. The Commission defined the scope of Issue # 6 as follows:

> "General review of quality of source waters, ground and surface; sources and sinks of major pollutants, both man-made and natural, point and non-point, as they affect the cost and quality of drinking water. Remediation practices and possibilities. Particular attention to pathogens and other contaminants capable of causing acute public health problems, including emerging microbial threats. Include an overview of other (chemical, physical) health threats: e.g. sewage treatment plants, intensive agricultural operations, and landfill leachates. Methods for controlling contaminants before they pollute ground and surface waters; the costs of so doing. Important but peripheral issues such as land use planning, severe weather events, or global warming should be put in context…."

The Ontario Water Works Association and the Ontario Municipal Water Association (OWWA/OMWA) have asked me to review two Commission Issue Papers relating to agriculture arising from the Issue # 6 context:

1. The Management of Manure in Ontario with Respect to Water Quality - University of Guelph - Michael J. Goss et al.; and
2. Effective Policy Regimes for the Management of Non-Point Source Water Pollution: Ontario and the US in Compartive Perspective - Carolyn M. Johns.

This review first summarizes these two Commission-sponsored reports and their findings. Second, the review examines a number of additional factors, measures, and initiatives in North America relating to controlling agricultural activity so as to protect both water quality and drinking water. Finally, the review recommends a comprehensive approach that should be adopted by the province to assist in achieving the goal of safe drinking water in future.

II. SUMMARY OF GOSS REPORT

The Goss report is divided into the following three parts:

1) Description of policy for manure management in Ontario relative to other jurisdictions, and why different policy instruments exist to achieve similar goals.

2) Description of what is known about the potential for contamination of water resources from manure production and handling, and effects of various livestock feeding, nutrient transport and cropping practices.

3) Description of the distribution of animal agriculture in Ontario, and associated manure production with an emphasis on trends over the next ten years.

The following summarizes each of the above parts.

A. Policy Approaches

Goss notes that in the late 1990s, a formal review of the state of the nation's waters in the United States, estimated that one-third of all surface water continues to be affected by some degree of impairment. However, surface run off is now the single most significant factor affecting water quality. According to Goss, agriculture is recognized as the largest contributor to water pollution caused by run off in the United States.

Comparable data for Ontario is not contained in the Goss report. However, Goss does note that it is expected that the costs of regulation aimed at reducing run off from agricultural operations would, at the margin, be expected to deliver a greater response than regulatory actions with similar costs aimed at industries causing point-source water quality problems.

In the Province of Ontario there are nine Acts (eight provincial and one federal) that may directly apply to farming operations. This part of the Goss report examines not only regulatory but also planning and voluntary regimes.

1. Regulatory Regimes and Water Pollution

a.) The Environmental Protection Act - (MOE) deals with spills but not with animal waste spread in accordance with normal farming practices.*
b.) The Ontario Water Resources Act - (MOE) is broader in interpretation stating that any person or municipality that discharges material of any kind into any water body or water course that may impair the quality of that water is guilty of an offence.
c.) The federal Fisheries Act - (MNR and some Conservation Authorities) - deals with pollution or other activity, such as damming up streams, that results in the harmful alteration, disruption or destruction of fish habitat as well as the deposit of deleterious substances harmful to fish.
d.) Drainage Act - (OMAFRA) deals with the discharge into any drainage works any liquid other than unpolluted drainage water - maximum fine is $1,000.00.

*Normal farming practices are set out by the Farm Practices Protection Board, the Board is composed of a minimum of 5 members appointed by OMAFRA.

2. Planning-Related Regimes That May Affect Agricultural Practices

a.) The Environmental Assessment Act (MOE) - there is no requirement for an agriculture operation to carry out an Environmental Assessment.
b.) The Conservation Authorities Act - the Conservation Authorities have no legal authority to deal with spills or other water quality impairment that may occur as a result of a particular farming practice.
c.) The Planning Act - (MMAH) - This Act authorizes municipalities to pass zoning by-laws to restrict the use of land and regulate the location, type and dimensions of buildings and structures. Water management objectives can be incorporated into municipal planning documents. As an example in 1999 the County of Oxford adopted a Nutrient Management Strategy. Prior to granting a permit for a new or an expanded livestock facility on an intensive livestock farm, operators must show that they have a nutrient management plan, they have satisfied the OMAFRA's Minimum distance Separation Formula II Guidelines, and have storage capacity for a minimum of 240 days.
d.) The Ontario Building Code - deals with the issuance of building permits and it is necessary to obtain a building permit for all agricultural construction projects in Ontario. Depending on the municipality, it may be a requirement to meet minimum separation distances from other dwellings and watercourses.(see above)
e.) The Farming and Food Production Protection Act (OMAFRA) - this Act relates primarily to protecting farmers from actions in nuisance or injunctions for causing disturbances such as odour, dust, noise, light, vibration, flies and smoke. Generally, this Act is not meant to protect farmers from liability for nuisance, from injunctions, or orders under provincial laws such as the OWRA concerning contamination of water sources by manure.

3. Voluntary Codes of Practice

A Minimum Distance Code (MDC) is a voluntary mechanism to fill the void created by the Environmental Protection Act. The code is voluntary unless municipalities have passed by-laws requiring permits and compliance. The permit applicants can appeal to the local committee of adjustment.

In addition, Best Management Practices in Ontario have been developed, again on a voluntary basis.

B. Potential Water Contamination From Agricultural Practices

This part of the Goss report deals with the constituency of manure, outlining its value as a source of nutrients for crop growth but also pointing out the potential for surface and groundwater contamination. Nitrogen (N), Phosphorus (P), and organic carbon compounds in runoff (both surface and sub-surface) are major environmental concerns related to manure. The report describes the many factors that impact the fate of manure constituents. These factors include diets and age of animals, livestock housing, bedding, length of

storage, timing and rate of manure application, land characteristics receiving the manure (type of soil, depth of water table etc.), the weather and dry manure versus liquid manure.

The report points out that of 229 spills recorded by the South West Region of MOE between 1988 and 1999, 94% related to liquid manure, 1% to solid manure with manure type not being recorded for the remaining 5%. It also states that of these 17 % were related to improper storage of manure, including insufficient storage space which leads to having to spread the manure on the land during adverse weather conditions such as during the winter. The most frequently reported type of manure spill is the movement of liquid manure, after it has been spread on the land, to tile lines.

C. Trends in Manure Production

This part of the Goss report provides an overview of manure production in Ontario. The report points out that "the bulk of Ontario's agricultural sales comes from relatively few farms. Sixty-seven percent of Ontario's agricultural production comes from 20% of the farms…While these exact statistics are not known for Ontario livestock farms, it can be assumed that the same general trend holds true." Goss also notes that Ontario livestock farms are consolidating into fewer, larger farms.

III. SUMMARY OF JOHNS REPORT

The Johns report may be divided into four main parts:

1. Dimensions of the Non-Point Source Water Pollution Problem;

2. Policy Instruments to Control Water Pollution;

3. Regimes in Place in Ontario and the United States to Address Non-Point Source Water Pollution;

4. Comparison of Approaches in Ontario and the United States.

A. Dimensions of the Non-Point Source Water Pollution Problem

Johns also notes the significant contribution to water pollution by agricultural activities in the United States. She notes that research in the United States in the 1980s indicated that non-point sources were contributing as much as two-thirds of surface water pollution. The three largest contributors of non-point source water pollution by volume were identified as coming from (1) sediment run off from agricultural land use, (2) nutrient loadings, and (3) pathogens such as coliform bacteria from livestock waste (as well as inadequately treated or sewage overflows of human waste). Johns does not provide comparable data for Ontario.

Johns notes that there are three important dimensions to non-point source water pollution that impact on possible policy approaches: (1) scale, (2) complexity of sources, and (3) property rights. Regarding issues of scale, Johns notes that non-point source water pollution problems occur in the upstream portion of drainage basins and have significant impacts downstream on the water quality in the receiving water body or groundwater.

Regarding source complexity, Johns notes that some agricultural sources such as large manure management facilities can be defined as point sources of water pollution (i.e. where pollutant inputs arise from a discrete conveyance or easily identifiable "end-of-pipe" such as industrial effluent or municipal sewage treatment outfall). However, she notes that often there are many agricultural sources of contamination on a typical watercourse and the mode of transport of contaminants to the water body is by overland run off during rain events. As a result, agricultural water pollution is best characterized as highly diffuse and extremely variable. Because such land use activities eventually impact drainage basins, Johns suggests that watersheds are important in assessing the non-point source contributions to the problem and possible solutions.

Regarding property rights, Johns notes that many individual farmers may own property in close proximity to a watercourse and may use that water body as a water supply for their cattle, plow too close to a stream, apply manure on their land in winter, etc. However, because of the diffuse nature of such activities, Johns suggests that non-point source water pollution makes it difficult to determine which land user is responsible for resulting problems, making both regulation and monitoring technically infeasible and financially prohibitive.

B. Policy Instruments to Control Water Pollution

Johns notes that applying "point source" control methods to non-point source problems has it limitations. She identifies three categories of instruments as being potentially applicable to the non-point source problem: (1) "sticks" in the form of regulation (land use, as well as regulation of agricultural practices through permits, licenses, and prohibitions); (2) "carrots" - economic instruments (subsidies, taxes, tax incentives); and (3) "sermons" information/communication (educational and outreach materials and programs).

Johns notes that the most common instruments used to address non-point source water pollution are various cost-share or tax incentive arrangements that attempt to subsidize or encourage voluntary implementation of best management practices such as streambank protection, proper manure management, livestock fencing, etc. She also notes that these "carrots" in conjunction with "sermons" have been the preferred instruments to address non-point source problems.

C. Regimes in Place in Ontario and the United States to Address Non-Point Source Water Pollution

Johns notes that under the Clean Water Act, the United States Government has developed programs addressing non-point source pollution by integrating federal funding with a mix

of state and local efforts to control the problem on a watershed basis. Federal funds are provided to state and local governments for technical assistance, demonstration projects, implementation of best management practices, monitoring, and the development of institutional arrangements. Recent efforts under the federal clean water law also have been directed toward integrating point and non-point source initiatives in an attempt to control total maximum daily loads to water bodies. A combination of assisted voluntarism and localism appears to characterize the primary non-point efforts in the United States to achieve water quality goals. Johns notes that some states also have begun to apply (1) performance measures and identification of "critical sites" as a departure from a largely voluntary approach, and (2) tax incentives in efforts to create protected area easements in close proximity to watercourses.

