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REPORT OF THE

ENVIRONMENTAL QUALITY BOARD

ADVISORY COMMITTEE ON GROUND WATER PROTECTION

June 1988

COMMITTEE PURPOSE

The EQB appointed an Advisory Committee on Ground Water Protection in January 1988. The charge was to:

1. Review the draft Minnesota Ground Water Protection Strategy under development by the Pollution Control Agency (and by mutual agreement with PCA, for review and approval by the EQB);

2. Review the draft Water Resources Strategy for the Control of Pests and the Management of Nutrients under development by the EQB Water Resources Committee; and,

3. Advise the EQB on the adequacy, policy choices, directions, priorities, justification, and implementation options of both strategies.

COMMITTEE PROCESS

The Committee met at three week intervals: February 19, 1988; March 11, 1988; March 31, 1988; April 21, 1988; May 13, 1988; and June 3, 1988. Thomas Anding, Associate Directer of the Center for Urban and Regional Affairs at the University of Minnesota, chaired the Committee.

A diverse membership representing farmers, industry, local governments, researchers, and citizen groups, brought a wealth of knowledge to the Committee. To expedite the review of the two strategies, two subcommittees were formed: A Ground Water Protection Subcommittee, chaired by Linda Lehman, and a Pest and Nutrient Management Subcommittee, chaired by Newell Searle. Each subcommittee thoroughly reviewed the relevant strategy and brought concerns and recommendations to the full Committee for its resolution.

Marilyn Lundberg, State Planning Agency, served as Committee Administrator. Staff from the State Planning Agency, Pollution Control Agency, Minnesota Geological Survey, Department of Health, Department of Agriculture, Department of Natural Resources, the Attorney General's Office, and University of Minnesota Center for Regional and Urban Affairs, and the University of Minnesota Center for Agricultural Impacts on Water Quality, assisted the Committee as it studied and discussed the two strategies.

To further help the Committee understand the issues associated with these strategies, Richard Kelly, Environmental Specialist Iowa DNR, and David Belluck, Ground Water Toxicologist Wisconsin Department of Health and Social Services, met with the Committee to discuss the ground water programs of their respective states.

The commitment of the members has been tremendous and reflects the concern and interest of the public. It is important to recognize that even though the Committee members represent very diverse interests, <u>the recommendations were made unanimously</u>.

COMMITTEE MEMBERS

Thomas Anding, Committee Chair
Center for Urban and Regional Affairs University of Minnesota

Calvin Alexander Jr.
Department of Geology and Geophysics, University of Minnesota

Jack Anderson
Irrigators Association of Minnesota

Steven Bloom
Martin County Special Projects Manager

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Verne Jacobsen
North Section Section, American Water Works Association

Diane Jensen
Clean Water Action Project

Linda Lehman
Minnesota Ground Water Association

Christine Olsenius
Freshwater Foundation

Richard Post
Kandiyohi County Commissioner

Newell Searle
Cargill

Lois Yellowthunder
Citizens League

COMMITTEE ADMINISTRATOR

Marilyn Lundberg
State Planning Agency

MINNESOTA ENVIRONMENTAL QUALITY BOARD
300 Centennial Building · 658 Cedar Street · St. Paul, Minnesota 55155
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June 16, 1988

To: Environmental Quality Board

Fr: EQB Advisory Committee on Ground Water Protection

Re: Committee Report

The Report of the EQB Advisory Committee on Ground Water Protection is attached. Our Committee recognizes the importance of the Ground Water Protection Strategy and the Strategy for the Control of Pests and the Management of Nutrients and offers its support for passage of the legislative package needed to carry them out.

We would like to highlight our major recommendations. The Committee:

* Strongly supports implementing these strategies. Members are concerned about problems resulting from the control of pests and management of nutrients, as well as contamination from other sources, such as improperly constructed wells or leaking storage tanks.

* Recommends that there be a preamble to the two strategies that provides a context for the two strategies. In addition, this preamble should provide highlights of both strategies, and convey a sense of urgency for implemention.

* Recommends that prevention of further contamination be the cornerstone of Minnesota's ground water protection efforts. In addition, cleanup of appropriate areas should continue to be an important part of Minnesota's efforts.

* Supports Minnesota having nondegradation (meaning prevention of further contamination) for a goal in order to have continued movement toward improvement of ground water quality.

* Supports Minnesota revising and updating the current framework that establishes the degree of actions required. This framework would include numerical limits, or a process for developing them, as a way of gaging the severity of contamination, identifying appropriate preventive actions, and defining clean-up requirements.

* Recommends applying water quality protection to all ground water. It does not support "writing off" any aquifers. Special protection should also be given in areas sensitive to ground water contamination.

* Recommends that the strategies need to be carried out as a whole, since no single effort, whether it be education, research, monitoring, incentives, coordination, or regulation can alone achieve the desired results.

* Recommends the creation of a Joint Legislative Commission on Water. This Commission would create a focus at the legislature for water issues and programs and complement the coordinating function of the Environmental Quality Board. This Commission could also evaluate the present state structure for its effectiveness in carrying out the strategies.

* Recommends that the Environmental Quality Board (EQB) continues its strong role relating to water issues. The EQB should also take a lead role in ensuring that state programs, rules, and other activities recommended in the strategies are communicated to local government.

* Recommends that the state significantly increase funding for local water management activities, since local government has an essential role in protecting ground water.

* Recommends that the funding needed to carry out the strategies be a combination of broad based (all potential beneficiaries) and those related to specific impacts on water. Every user of water should pay the costs of general, statewide functions, such as coordinating, education, and research. Special taxes or fees should be used to underscore the relationship between specific activities and problems or benefits.

* Recommends the state obtain information to characterize aquifers in terms of quantity and quality. To do this, the state must establish clear goals for information needs that outline the purpose, scope, value, and coordination efforts.

* Recommends that state ensure water resources data compatibility between agencies and with local government. It should have clear goals that outline the purpose, scope, value, and coordination efforts of its monitoring programs. Water testing should be required at real estate transfers.

* Recommends that in considering the Strategy for the Control of Pests and Management of Nutrients, the state must recognize the significant role the federal farm programs play in shaping agriculture practices, and work to impact the direction of the new federal farm program as it is drafted in 1989 or 1990.

* Recommends a research project to better evaluate the number of abandoned wells, the priorities for sealing, and the methods and process for sealing.

The enclosed Committee Report contains more information about each recommendation as well as a number of specific recommendations about portions of the strategies.

FUNDING WORKSHEET

	Lead Agency *	Environmental Goal	Mechanism to Achieve	Target Group	Possible Funding Source
Well Abandonment	MDH	seal problem wells, prevent contamination	incentive program for sealing	urban and rural well owners	permit fees on wells; general fund
Wellhead Protection	MDH	protect public water supplies with zoning controls	demonstration projects, program development	public water supplies	EPA grant; local water utility fees
Pest and Nutrient Management	MDA	environmentally sound agricultural practices (also urban)	better usage records; development of BMPs; incentives for implementation	farmers, licensed applicators; homeowners, state land managers	fees and taxes on pesticides and fertilizers (label should show fee): general fund
Nonpoint Source Pollution	PCA	control nonpoint sources of pollution	clear water partnership; control regulations and ordinances	farmers, homeowners, local governments	general fund; federal funds; fees on polluting substances
Storage Tanks	PCA, MDA	total containment	rule revision; tank permits	tank owners	permit fees
Sensitive Area Identification	PCA	tailor management to local conditions	rule change; more information on resource	all pollution sources in identified sensitive areas	general fund; extra fees on development in sensitive areas
Numerical Limits (standards)	PCA, MDH	limit contaminants in ground water	develop numerical limits apply in all programs	state and local programs to control pollution sources	general fund
Education	EQB/interagency	raise public awareness, promote stewardship	develop curriculum; develop multi-media campaign, public seminars	children and adults; urban and rural	general fund; grants from public and private agencies