The situation in Ontario regarding non-point source initiatives, according to Johns, appears less developed. She notes that presently, no initiative in Ontario exists to deal specifically with non-point source water pollution. She also notes the existence of the voluntary Ontario Environmental Farm Plan (EFP) program, which seeks to encourage best management practices through moral suasion and economic incentives. She also refers to a number of municipal development and land use planning measures that may have indirect benefits for water quality. However, integration of these land use tools with provincial water quality objectives is weak and indirect. She further notes the existence of some municipal by-laws that place limits on the number of livestock units at a site or regulate manure management, that have been upheld by provincial land use control bodies (OMB). She notes few tax or easement measures in place to promote water quality protection.

D. Comparison of Approaches in Ontario and the United States

In her comparative analysis, Johns notes that water pollution policy in both Canada and the United States still largely is driven by concern about point sources of water pollution. However, the United States has taken greater initiatives than Canada regarding non-point sources. Even in the United States while a mix of instruments is employed through federal-state cooperation, the primary approach at the state level, with some exceptions, is voluntary. Tax incentives to protect land have made only indirect contribution to water quality, and land use regulation is viewed as a weak instrument that is not well integrated with other non-point source efforts.

In Ontario, Johns notes that there is no non-point source policy, and it is unclear the extent to which the EFP program contributes to achieving water quality objectives. Land-use tools and tax incentives are viewed as weakly integrated with water pollution control efforts.

IV. ANALYSIS OF AGRICULTURE, WATER POLLUTION, AND APPROPRIATE CONTROL MEASURES

A. Issues Raised by Commission Reports

The Goss and Johns reports provide good information that outlines the various programs in place and the success various jurisdictions have had in following or enforcing them. The reports also provide in-depth knowledge of the constituency of manure, nutrient value, storage and spreading considerations and related information.

With the exception of the Planning Act, which is dependant on the individual municipalities to carry out, all the other Acts relating to surface or ground water pollution are reactionary and not proactive. The only Acts that are directly Provincially enforced are the EPA, OWRA, Fisheries Act (MNR and some Conservation Authorities) and the Drainage Act.
The Command and Control regulatory approach is described along with descriptions of "market instruments" which could include low interest loans, cost sharing agreements, taxes, manure rights and quota etc. and voluntary efforts such as best management practices, education, EFPs etc.

The reports tend to favour a guidance (Best Practices), educational approach as opposed to greater regulatory approach. The reports do recognize the importance of proper farming practices to mitigate potential pollution of both surface and groundwater. Goss states for example: "It is possible to conclude from examining the research and practices in this area, that; 1) a successful policy is made up of a well integrated combination of individual components; (2) there is no one policy that is optimal for all situations; and (3) that a specific component that works well in one context may be inadequate in another. Jurisdictions vary in how different levels of government interact. There are differences in the level and type of authority exercised by different levels of government, in dealing with the severity of water impairment problems. There are also differences across regions in other factors such as geological and physical features, the costs of complying with a given standard or practice, demographics and other social and economic activities that may mitigate or exacerbate water quality issues associated with animal agriculture".

Using the above three conclusions from Goss the following provides analysis and suggested directions the OWWA and OMWA sees in the management of manure and control of non-point source water pollution in Ontario.

1. Characteristics of Successful Policy

The components of a successful well-integrated policy include but are not limited to: federal, provincial and municipal government involvement; public hearings, setback facility approval, waste system approval, fees, nutrient standards, hydrogeological testing, groundwater monitoring, and discharge requirements.

Goss states "In their assessment of the impacts of regulations on the hog industry in several European nations and 25 U.S. states, Beghin and Metcalf (2000) review recent trends in new environmental regulations aimed at livestock waste management. Their review emphasizes the evolving and heterogeneous nature of environmental regulations, which vary dramatically from state to state and across countries. Despite the geographical disparity in regulation, there is everywhere a common trend toward introducing more stringent and new policy instruments' ".

In another section of the Goss report he states "The Clean Water Action Plan (U.S.) released in February 1998, identified runoff as the most important remaining source of water pollution in the United States, with agricultural runoff from livestock waste listed as a specific target for future action."

Due to the substantial difference in the U.S. and European constitutional systems of government, involvement of the federal government in Canada may be limited in regulating agricultural practices relating to water pollution. The federal Fisheries Act, administered in Ontario by the Ontario Ministry of Natural Resources or certain conservation authorities, states that no person shall carry on any activity that results in harmful alteration, disruption or destruction of fish habitat. This legislation is reactive and does not proactively provide specific regulations to prevent sources of pollution from occurring and relates only to water quality impairment that affects fish.

The Provincial government, therefore, is the senior government agency that has the authority to regulate and institute agricultural practices. The Goss report outlines the approach the Provinces of Quebec and New Brunswick have taken although their policies are relatively new. Both objectives are the same, that is to prevent water pollution or impairment from agricultural operations but the approach in achieving this is different. The Quebec approach is one of command and control whereas New Brunswick's approach is more educational. The report also states that "Ontario has not yet seen new implementation of regulations that specifically targets livestock waste management for water resources protection."

There are eight (8) existing Ontario laws that relate to the agricultural area: Farming and Food Production and Protection Act; Environmental Protection Act; Ontario Water Resources Act; Environmental Assessment Act; Conservation Authorities Act; Drainage Act; Planning Act and the Ontario Building Code.

The three Acts directly administered by the Province relating to water quality are the Environmental Protection Act, the Ontario Water Resources Act and the Drainage Act. These Acts are all reactive in the agricultural context as they do not require plan submittal or approval of facilities that could protect either surface or ground water quality.

The Planning Act empowers the municipality to create zoning bylaws to restrict the use of land and to regulate the location, type and dimensions of buildings and structures. The Building Code makes it mandatory to obtain a building permit for all agricultural construction projects in Ontario, which includes manure storage utilizing concrete, wood or

steel components. Since these two Acts fall under the purvey of the municipalities the requirements vary widely.

Goss illustrates proactive approaches of some Ontario municipalities. Codes or guidelines such as the Minimum Distance Separation (MDS) guidelines have been developed to deal with agricultural expansion. As the Goss report points out "The MDS guidelines are intended to provide a voluntary mechanism to fill the void created by the Environmental Protection Act."

Both Goss and Johns note that an increasing number of municipalities have developed municipal by-laws affecting livestock manure management. As an example the Municipalities of Oxford County have developed a countywide nutrient management strategy as a means to comply with their Official Plan for protecting surface and ground water supplies.

As purveyors of water OWWA/OMWA would advocate a stronger role for the provincial government in establishing mandatory criteria similar to the approval program applicable to all municipal and private water and waste water facilities in the province under the Ontario Water Resources Act. Such requirements could be applied where any agricultural practice will produce liquid manure, where the facility meets criteria as an "intensive livestock operation", or is located in "critical areas" such as near watercourses.

The Certificate of Approval or "Permit" should include practices outlined in the Goss report such as:

- Minimum Distance Separation Guidelines
- Incorporate the Best Management Practices using as a framework "The Guide to Agricultural Land Use "(OMAFRA, 1995).

Mechanisms are presently in place under the approval regime for municipal wastewater treatment plants for stream assimilation studies on sensitive streams limiting the amount of phosphorous or nitrogen that can be discharged from a wastewater treatment plant. As well the spreading of biosolids from wastewater treatment plants requires MOE approval.

2. No One Policy Optimal for all Situations

We agree with the Goss report that no one policy or jurisdictional approach is optimal for all situations. However we feel the framework of the Environmental Protection Act and the Ontario Water Resources Act is in place to deal with the various surface and ground water quality issues in the Province.

Examples of how other jurisdictions have addressed approval issues are mentioned in the Goss report. In the U.S. all point-source pollution, which is defined as any 'discernable, confined and discrete conveyance' and specifically targets concentrated animal feeding operations, must qualify for permits that ensure standards are maintained and best available control strategies are used.

The Province of Quebec has enacted regulations to minimize environmental impacts of animal agriculture by requiring leak-proof storage of livestock waste and regulating manure-spreading activities on cultivated land. The regulations include requirements such as (1) minimum storage capacity of 250 days, (2) the maximum amount of waste material to be stored cannot exceed the limit of the facility, (3) provisions for the quantity of waste that can be spread on the land at the facility or adjacent farms providing signed agreements between the two land owners are in place, and (4) surplus waste must be transported in closed watertight containers to a manure management organization.

3. Where Specific Components Work and Don't Work

We agree with Goss that a specific component that works well in one context may be inadequate in another regarding programs he discussed that are in place in some European and U.S. jurisdictions. These include: ammonia rights; nutrient standards for phosphorous and nitrogen; reduction in output; taxes on excess nutrients; fines on excess nutrients and moratoriums on excess animal populations.

However from the writer's experience, sufficient flexibility can be incorporated into any approval that allows for site-specific issues but does not compromise the overall intent of the law.

B. Additional Factors, Measures, and Initiatives

OWWA/OMWA believe that in addition to the matters raised by Goss and Johns there are some additional factors, measures, and initiatives to consider in the context of both water quality and drinking water protection. These are set out in the following eight points of this review.

1. Findings of the International Joint Commission

Although neither the Goss nor Johns reports provided findings on the nature or extent of agricultural sources of water pollution in Ontario, such work was undertaken in the 1970s. An International Joint Commission (IJC) study in 1978 (International Reference Group on Great Lakes Pollution from Land Use Activities, *Environmental Management Strategy for the Great Lakes System* - July 1978) and the report of the IJC itself to the Canadian and U.S. Governments in 1980 (*Pollution in the Great Lakes Basin from Land Use Activities* - March 1980) concluded that the Great Lakes were being polluted from land drainage sources by pollutants such as phosphorus, sediments and chemicals.

The IJC identified agricultural activity such as nutrient runoff from feedlots and other livestock operations, inadequate soil conservation and drainage practices, and improper or excessive fertilizer application including spreading of manure in winter as contributing significantly to total phosphorus loads in areas such as central and southwestern Ontario. (Urban activities such as stormwater and construction site runoff also were identified as significant land drainage pollution sources). Phosphorus was identified by the IJC as being

of concern in the Great Lakes ecosystem because it is the principal controlling factor in eutrophication, which can cause severe water quality degradation.

The Reference Group and the IJC itself recommended that each governmental jurisdiction prepare a comprehensive non-point source management plan consisting of four components: (1) *land use planning* to ensure that activities having effects on the Great Lakes Basin are minimized, (2) *regulation* for use where voluntary programs do not achieve desired results (noting, for example, that major livestock operations are more amenable to and may require regulatory action if voluntary measures are not successful), (3) *fiscal arrangements* to ensure rapid implementation of programs, including use of loans, grants, tax incentives, cost-sharing arrangements, and other fiscal measures), and (4) *information, education, and technical assistance* to increase awareness of, and ability to undertake, needed actions.

2. Total Water Management

A recent American Water Works Association (AWWA) white paper on total water management (See Appendix A) made the following observations that OWWA/OMWA endorse in the Canada-Ontario context:

- Land and water resource management must be integrated at the local level;

- There is an urgent need for a unified water management policy that observes the principles of integrated land and water resource planning and management under a watershed framework and is based on rational priorities. This would relieve the patchwork of conflicting objectives and jurisdictions at the federal, provincial and municipal government levels, as well as address regional differences, urban and rural distinctions, competition between cities and agriculture for water related concerns;

- A new water policy must integrate planning, management and development to protect surface water and groundwater resources under a watershed framework;

- Public support and political support are necessary to achieve water management goals and objectives.

A number of papers at a 1996 AWWA conference also offer excellent advice on how to implement watershed management. The papers deal with (1) elements of a watershed management plan, (2) the New York City Watershed Agricultural Program, and (3) protection measures taken by two states that share the Lake Tahoe watershed.[1] Taken together the three papers point out (1) the need to identify pollutant sources, their relative

[1] The papers, presented at the 1996 AWWA Annual Conference and Exhibit, are as follows: (1) Perri Standish-Lee, Elements of a Source Water Protection Program. (2) Larry Beckhardt, The New York City Department of Environmental Protection, New York City Watershed Agricultural Program Overview: Water Quality Protection Through Public-Private Partnership Between New York City and the Watershed Agricultural Council. (3) Daniel M. St. John, Lake Tahoe: Protecting a Watershed Shared by Two States.

impacts, and the vulnerability of the source to such impacts, (2) farms need to implement their own multiple barrier approach consisting of pollutant source controls, landscape controls, and stream corridor controls, and (3) how the emergence of a super agency - the Tahoe Region Planning Agency - was key to establishing basin-wide environmental protection through the adoption of unified environmental thresholds, a land use plan, and a code of by-laws that applied across jurisdictional lines. These initiatives are capable of being implemented in Ontario through a variety of land use and water resource management measures and agencies already in place in the province. OWWA/OMWA commend these approaches to the Commission as part of an overall approach to protecting drinking water in agricultural/rural source water areas.

3. Source Water Protection

A recent AWWA white paper on source water protection (See Appendix B) made the following observations that OWWA/OMWA endorse in the Canada-Ontario context:

- The AWWA is dedicated to providing the public with an adequate supply of clean, safe drinking water. AWWA is committed to assuring that water resources are managed in a manner consistent with the protection and enhancement of source waters for current and future supplies of drinking water. Source water protection is a program of actions, policies and practices to be undertaken by water suppliers, government agencies, institutions or individuals to advance these goals;

- Property owners must bear responsibility for preventing and abating pollution emanating from their holdings. AWWA supports the interests of water suppliers and of consumers whose health and welfare could be affected by unrestricted exercise of property rights upstream. However, AWWA recognizes the need to be sensitive to property rights and to avoid imposing undue burdens on parties who may be affected by source water protection measures;

- AWWA promotes a multiple-barrier approach to providing safe drinking water that includes Source Water Protection (SWP), treatment, distribution system maintenance and monitoring. SWP may reduce health risks and treatment costs, and improve finished water quality.

- SWP programs must be implemented in a context of supporting and competing public needs. They also must be flexible enough to address threats to source water quality and opportunities for improvement that vary from site to site.

- Existing government programs need to be tailored to support a local and regional approach to the development and implementation of source water protection programs and activities.

- New or expanded regulatory programs for SWP should be implemented. This implies an integrated look at all the activities within an aquifer or watershed to

assess priorities and place priority on certain pollution-protection programs that offer the best net economic and environmental benefit.

- The SWP plans should delineate and characterize specific source water areas (watershed, wellhead or recharge areas), should identify threats to water quality, and should provide a strategy for ongoing management of conditions and activities within these areas that may affect source water quality.

4. Water Resources

A recent AWWA white paper on water resources (See Appendix C) made the following observations that OWWA/OMWA endorse in the Canada-Ontario context:

- A sound water resources policy must have as its primary objective the provision for an adequate supply of high-quality water for people, carefully planned and properly managed with due regard for the environment and project cost.

- A sound water resources policy must provide basic guidelines that clearly define areas of responsibility for the supplier, the user, and the regulatory agencies and among levels of government.

- The responsibility for water resources projects, particularly those for which community and industrial water supplies are a primary consideration, should rest with the agency closest to the people benefited. This includes sponsoring, planning, design, development, financing, ownership, operation, and maintenance of the water system.

- Comprehensive planning is a dynamic process and it is important that the environmental implications of the plans be thoroughly considered in order that any adverse environmental impact is minimized.

- Priorities for water, where competition among water users occurs, should be measured by the degree to which the use is vital to human needs and the contribution it will make to the economic and social welfare of the region concerned.

- Political (municipal) boundaries should not become barriers to most effective management of water resources. Surface and groundwater sources should be managed conjunctively.

- Hydrologic, environmental, socioeconomic, and other basic data continue to provide the vital base for water resources planning development and management. Data acquisition should be a responsibility of each level of government and each water producer. Better coordination of data acquisition and publication should be supported and encouraged.

- The province must provide water quality management, including pollution abatement and control, as an important part of environmental protection activities. A competent staff of adequate size also should be provided to handle effectively the regulatory and technical responsibilities relating to water resources and multiple use of streams and water bodies, including the surveillance of community water supply services.

5. Total Maximum Daily Load

The AWWA, in recent legislative testimony (See Appendix D) on Total Maximum Daily Loads (TMDLs) [a program for addressing point and non-point sources under the U.S. Clean Water Act], made the following observations that OWWA/OMWA endorse in the Canada-Ontario context:

- It is critically important that all levels of government address nonpoint source pollution seriously and aggressively;

- Where drinking water systems do not have access to protected water supplies the public must invest in treatment to remove contaminants introduced by point and nonpoint sources of pollution. Taking reasonable measures to identify and manage pollutant loadings on a watershed basis is important to ensuring that drinking water can be provided with reasonable treatment and at a reasonable price.

- Water utilities face pathogen, nitrate and other pollutant loadings that could be addressed through nonpoint source controls. Timely action to adopt and implement nonpoint source management measures is critical to protecting the nation's health from acute and chronic contaminants being introduced to the nation's surface and groundwater drinking water supplies by nonpoint pollution.

- Numerous studies have shown that nonpoint sources of pollution are the largest and most significant sources of water pollution in most of the impaired rivers and lakes in the United States. If Total Maximum Daily Loadings process does not address nonpoint pollution it will simply be a paper tiger of little value in improving water quality.

6. Source Water Assessments vs. Treatment Options

OWWA/OMWA also believe that source water assessment needs versus treatment options should be considered. The capture zone of the water supply needs to be identified along with the time of travel and contributing contaminants. Options would include: dilution, attenuation, inactivation versus treatment and/or watershed controls limiting or controlling all contaminant inputs. The financial cost of this would need to be compared, including financial compensation for land use controls, etc. before a decision to treat versus protect at source is made.

7. Concentrated Animal Feeding Operations

The AWWA, in recent comments (See Appendix E) on a proposed rule by the United States Environmental Protection Agency (USEPA) amending existing permit requirements for Concentrated Animal Feeding Operations (CAFOs) under US clean water legislation, made the following observations that OWWA/OMWA endorse in the Ontario context:

- Water suppliers struggle with the impacts and potential threats of impacts on their source waters by CAFOs;

- Particularly on drinking water supply watersheds, CAFOs must design and operate their facilities to prevent contamination of source waters under all conceivable weather conditions. Storage lagoons should not be allowed to "wash out" during a 25-year storm and contaminate downstream source water;

- Discharges to groundwater (primarily from earthen waste storage seepage) should be prohibited unless the permit applicant can demonstrate that there is no hydrogeological connection to surface water;

- The cost of additional drinking water treatment required to address pollution from CAFOs should be considered. The USEPA notice for the proposed rule amendment noted a wide variety of potential impacts to drinking water sources from CAFOs (nutrients, ammonia, sediment, salts, pathogens, etc.), with increased pathogen levels probably having the greatest impact. In the near future, water utilities in the United States will be required to monitor their source waters for *Cryptosporidium*. The result likely will trigger additional treatment requirements for water suppliers.[2]

- There is a need for stronger enforcement of permit requirements for CAFOs.

8. Ontario's Proposed Nutrient Management Bill

In mid-June 2001, the Ontario government, through the Ministry of Agriculture and Rural Affairs (OMAFRA), introduced Bill 81, The Nutrient Management Act, 2001. Bill 81 provides enabling authority for the province to introduce standards for the management of nutrients used on lands and to make regulations governing farm animals and lands where nutrients are applied. The regulations may require persons to hold a certificate if they carry out prescribed management practices, to have a licence if they are engaged in the business of applying materials containing nutrients to lands, or to obtain an approval for their nutrient management plans or strategies.

[2] For reasons that have been set out in other OWWA/OMWA reports to the Commission (e.g. report on Issue # 7), both organizations believe that at this time pathogen monitoring is a viable strategy for source (raw) water assessment, in conjunction with monitoring for surrogates such as turbidity and E. Coli, as well as providing multiple source water and treatment barriers to ensure public health protection.

OWWA/OMWA welcome the introduction of Bill 81 as an indication that the province is prepared to address the problems posed by agricultural impacts on source water quality and drinking water. However, at this stage of the process it is very difficult to know the extent to which Bill 81 will address the concerns of drinking water suppliers for the following reasons:

- There is no section establishing the purpose of Bill 81 including whether its purposes include - and the conduct of the regulated community consistently guided by - protection of the environment, water quality, or drinking water;

- It is unclear which ministry (OMAFRA or MOE) will be responsible ultimately for the Act and therefore whether Bill 81 is consistent with the notion of MOE being the lead ministry for drinking water protection in the province;

- Bill 81 is merely discretionary enabling authority to develop regulations that will be the teeth of the law's effectiveness; the regulation-making authority under Bill 81 contains no mandatory requirements to develop specific regulatory provisions, no timetable or schedule for when proposed regulations must be produced, or minimum conditions or criteria that must be achieved by the regulated community;

- Bill 81 rarely mentions environmental or water quality protection - and never mentions drinking water protection - as the objective to be achieved by a particular enabling provision;

- Standards to be developed under Bill 81 would apparently apply initially only to new construction or expansion of large livestock operations but it is unclear from the Bill what size of operation would constitute a large livestock operation (OMAFRA background information suggests as an example that a large livestock operation might be 450 livestock units) and therefore how many such facilities in the province will actually be subject to the most stringent standards under the new law;

- It is not clear what standards would apply to construction of new or expanded smaller livestock operations;

- Existing larger livestock operations would not be subject to the standards for at least three years according to OMAFRA background information;

- Existing smaller operations would not be subject to standards for at least five years, nor is it clear what standards these smaller operations would be subject to, according to OMAFRA background information;

- It is unclear what criteria, if any other than size, would cause a livestock operation to be subject to the most stringent requirements under Bill 81 regulations (under US clean water law an animal feeding operation can become

subject to the permit requirements applicable to a CAFO - regardless of the number of animals at the facility - if the facility is found to be a "significant contributor of pollution to the waters of the United States");

- Bill 81 is silent on the availability of fiscal measures to assist farmers with compliance or technical assistance in meeting new standards promulgated under the regulations.

- While Bill 81 would amend the Farming and Food Production Protection Act, 1998 (FFPPA) so as to ensure that a normal farm practice under the FFPPA must be consistent with regulations made under Bill 81, it is unclear at this time what the content of these regulations will be and therefore the extent to which they will contribute to overall source water and drinking water protection.

V. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

From the perspective of OWWA/OMWA it would appear that to protect drinking water in future an approach is necessary that combines (1) land use planning, (2) regulation, (3) fiscal measures, and (4) information, education, and technical assistance.

Without effective land use planning measures, major new or expanded livestock operations may continue to be located at inappropriate locations that are not conducive to protection of source waters.

Without strong, enforceable regulations there is not sufficient incentive, outside of the "right thing to do", on either government, (local, provincial or federal) to provide subsidies, loans, tax incentives, or other fiscal measures, or farmers to build proper storage facilities for manure and animals, and carry out appropriate nutrient management or other farming practices to protect source waters. Without strong regulation the potential is always there to reduce a subsidy in times of economic slowdown or changing government policies. It is unclear at this stage the extent to which the province's proposed Bill 81 will provide either the right mix of regulation, fiscal measures, or technical assistance to achieve the new law's objectives.

Jurisdictions outside Ontario have taken more stringent approaches to the management of farm animal waste disposal. In the U.S. the federal government takes a lead role in regulating countrywide policies dealing with water and water operations. USEPA provides detailed and specific regulations in conjunction with the U.S. Department of Agriculture to regulate waste from farming operations. Individual States can make their own regulations but they have to be as strict or stricter than the USEPA.

European countries appear to be the most restrictive on agricultural operations. One of the main reasons, especially regarding the handling of manure waste, is the limited land available for the disposal of this waste. As an example the Netherlands, which produces

more manure than the country has land on which to deposit it, has strict maximum animal manure deposits based on nitrogen and phosphates levels with heavy fines being imposed if the limits are exceeded.

Approaches to water quality protection from livestock agriculture in New Brunswick and Quebec have been recently designed to deal specifically with trends to increasingly concentrated livestock facilities, yet both are quite different. New Brunswick provides a combination of manure management guidelines and regulatory mechanisms while the Quebec regulation is based on a command-and-control approach to regulation.

The US, New Brunswick and Quebec approaches show strong federal (U.S.) and provincial direct involvement. Until now, Ontario has lacked a strong commitment to preventively control agricultural pollution of provincial waterways. The EPA and the OWRA, have been largely reactive to situations causing pollution from agricultural practices and have been applied only if there is a spill causing serious degradation to a water course, such as a fish kill. From the lessons learned with the Walkerton E.Coli outbreak it has been shown that unenforceable objectives do not "convince" everyone to carry out the initiatives contained in them. This, in part, has lead to the new drinking water regulation.

As well it has been shown that routine inspections of facilities have to be carried out by qualified inspection/enforcement staff that have the "weight of the law" behind them. Even the "best run" facilities may be found to require upgrading, although minor, in their mode of operation. Recent experience has shown the necessity of outside peer review of such facilities. Therefore, it cannot be expected that potential major sources of pollution, such as farming operations, can be left to self-regulation and voluntary use of best management practices. It remains to be seen the extent to which Bill 81 will correct the situation.

B. Recommendations

Surface and ground water supplies are susceptible to factors outside the control of water utilities. Conditions such as temperature, rain, snow, freezing, thawing and natural organic or inorganic matter are all examples of this. It is the responsibility of water utilities to construct and maintain facilities that can deal with these various water conditions to produce a reliable and safe municipal drinking water supply. It is the responsibility of people on a watershed to ensure that their actions do not adversely contribute to deterioration of the watershed. It is with this in mind that the OWWA/OMWA recommend that the Commission adopt the following recommendations in its final report to the Ontario Government:

1. Land Use Planning Measures

1. That the province provide clear guidelines and policies in the land use planning process for the protection of both source water and drinking water so that land and water resource management are integrated at the local level to minimize non-point source pollution from agricultural activities.

2. That the province provide stringent baseline performance standards and where necessary provide municipalities with the necessary land use planning tools to apply local initiatives such as groundwater protection and nutrient management policies.

3. As part of the land use planning process, there should be conducted by municipal entities, in partnership with conservation authorities or other provincial entities on a watershed-by-watershed basis, on-going identification of point and non-point sources of pollution:

    - Point sources would include manure storage areas, silo areas, etc.
    - Non-Point sources would include inadequate soil conservation and drainage practices, and improper or excessive fertilizer application including spreading of manure in winter.[3]

2. Regulatory Measures

4. That the MOE maintain the primary lead role in respect of water quality and drinking water protection under the Environmental Protection Act, the Ontario Water Resources Act, and Bill 81 - the Nutrient Management Act, 2001 in respect of agricultural pollution.

5. That provincial environmental legislation define and regulate such matters in the agricultural context as:

    - Agricultural storm water discharge to include only discharge from waste application fields on which manure or wastewater has been applied at an agronomic rate.
    - Animal feeding operations including waste application fields.
    - Land application areas including waste application fields on which manure or wastewater from a concentrated animal feeding operation (CAFO) is applied. This would include fields under a contractual relationship with the owner or operator of the CAFO.
    - Land application areas including land to which manure or process wastewater is or may be applied.

6. Regulations should apply to any livestock operation not just "large" livestock operations or CAFOs where such operations may be significant contributors to pollution of Ontario waterways or groundwater.

[3] Defining the watershed as to the predominance of these sources would aid water supply providers in capital spending for either existing facilities or upgrading of facilities. For example, if the main point and non-point sources of pollution within a watershed were of a particular type, then the water utility might decide to install treatment equipment appropriate to the contaminant. This would also provide the water utility with information on when to sample for specific substances or to prepare for specific events such as heavy rainfalls and potential elevated turbidity levels.

7. There should be a province-wide prohibition on manure spreading during winter months or during times of adverse weather conditions.

3. Fiscal Measures

8. To assist farmers with compliance or technical assistance in meeting new standards promulgated under regulations developed under Bill 81, or other environmental laws, fiscal measures, including loans, grants, tax incentives, cost-sharing arrangements and other fiscal measures, should be made available.

9. Such fiscal measures should be made conditional on implementing non-point source and animal waste management requirements to protect source waters.

4. Voluntary/Educational Measures

10. That the province, in conjunction with regulatory requirements, initiate informational, educational, and technical assistance programs directed at the agricultural community on new measures for source water protection. Specific areas should include:

    - Minimum distance separation.
    - Nutrient management strategy.
    - Best management practice. (The Guide to Agricultural Land Use - OMAFRA, 1995).
    - Proper storage of liquid/solid manure.
    - Manure land spreading/irrigation practices.
    - Well head protection.
    - Procedures for well abandonment.
    - Implementation of agricultural multiple barrier approach consisting of at least pollutant source controls, landscape controls, and stream corridor controls.

11. MOE, OMAFRA, and other appropriate agencies should be provided with sufficient technical and financial resources in order to advise/assist farmers to address environmental issues from both a land use and water resource protection perspective.

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VII. APPENDIX A

AWWA Government Affairs
Total Water Management

Approved June 23, 1994. Published November 1994 in AWWA Mainstream

Background

Regional, state, provincial, and local agencies face increasing frustrations as they attempt to plan for future community needs and implement their water supply, water quality, and wastewater management responsibilities. Environmental awareness, multiple laws, conflicting jurisdictions, scarce resources, increasing competition for available public funds, and increasingly factious citizen activism make their work appear impossible.

AWWA has endorsed the long-term goal of total water management, which is an attempt by the water supply industry to assure that water resources are managed for the greatest good of people and the environment and that all segments of society have a voice in this process.

Today, environmental issues are being framed in terms of watershed management by federal agencies. The US Geological Survey (USGS) has identified 21 major watershed basins, and each state or province is further divided into smaller watersheds that feed the major drainage systems. President Clinton's Clean Water Initiative, submitted to Congress on Feb. 1, 1994, supports a new provision in the Clean Water Act to establish statewide programs for comprehensive watershed management.

Total Water Management

Total water management recognizes the paradigm shift from considering water available in unlimited quantities to understanding water supply as a limited resource.

All water issues revolve around three factors: water quantity, water quality, and establishing priorities to deal with the limitations of quantity and quality. The need to prioritize is being debated at the national level, accented by conflicting uses. Recent allocation of waters in the Pacific Northwest for fisheries and Native Americans and the reallocation of water from the Edwards Aquifer in Texas for

endangered species bear this out.

The major challenge to the drinking water industry is developing the process to establish priorities. Water, by its very nature, is an integral part of every environmental issue and a basic need for the public welfare and prosperity. Thus, the water cycle must be recognized in all forms in the environment--from ice to liquid to vapor.

Total water management should consider the integration of the complete water cycle. Legislation must give opportunities to consider and determine the interrelationships between all aspects of the environment and society on a regional basis rather than dealing with each issue discretely and within limited parameters. The program must begin at the local level and integrate the activities of local, state, provincial, and federal governments if total water management programs are to succeed.

Stewardship

The water utility industry cannot be concerned only with providing potable water. The role of the utility in providing safe water for human uses must be expanded to include good stewardship. This effort requires water utilities to strive to not only be leaders but recognized as stewards of good water policy.

Land and water resource management must be integrated at the local level. Water utilities must position themselves to effect change in the way land and water resources are currently managed. This could ultimately lead to changes in demand management and the identification of water reuse as a constraint for land use in water-short areas.

Government Role in Total Water Management

There is an urgent need for a unified water resources policy that observes the principles of integrated land and water resource planning and management under a watershed framework and is based on rational priorities. This would relieve the patchwork of conflicting objectives and jurisdictions at the federal, state, and local government levels, as well as address regional differences, urban and rural distinctions, competition between cities and agriculture for water, and interbasin transfers.

During the first half of this century, an extensive system of water storage was constructed for municipal supply, agricultural

irrigation, and flood control. These facilities are the United States' most important water assets and form the backbone for the United States to structure a more effective total water management program. They must be better integrated to meet future water needs. Conservation of municipal and agricultural uses-- combined with water reuse, reallocation of resources, and watershed management--will be necessary to meet the challenge of a national water program for sustainable development.

A new federal water policy must integrate planning, management, and development to protect surface water and groundwater resources under a watershed framework. It must be based on the principles of pollution prevention and resource conservation incorporated into a sustainable development strategy. The policy should also be designed to incorporate concern for water resources into every aspect of human activity. The policy should strive to integrate institutions, economics, ecology, and technology into a common objective. Furthermore, policy implementation should be delegated to the states, limiting the federal role primarily to technical assistance and interstate water management issues.

Watershed Management

Watershed-based management on a subdrainage basis is one tool that can be implemented for the protection of water resources. Because most economic and natural events that affect the quality of water resources occur principally within watershed boundaries, watershed boundaries are the most sensible way of taking action to restore and protect water resources. This approach provides a framework that would supersede international political boundaries to evaluate and solve natural resource problems such as water quality.

The US Geological Survey's 21 major water-resource regions with their many subdivisions provide a framework for the establishment of a basis for watershed management in the United States. The Canadian and Mexican equivalent, further divided by the state and provincial watersheds, should also establish a framework. These USGS hydrologic units, which encompass the drainage areas of the major river systems, provide the flexibility to address water quality problems at the appropriate level.

Water Resource Management

Water supports life--from the basic needs of living organisms to complex habitats and recreational and aesthetic environments, as well as public drinking water requirements. The water industry must

consider the total interaction of water with the environment, including balancing human and ecological risk and the preservation and restoration of ecosystems. The challenge is in assuring public health, safety, and welfare--which must take precedence-- while achieving this balance.

Water availability and allocation can be a constraint on development and economic options. For example, the Endangered Species Act can have an enormous impact on a local water utility because the act prevents the drawdown of an underground aquifer if it feeds streams critical to an endangered species habitat. A similar or corresponding act should address the needs of society.

Water Conservation

Water is a renewable but finite natural resource. Water conservation considerations should be a part of any utility's water resources planning. Conservation, encompassing supply and demand management, is appropriate to some degree for all utilities and not just those in water-short areas.

To convince the local population that water conservation makes good water and economic policy, however, local water utilities will need to educate consumers about the benefits of regionally appropriate conservation measures and resources planning. This may be a daunting task for those utilities in areas where water resources are plentiful.

Public Support

Public support for total water management decisions is critical for the water manager. Water suppliers have a distinctly public role by virtue of contributing to the public health, as well as managing a sustainable natural resource. Utilities will play a major role in the process of disseminating information through a variety of forums. For issues that affect the community and its water resources, water utilities will play an important part in enlisting public participation in these decisions.

The water users, as well as the general public who may be affected by total water management decisions, should be a part of the decision-making process. The public should be included in analyzing alternatives, evaluating relative risk reduction, and the economic effects of alternatives. Relative risk reduction must include adequate regulatory flexibility so that environmental problems can be evaluated from a risk-reduction benefit and cost perspective.

Remedies must be achieved through priorities set through public choices. The public must have a voice in decisions of significant impact, such as water conservation or curtailment as a solution to water shortages during drought periods, balancing competing needs for the resource, and growth and economic development. These decisions will need to be made on a regional or even multistate basis.

Political Support

Political leadership by local and national representatives will be required to achieve the goals of a total water management program, and AWWA asks the national political leadership to support the effort to accomplish our vision of total water management. The technical knowledge of AWWA is available and stands ready to assist governmental leaders in developing a national water policy that incorporates total water resources management.

As published in AWWA MainStream, November 1994.

VIII. APPENDIX B

AWWA Government Affairs
Source Water Protection

(Approved April 11, 1997)
To Be Published in AWWA MainStream

Statement of Principles

The American Water Works Association is dedicated to providing the public with an adequate supply of clean, safe drinking water. AWWA is committed to assuring that water resources are managed in a manner consistent with the protection and enhancement of source waters for current and future supplies of drinking water. Source water protection (SWP) is a program of actions, policies, and practices to be undertaken by water suppliers, government agencies, institutions, or individuals to advance these goals.

AWWA promotes a multiple-barrier approach to providing safe drinking water that includes SWP, treatment as appropriate, distribution system maintenance, and monitoring. SWP may reduce health risks and treatment costs and improve finished water quality. SWP programs may also provide ancillary benefits of enhancing water quality for other users and improving the natural and aesthetic environments of communities. Accordingly, SWP should be pursued diligently for every water supply source.

SWP programs must be implemented in a context of supporting and competing public needs. They also must be flexible enough to address threats to source water quality and opportunities for improvement that vary from site to site and evolve over time. Regulatory programs and subsidies at all levels of government that are related to water resource protection should focus on existing or potential sources of drinking water. In these programs, SWP goals should be added or elevated in importance.

Water suppliers, regulators, and local landowners and municipalities share responsibility for accomplishing source water protection. Property owners must bear responsibility for preventing and abating pollution emanating from their holdings. AWWA supports the interests of water suppliers and of consumers whose health and welfare could be affected by unrestricted exercise of property rights upstream. However, AWWA recognizes the need to be sensitive to property rights and to avoid imposing undue burdens on parties who may be affected

by source water protection measures.

The Road to a Source Water Protection Program

A basic premise for the implementation of source water protection programs is the multiple-barrier approach to protecting water supplies and public health. Through the establishment of multiple barriers that include source water protection, treatment as appropriate, distribution system maintenance, and monitoring, water suppliers are able to assure the quality and safety of drinking water for their consumers. Source water protection represents a first and most important step in safeguarding public water supplies.

There are some common elements for successful source water protection programs: they account for local conditions, incorporate diverse interests, require commitment to the SWP process by all involved parties, and are sustainable over the long term. Source water protection requires a sustained commitment of policy, as well as financial and technical resources over a time span of decades, not just years. Some important water quality benefits of source water protection may not be measurable in the short run. In addition, a long-term commitment is necessary to assure the protection of high-quality water sources so that they remain available for future generations.

One of the most difficult issues in an SWP plan is the establishment of equity in sharing the responsibility and expense of these programs. Source water protection efforts often are hampered by issues of who benefits and who pays. The following guidelines have been used to resolve these issues:

- Sources of pollution bear the responsibility for remediation; in other words, the polluter pays.
- Open and active communication, flexibility, and participation in the SWP process by involved parties can overcome actual and perceived imbalances of equity.
- Federal, state, and local resources can be applied to help address the equity issue.
- Consideration should be given to the value that source water protection programs can provide to a community through environmental benefits -- such as wildlife habitat and open space -- as well as improved quality and quantity of available resources.
- Appropriate compensation for lost or diminished use of property because of source water protection restrictions may be considered in some cases.

These guidelines can help balance the rights of property owners and others affected by source water protection measures with the rights

of consumers whose health and welfare depend on the quality of source waters that could be degraded by the exercise of unrestricted property rights.

Developing Resources for Source Water Protection

A challenge incumbent upon successful, sustainable SWP programs is developing adequate structural and financial resources to support them. Some specific options include the following:

- State and federal governments tailoring legislative and regulatory agendas, resources, and programs to support source water protection.
- State governments refocusing and allocating a portion of resources and funding to source water protection. The states should secure adequate legislative and regulatory authority, e.g., planning and regulatory enforcement, for source water protection programs. This could also include levies on polluters or pollutants (pesticides, herbicides, fertilizers, etc.), with the proceeds supporting cleanup efforts.
- Local governments supporting source water protection with appropriate land use management and regulatory enforcement and by encouraging support from local grassroots efforts, environmental groups, and community groups.
- Water suppliers taking an active role in protecting their source waters by providing organizational, technical, monitoring, and financial resources and by harnessing resources available from federal, state, and local programs and institutions and from volunteers.
- Private organizations initiating source water protection programs and participating in cost-sharing arrangements.

Recommendations:

- Water suppliers, regulators, and local landowners and municipalities share responsibility for accomplishing source water protection. Existing federal and state programs need to be tailored to support a local and regional approach to the development and implementation of source water protection programs and activities.
- Recognizing that significant pollution of drinking water sources is occurring now, various federal and state legislative and regulatory programs should be directed to stress the protection of water resources for existing or potential drinking water supplies on a priority basis. Source water protection goals should be included in programs and, where already included, elevated in importance.

Where necessary and appropriate, new or expanded regulatory programs for source water protection should be implemented for specific river basins, watersheds, or aquifers via state or regional initiatives. This implies an integrated look at all the activities within an aquifer or watershed to assess priorities and place priority on certain pollution-protection programs that offer the best net economic and environmental benefit.

Water suppliers should develop written source water management plans to prevent or reverse water quality degradation. The SWP plans should delineate and characterize specific source water areas (watershed, wellhead, or recharge areas), should identify threats to water quality, and should provide a strategy for ongoing management of conditions and activities within these areas that may affect source water quality. The plans should also specify resource requirements for communications, implementation, and program assessment.

IX. APPENDIX C

AWWA Government Affairs
Water Resources

Adopted by the Board of Directors June 8, 1975, revised Jan. 31, 1982, and revised Jan. 28, 1990

A sound water resources policy must have as its primary objective the provision for an adequate supply of high-quality water for people, carefully planned and properly managed with due regard for the environment and project cost.

Among the many other related considerations, planning and management must include the conservation of water by all practicable means, the reduction of pollution to its lowest practicable level, the most effective treatment and distribution of water, the encouragement of effective water reclamation and reuse when economically and technologically feasible, and the taking of appropriate steps to protect life, property, and land from destructive forces of water. A sound water resources policy must provide basic guidelines that clearly define areas of responsibility for the supplier, the user, and the regulatory agencies and among levels of government. The responsibility for water resources projects, particularly those for which community and industrial water supplies are a primary consideration, should rest with the agency, governmental or private, closest to the people benefited. This broad management responsibility includes sponsoring, planning, design, development, financing, ownership, operation, and maintenance of the water system.

In the fulfillment of its task, the public water supply industry processes and serves water daily to most of the population. This service has been provided largely on a self-supporting basis. The industry has to deal with a growing per capita water use, increasing population, urbanization, pollution, shortages of funds, and the growing competition for available water by other uses.

The majority of water crises may be traced to insufficient and delayed action rather than actual shortages of usable water. To establish appropriate water policies for regional and local areasþincluding consolidation or regionalization of domestic water supply within the framework of national needs, comprehensive studies should be made to ensure planning for the most economical use of water for domestic, industrial, and other purposes and to prevent

waste.

Because comprehensive planning is a dynamic process, it is imperative that the plans evolved be subjected to continual updating and that this continual appraisal becomes the basis for the evolution of policies. It is equally important that the environmental implications of the plans be thoroughly considered in order that any adverse environmental impact be minimized. For plans to be of value, the immediate needs must be realistically met, and the provision of needed facilities be kept ahead of actual demand. It is with this background that the American Water Works Association (AWWA) sets forth the following principles by which the water supply industry can best meet its responsibilities to the public. These principles are consistent with the best processes of intergovernmental action and are based on a long history of demonstrated ability of the community water supply industry to be self-supporting.

Priorities

Priorities for water, where competition among water users occurs, should be measured by the degree to which the use is vital to human needs and the contribution it will make to the economic and social welfare of the region concerned, with appropriate consideration for the total environment. Where feasible, the best quality waters should be assigned to domestic use.

Water Supply Sources

Each water source should be developed and managed with careful attention to the hydrologic and ecologic systems of which the particular source is a part. Political boundaries should not become barriers to most effective management of water resources. Although surface water sources provide most of the water used for community supplies, groundwater sources, developed and undeveloped, are among a nation's most valuable natural resources. The utilization and management of groundwater must be based on evaluation of its role in the hydrologic system. Surface and groundwater sources should be managed conjunctively.

Withdrawals from groundwater sources should be based on knowledge of aquifer capabilities and recharge rates. Saline water intrusion should be avoided by careful well location, controlled pumping, and, where necessary, by protective barriers of induced fresh water or other management procedures. Withdrawals of groundwater to levels of near depletion should be resorted to only after all other water

supply alternatives have been explored and with full public realization that eventually other sources will be required. Artificial recharge of groundwater formations is becoming increasingly important in sustaining groundwater supplies, and the use of adequately reclaimed waters for recharge should be considered where conditions justify.

The growing value of desalted sea or inland saline water as public and industrial water sources must be recognized. Such sources should be utilized where natural water supplies are unavailable or inadequate, or where such converted waters are economically advantageous.

Regional Water Systems

In some areas, growing demands on a limited number of existing and contemplated water sources require consideration of consolidation of systems and regional-level planning for adequate management of the resources. Preparation of such regional plans should be carried out with active participation by the entities to be served so that local needs will be met.

Water Quality Management

The pollution, or degradation of the quality, of water supply sources has damaging effects on the health, welfare, and national economy, as well as on the general environment. The public water supply industry, as an essential factor in the economy, is entitled to good-quality raw water. The responsibility for assuring good water quality through pollution control and abatement rests with those who return waste products to our streams, lakes, and underground sources. All water users must take effective action to identify and reduce to the lowest practical minimum the pollution of our water resources. All levels of government must cooperate to monitor and regulate the quality of discharges to our water sources.

AWWA recognizes that water quality is only one aspect of protection of the environment and recognizes that a step taken to improve water quality might have detrimental effects on air and land resources. Any study or action to improve water quality should consider the effect of such action on the total environment as well as their economic and social effects.

Water Conservation

Water is a renewable natural resource. It must be managed to best

meet the many needs of man. Every effective means to prevent and minimize waste and promote wise use should be employed by all entities, public and private, engaged in water resource activities.

Basic Data

Hydrologic, environmental, socioeconomic, and other basic data continue to provide the vital base for water resources planning development and management. Data acquisition should be a responsibility of each level of government and each water producer, whether public or private. Water facts should be documented, expressed clearly and uniformly, and made available on a current basis. Better coordination of data acquisition and publication should be supported and encouraged.

Federal data acquisition programs should be designed and conducted with attention to the full range of current and future uses by all entities, public and private. State or provincial agencies should participate in the acquisition and study of basic data to meet the needs within the state or province and should encourage municipalities, water departments, and other public and private entities in data collection. Federal programs should support activities and responsibilities of state and local agencies.

Role of Federal Government

The role of the federal government in water resource programs and projects should be supportive and cooperative, not preemptive. The federal government should provide:

- Cooperation with the states or provinces and local public and private agencies for the preparation of general plans for the unified development and management of river basins and major groundwater basins in accordance with sound hydrologic, engineering, economic, ecologic, and other scientific principles.
- Systematic and effective coordination among federal agencies engaged in water resources activities to eliminate competition and duplication of effort by these agencies.
- Financing for large regional projects to be built by state, provincial, or federal governments, but with provisions for the local agencies to pay in some form for the local benefit or use of these facilities.
- Research in those aspects of national water problems which are beyond the capabilities of state, provincial, and local groups, with close coordination and support, wherever possible, with state, provincial, and local efforts.
- Training opportunities in advanced technology relating to water

supply functions which are beyond the capability of state, provincial, and local groups, as well as financial and personnel support for state, provincial, and local programs directed toward fulfilling the need for trained personnel.

Successful planning and implementation of water resources and related developments require that the following principles be recognized in federal actions:

The development and management of water resources of interjurisdictional watersheds through compacts should be encouraged.
State, provincial, and local agencies should be encouraged to assume greater responsibility through active participation in planning, constructing, operating, financing, and managing water resources projects.
The right of each state or province in interjurisdictional basins to control the use of its water and associated land resources should be recognized and respected by the federal government, provided that management of the resources is responsive to clearly defined national needs and established interjurisdictional responsibilities.
Regulations should not necessarily be uniform for the entire nation but should be tailored to regional circumstances and requirements.

The federal government should assume the initiative in development only when:

An economically justifiable project is of such magnitude as to be definitely beyond the capability of local, state, or provincial groups.
A project is so complex that no clearly defined local, state, or provincial group or groups can be identified as principal beneficiaries.
The participation of the federal government is necessary to assure the maximum feasible development in keeping with a comprehensive, regional, multi-purpose plan.
Federal programs and projects do not compete with alternative means of developing the necessary water resources by state, provincial, local, or private initiative.

Role of the States and Provinces

Every state or province should fully exercise its constitutional rights and responsibilities in the control and management of water

resources. Each state or province should take the initiative in carrying forward water resources and related developments on a cooperative basis with the agencies of local and federal governments. To carry out these responsibilities, a single appropriate agency should be established in each state or province to provide unified policy and coordinate the water resources activities of the various agencies in the state.

The state or province must:

Provide water quality management, including pollution abatement and control, as an important part of environmental protection activities.

Undertake flood plain management including flood plain zoning to reduce flood damage, lessen need for flood control projects, protect life and property, and make it possible to open flood plains for public recreational and other low-damage uses.

Encourage suitable land-use practices, including forest and tree farm management to reduce erosion, floods, siltation and reservoirs, and water waste, and to enhance stream flow.

Provide for the reservation of sites for future storage reservoirs by acquisition or other legal means where need is demonstrated.

Encourage the formation of investor or public-owned water districts, authorities, or similar regional-type organizations for the planning and management of water resources and community water supply systems. The state or province should establish, through its appropriate central agency, regulations necessary to assure the adequacy of the systems proposed by such organizations.

Participate effectively in the planning and management of water and related resource developments on interjurisdictional streams with representatives of federal, state, and local agencies. This joint participation should be continuous in order that the plans and project development ensure the best and most effective management of resources.

Through its planning and management policies, appropriately regulate water use at the supplier level to minimize waste and to provide for wise use and conservation of water.

Be responsible for developing, publishing, and keeping current studies of its water resources, and the demands that will be placed upon them, as a sound basis for comprehensive plans by which its water resources may be managed. Leadership must be available at the state or province level so that water supplies designed and constructed by local entities do not conflict with the comprehensive plans. It is of vital importance that water resource plans be continually reviewed and updated. +

Provide a competent staff of adequate size to handle effectively

the regulatory and technical responsibilities relating to water resources and multiple use of streams and water bodies, including the surveillance of community water supply services.
Ensure that all accumulated data are considered in preparing water resources plans, and that decisions are based on the data and scientific fact.

Insist on having the opportunity to participate and exercise leadership in the development and enforcement of drinking water standards to ensure that such standards accurately reflect the differing needs and conditions of states and provinces.

Role of Local Agencies

Historically, local entities generally have served the population with community water supplies, efficiently and economically. Agencies, public or private, such as water districts, cities, towns, villages, investor-owned water companies, commissions, and authorities should be responsible under state or provincial law for:

Planning, financing, constructing, and operating water supply systems for public and industrial uses.
Delivering high-quality water, meeting community water supply needs at all times.
Ensuring that plans are put into action on a timely basis so that water crises do not occur.
Managing the systems as self-sustained, utility-type enterprises.
Participating in multipurpose water resources planning and management activities of state, provincial, and federal agencies so that public water supply needs receive appropriate consideration.
Considering the feasibility of including recreational facilities which may be associated with water supply utilities. The cost of recreational facilities, if provided, must be assumed by the sponsoring entity or be self-supporting and should not be imposed on the water utility.
Staffing the water system operation with adequately qualified personnel. Water department officials should be selected on the basis of experience and competence. Because of the responsibilities to the welfare and health of the community, they should be given latitude in management and promise of continuity of service with salaries commensurate with their responsibilities.

Recognizing the contributions of local entities, such as the soil and water conservation districts, irrigation districts, conservancy districts, and other similar local organizations, not

only to water resources but to public water supply ventures. Local water agencies should provide for the coordination of activities with these organizations for improved development and management of water resources.

The collection and preservation of water source and operating data useful to planning and management activities. The local water utility should also seek and consider reliable data collected by other agencies.

Conducting water supply responsibilities with due consideration for protecting and enhancing the environment.

X. APPENDIX D

AWWA Government Affairs
AWWA Legislative Testimony - 05/06/00

STATEMENT OF
AMERICAN WATER WORKS ASSOCIATION
BEFORE
ENVIRONMENT AND PUBLIC WORKS COMMITTEE
UNITED STATES SENATE
STATEMENT ON
PROPOSED RULEMAKING REGARDING
TOTAL MAXIMUM DAILY LOADS
MAY 6, 2000
PRESENTED BY
DAVID PARIS, WATER SUPPLY ADMINISTRATOR
MANCHESTER WATER TREATMENT PLANT
MANCHESTER, NEW HAMPSHIRE

INTRODUCTION

Good morning Mr. Chairman. I am David Paris, Water Supply Administrator of the Manchester Water Treatment Plant, Manchester, New Hampshire. The Manchester Water Treatment Plant provides drinking water to 128,000 people in Manchester and the surrounding communities of Derry, Londonderry, Grassmere, Goffstown, Bedford and Auburn NH. I serve on the American Water Works Association (AWWA) Water Utility Council and am here today on behalf of AWWA. AWWA appreciates the opportunity to present its view on the proposed rulemaking regarding Total Maximum Daily Loads.

Founded in 1881, AWWA is the world's largest and oldest scientific and educational association representing drinking water supply professionals. The association's 56,000-plus members are comprised of administrators, utility operators, professional engineers, contractors, manufacturers, scientists, professors and health professionals. The association's membership includes over 4,000 utilities that provide over 80 percent of the nation's drinking water. AWWA and its members are dedicated to providing safe, reliable drinking water to the American people.

AWWA utility members are regulated under the Safe Drinking Water Act (SDWA) and other statutes. AWWA believes few environmental activities are more important to the health of this country than assuring the protection of water supply sources, and the treatment,

distribution and consumption of a safe and healthful adequate supply of drinking water. We strongly support effective clean water pollution prevention programs.

AWWA supports the Total Maximum Daily Load (TMDL) concept with the inclusion of effective nonpoint source controls. AWWA has several concerns about implementation of the TMDL proposal as published in the Federal Register on August 23, 1999. AWWA's concern stems from our member's responsibility to protect the American public through the provision of safe and affordable drinking water. AWWA agrees with a number of stakeholders that the TMDL proposal as proposed in the August 23, 1999, Federal Register is flawed, and AWWA does not currently endorse any specific TMDL rule proposal.

AWWA is disappointed by recent indications from U.S. EPA that the final TMDL rule will not address critical components contained in the August 23, 1999, proposal. It now appears that U.S. EPA will be removing key provisions:

Identification of drinking water supplies as high priority watersheds for TMDL development, and
Management of nonpoint pollution within the TMDL process.

DRINKING WATER SUPPLIES AS HIGH PRIORITY WATERSHEDS

Much of the current TMDL debate focuses on the Clean Water Act efforts to control point sources of pollutants so that receiving waters are "fishable and swimmable." While important goals, the Clean Water Act is also a critical component of protecting drinking water supplies. Public water systems serve 271.3 million Americans. More than 161.7 million American drinking water consumers rely on drinking water drawn from surface water supplies. Few of these drinking water systems have access to protected, pristine supplies and as a consequence must invest in treatment to remove contaminants introduced by point and nonpoint sources of pollution.

Taking reasonable measures to identify and manage pollutant loading on a watershed basis is important to ensuring that drinking water can be provided with reasonable treatment, and therefore, at a reasonable price. Local consumer expectations and regulatory pressures have set high expectations for the safety of America's drinking water. The job of ensuring that safe, affordable water can be provided to the nation's citizens begins with reducing the pollutants entering the water treatment plant's source of supply. Protecting the 161.7 million Americans whose drinking water is drawn from surface water supplies is clearly one of the highest and best uses to which Clean Water Act resources should be applied.

NONPOINT SOURCE POLLUTION

AWWA believes it is critically important that all levels of government address nonpoint source pollution seriously and aggressively.

Numerous studies have shown that nonpoint sources of pollution are the largest and most significant sources of water pollution in most of the nation's impaired rivers and lakes. If the TMDL process does not address nonpoint pollution, it will simply be a paper tiger of little value in improving water quality.

As a matter of law, nonpoint pollution is clearly within the U.S. EPA's purview under the Clean Water Act. Citing the comprehensive approach envisioned under the Clean Water Act, a federal district judge ruled March 30 that plans to clean up impaired waters can apply to a river polluted solely by nonpoint sources, in this case sediment runoff (Pronsolino v. EPA, N.D. Cal., No. C99-1828, 3/30/00). "TMDLs had to be set at levels that would 'implement' the applicable water quality standards," U.S. District Court Judge William Alsup wrote. "It would have been impossible to do so without taking any nonpoint sources into account as well as any point sources." The court suggested that the TMDL process could be used to "help states evaluate and develop land-management practices to mitigate nonpoint-source pollution."

REALITIES OF IMPLEMENTING TMDLS

Implementation of the Clean Water Act is a delegated responsibility. That is, individual States take responsibility for developing and implementing programs that achieve the Clean Water Act's goals. The States have overwhelmingly stated that they do not have the resources to implement the August 1999, TMDL proposal. AWWA's members understand that federal requirements in the proposed TMDL rule would challenge States financially and technically. The Water Pollution Program Enhancement Act of 2000 (S. 2417), introduced by Senators Crapo and Smith, recognizes that challenge and authorizes needed financial resources for several programs related to implementation of TMDLs. AWWA supports additional funds for administration, monitoring, Section 319 grants, and remediation of nonpoint sources of waterbody impairment. Once authorized it will be critical to ensure that the authorized funds are appropriated in each fiscal year; this second hurdle in the budget process has historically been a challenge for the programs affected by S. 2417.

S. 2417 also recommends the initiation of a National Academy of Sciences (NAS) study on key TMDL technical implementation issues. AWWA believes strongly that federal policies and regulations should be based on sound science and supports involving independent scientific input on technical issues surrounding TMDL implementation. We would caution that the NAS study process and regulatory processes can be quite slow. AWWA strongly urges that S. 2417 be amended to provide strong assurance that the NAS study will be completed and that the rulemaking can proceed in a reasonable period of time. We believe it critical that a final TMDL regulation which includes an effective nonpoint source pollution component based on the current proposal, comments received during the formal comment period, and the NAS report be completed as soon as possible.

Under no circumstances should the NAS study process delay promulgation of the final rule beyond 24 months from enactment into law. Drinking water utilities across America are facing pathogen, nitrate, and other pollutant loadings that could be addressed through nonpoint source controls. Timely action to incorporate nonpoint source management within the nation's TMDL process is critical to protecting the nation's health from acute and chronic contaminants being introduced to the nation's surface and groundwater drinking water supplies by nonpoint source pollution.

This concludes the AWWA statement on the proposed rulemaking regarding Total Maximum Daily Loads. I would be pleased to answer any questions or provide additional material for the committee.

XI. APPENDIX E

Comments by the American Water Works Association
On the Proposed Rule for
National Pollutant Discharge Elimination System Permit Regulation and
Effluent Limitation Guidelines and Standards for
Concentrated Animal Feeding Operations
(66 FR 2960)
April 2001

I. INTRODUCTION

The American Water Works Association (AWWA) is an international, nonprofit, scientific and educational society dedicated to the improvement of drinking water quality and supply. Founded in 1881, the Association is the largest organization of water supply professionals in the world. Our 57,000 plus members represent the full spectrum of the drinking water community: treatment plant operators and managers, environmental advocates, scientists, academicians, and others who hold a genuine interest in water supply and public health. Our membership includes more than 4,200 utilities that supply roughly 80 percent of the nation's drinking water.

The comments provided herein reflect the consensus of the AWWA that, given the depth and breadth of its representation, also reflect the predominant view of the nation's drinking water professionals. It is therefore appropriate that these AWWA comments be heard on behalf of the drinking water community in general.

II. GENERAL COMMENTS

AWWA strongly supports revising the existing Concentrated Animal Feeding Operations (CAFO) regulations to require appropriate control of CAFOs to protect drinking water sources. Water suppliers in many parts of the country struggle with the impacts, and the potential threats of impacts, on their source waters from CAFOs. For example, the City of Waco, Texas is fighting pollution in the Bosque River watershed from dairies that moved from the Chino, CA area after polluting watersheds in that region. CAFOs must control their pollution just like any other enterprise, regardless of where in they country they choose to locate. CAFOs cannot continue to escape installation of pollution control by continuing to move where land is cheap and regulation is lax. AWWA commends EPA for proposing revisions to bring national consistency to the CAFO regulations.

AWWA supports the two-tier structure in the proposal, with the threshold of 500 Animal Units (AUs) for simplicity's sake. AWWA doesn't believe that the 750 AU threshold is protective enough, and frankly, more research is needed to determine if the 500 AU threshold is adequate. Clearly, under the current regulation (a three-tier structure), many operators didn't believe that the regulation applied to them. Confusion reigned rampant with both facility operators and regulatory staff. The two-tier structure is easy to understand by all operators—you are either above the threshold or below it.

Additionally, AWWA urges EPA to consider setting tighter standards and lower thresholds for CAFOs in the watersheds of impaired or threatened waters. For example:

- the threshold for dairy CAFOs could be lowered to 100 cows;
- the "no discharge" exception could be raised to a 100-year storm event;
- the *chronic* storm event exception could be eliminated or, at least, the exemption threshold could be raised to 1½ times the 25-year/24-hour storm (or the 100-year storm).

The permit authority needs the flexibility to change thresholds for required regulatory actions in the watersheds of impaired or threatened waters.

AWWA supports continuation of the mixed animal calculation for applicability determination. It would not be difficult to convert a 900 head animal dairy into a combination 450 head dairy and a 450 head beef cattle feed lot. The same amount of water would be generated and the CAFO could avoid regulatory requirements. The mixed animal calculation closes a loophole, which some operators could exploit to circumvent the regulation. This calculation is NOT burdensome to small operations such as the family farm, as it is an uncomplicated calculation that can be done on a single sheet of paper. AWWA recommends that EPA develop a simple one-page worksheet to assist in performing this calculation.

AWWA supports removal of the 25-year, 24-hour storm event exemption from the definition of a CAFO. Particularly on drinking water supply watersheds, CAFOs must design and operate their facilities to prevent contamination of source waters under all conceivable weather conditions. The selection of the 25-year, 24-hour storm was based on historical stormwater detention needs, which are likely not appropriate for CAFOs given the serious environmental consequences of a CAFO facility overflow. Storage lagoons should not be allowed to "wash out" during a 25-year storm and contaminate the downstream source water.

AWWA supports the co-permitting concept in the proposal. Integrators and other parties contracting to growers must share with their contractors the ultimate responsibility for protecting water resources. Additionally, AWWA recommends that aggregate totals for an integrator and their contractors be used to determine applicability of the regulations, so that integrators and contractors cannot evade these regulations by contracting with multiple parties, each individually under the regulatory limit. AWWA also supports the co-permitting for manure haulers and applicators under the CAFO permit. Clearly, the final disposition of the manure is critical to protecting source waters.

AWWA supports EPA's continuation of regulatory requirements to discharge of pollutants from a point source via groundwater that has a direct hydrologic connection to surface water. Clearly, the scientific evidence proves that all earthen waste storage structures allow

some seepage. AWWA generally supports the general guidance in the *Federal Register* notice for the determination of hydrologic connection. All discharges to groundwater (primarily from earthen waste storage seepage) should be prohibited unless the applicant can demonstrate that there is no hydrological connection to surface water.

AWWA believes that national standards are necessary to establish performance baselines, even though AWWA recognizes that some states may have adequate existing programs to control CAFO pollution. AWWA recommends that EPA work with these states and recognize the "functional equivalence" of those programs that meet baseline performance standards and require states to adopt more site specific programs that address land use, soil types, hydrogeologies, etc. AWWA recognizes that this is not an easy task, however, AWWA still believes that national standards are necessary to provide performance baselines.

AWWA recommends that EPA develop a strategy, as part of the final regulation, for stronger enforcement of the regulations. The existing regulations have not been adequately enforced, possibly in part because of some confusion about applicability. According to EPA estimates (66 FR 2969), under the existing regulations, there are an estimated 12,000 CAFOs and only 2,500 NPDES permits issued. These statistics highlight the need for federal and state emphasis on the identification and permitting of CAFOs. But enforcement difficulties are also due to a lack of commitment by state government to provide adequate funding of programs and staff. The fact that not as many CAFOs have been permitted as originally expected is evidence of the gap in enforcement.

AWWA recommends that the cost of additional drinking water treatment required to address pollution from CAFOs should be factored into the benefit side of the cost-benefit analysis. In the *Federal Register* notice, EPA covers the gambit of potential impacts to drinking water sources (nutrients, ammonia, sediment, salts, pathogens, etc.). While the drinking water impacts from CAFOs can vary from region to region, increased pathogen levels is probably the greatest impact from a national perspective. EPA's Office of Groundwater and Drinking Water (OGWDW) is in the process of finalizing a proposal for a complex set of drinking water regulations that provide further protection from pathogens in drinking water sources, primarily focusing on *Cryptosporidium*. For the first time, in 2003 and 2004, utilities will monitor their source waters for average *Cryptosporidium* levels. The resultant level will likely trigger additional treatment requirements for many surface water and some groundwater suppliers. It is not clear how many water utilities are affected by CAFO pollution, the experiences of Waco, Texas and Tulsa, Oklahoma are certainly not unique. Some utilities will see increased treatment requirements based on these new drinking water utilities. Other utilities will continue to battle taste and odor problems resulting from the increased nutrients in the source waters from CAFOs. A recent study of lakes and reservoirs in Iowa found that most of them were classified as hypereutrophic as a result of nutrient inputs from agricultural activities.

The proposed revisions to the CAFO regulation will also add some inherent protection from risks that are unknown at this time. The proposed regulations provide a factor of

safety for the protection of human health from a variety of potential pathogens and general water quality degradation.

III. SPECIFIC COMMENTS

AWWA offers the following specific comments on the proposal:

1. AWWA recommends that all ponds and other retention control structures be certified by a registered professional engineer as meeting the regulatory requirements, both in any permit application and at least once every three years thereafter. Certification is required for municipal stormwater retention control structures, and agricultural operation should not be any different.

2. AWWA *strongly* supports the proposed definition of "agricultural storm water discharge" in section 122.23(a)(1) to include only discharges from waste application fields on which manure or wastewater has been applied *at an agronomic rate*.

3. AWWA *strongly* supports the definition of "animal feeding operation" in section 122.23(a)(2) to include waste application fields (WAFs).

4. AWWA recommends that the definition of "land application area" in section 122.23(a)(4) should be expanded to include waste application fields (WAFs) on which manure or wastewater from a CAFO is applied. The proposed definition would only apply to land where both are applied. Further, the definition should include waste application fields "under a contractual relationship with the owner or operator of the animal confinement area." The "under a contractual relationship" language is similar to that which is used to impose liability under state and federal "superfund" legislation. In many instances, it would be difficult to show that a WAF is actually "under the control of" the CAFO owner or operator.

5. AWWA recommends the adoption of "Option 1" for CAFO designation authority under proposed section 122.23(b). If EPA or the delegated state determines that any AFO is a significant contributor of pollutants, following an inspection, that should be the final designation. There should be no additional requirements, as suggested by "Option 2," to designate AFOs with under 300 AUs. If a small operation is a significant polluter, then the operation should have to comply with the regulations, no matter what the size.

6. Regarding the proposed regulation of waste application fields that are not parts of AFOs under section 122.23(h), AWWA recommends that an NPDES permit *invariably* should be required for any discharge of runoff from a WAF if manure *or wastewater* is applied not in accordance with proper agriculture practices. The administrator should have no discretion. Therefore, the language should be changed from "*may* be designated" to "*shall* be designated."

7. Under section 122.28(b)(3)(G), under no circumstances should general permits be available for CAFOs in the watersheds of 303(d)-listed waters or for any CAFOs confining over 1,000 AUs. General permits should be discouraged.

8. AWWA recommends that the definition of "land application area" should include land to which manure *or* process wastewater is or may be applied.

9. AWWA recommends that the definition of "new source" in section 412.1(g) should include the addition or replacement of new waste application fields or retention control structures (i.e., wastewater ponds).

10. AWWA recommends that EPA include a definition for *Cryptosporidium* in section 412.1(r) for regulated microbial parameters for permitted effluent limitations. Suggested rule language is as follows: "(3) *Cryptosporidium* means 'disease causing microorganism of the genus Cryptosporidium.'"

Cryptosporidium is a waterborne pathogen that, because of public health impacts, should be minimized in drinking water sources. Livestock are well-established sources, perhaps a major source, of this pathogen in some source waters in the United States, depending on the level of animal operations. Source control through permitted effluent limitations will beneficially impact public health and the ability of water utilities to meet regulatory requirements. Similarly, *Cryptosporidium* should be added as a regulated parameter in the Effluent Limitations Table in section 412.22.

11. AWWA recommends revising the requirement in section 412.31(a)(2)(i) to state that "the production area is designed, constructed, *operated* and *maintained* to contain all process wastewater...."

12. AWWA recommends that the most stringent "BAT" standard in section 412.33 apply to *all* CAFOs. No lower standards should apply to old CAFOs.

13. AWWA recommends that the soil sampling required by section 412.37(a)(4)(ii) occur *every year* (not every three years) and should expressly apply to *irrigation* fields as well as fields on which dry manure is applied. In fact, language throughout the proposed new rules should be revised to ensure that wastewater irrigation fields are regulated just as comprehensively as fields on which solid manure is applied.

14. AWWA recommends requiring that the soil sampling records required by section 412.37(b) be filed with the permitting agency, not just kept on site.

F:\home\jar\comments\CAFOs