Research	EQB/interagency	increase knowledge of impacts and prevention	university research; DNR; private research	colleges and universities; research users (need to link)	general fund; grants from public and private agencies
Resource Evaluation	DNR, MGS	increase basic knowledge of the resource	county hydro atlases; aquifer studies; hydraulic testing	state and local governments	federal and local matching funds; general fund
Monitoring	WRC/interagency	better information on ground water, coordination	review of programs, linking where possible, data sharing	state agencies, pollution sources	general fund; user fees, polluters/ responsible parties
Data Management	EQB/SWIM	coordinate, develop, and maintain automated data bases	more active role for SWIM; more funding for maint.	state agencies, local government, federal government	general fund; permit fees
Appropriation	DNR	ensure adequate supply,	appropriation permits	public water suppliers, industrial users, irrigators	permit fees; general fund

* MDH = Minnesota Department of Health
MDA = Minnesota Department of Agriculture
MPCA = Minnesota Pollution Control Agency
EQB = Environmental Quality Board
DNR = Department of Natural Resources
WRC = Water Resources Committee of the EQB
SWIM = Systems for Water Information Management

Expand state and local pesticide and nutrient control efforts.

pg. 13 Option 1: Add a goal for reduced use as part of the pesticide management plan.

INITIATIVE II:

Develop financial incentives.

(Note that Options 2 and 3(a) were recommended to be omitted.)

pg. 19 Add a recommendation. There should be a recommendation that everyone is encouraged to use Best Management Practices (BMP). In establishing BMPs, consideration must be given to impacts on ground water as well as surface water.

Pg. 19 Option 3(b): Change to read, "Retire areas for water quality purposes through purchase or easements."

pg. 20 Option 5: Require well tests for chemicals used in the area with real estate transfers. (See recommendations for Ground Water Protection Strategy.)

Improve and expand public educational and informational efforts.

pg. 21. Option 1: Broaden to say the University of Minnesota and other institutions.

Option 2: Broaden to the University of Minnesota.

INITIATIVE III.

Add recommendation to indicate that the state should have the right to have stronger requirements than exist in federal legislation.

INITIATIVE IV.

Continue and enhance basic research efforts.

pg. 31 Option 1: Add recommendation to build a health effects registry into the research and data collection efforts.

INITIATIVE V. FUNDING

Taxes can be used to raise revenue and also to influence behavior. Every user of water should pay the costs of general, statewide resource functions, such as coordinating, education, and research. The costs should be supported through the general fund. Possibly a tax for water resources could be identified as such on income tax forms.

There should also be specific taxes on pesticides and fertilizers. These and other user fees or special taxes could be used to influence behavior or underscore the relationship between specific activities and problems or benefits, such as pesticide container deposits to pay for disposal; fines for spill clean-ups or well drilling fees to pay for well enforcement or monitoring. Fee structures could also be used as incentives for reuse of water, such as for air conditioners.

SPECIFIC ADVISORY COMMITTEE RECOMMENDATIONS

POLICY DIRECTIONS

Pg. 5 Policy 2.

Change caption from "Each individual must be informed" to "Individual behavior and actions need to be modified."

Change the Policy Direction as follows: "Changing...actions. These modifications in turn require that individuals..." Add an additional sentence at the end discussing the use of incentives.

The Committee recommends this change recognizing that the purpose of this strategy is to influence behavior, and while education is essential, other motivating factors, (e.g., incentives, health risk) are also needed.

Government led the soil conservation movement in the 1930s that influenced agricultural practices, and in the 1960s agriculture changed again due to a number of forces, so there is precedent for redirection of agricultural practices.

Pg. 5 Policy 3.

The caption "Land stewardship must be stressed" requires a more precise statement perhaps "emphasize resource sustainability" or substituting the phrase "emphasizing best management practices" may be more accurate.

Change the last sentence to read, "Education and policy efforts should, therefore, stress an overall land stewardship ethic, and emphasize resource sustainability and long-term profits instead of short-term yields or gains."

Pg. 5 Policy 6.

Change the first sentence to read, "Due to the potential problems with environmental and health risks, and the difficulties associated with clean-up, instances of contamination can not be disregarded."

Pg. 5 Policy 7.

Add environmental protection to policy. It is important to recognize environmental risks in addition to health risks. Fish kills is an example of an important problem that needs action even if the human health risk is not clear.

INITIATIVES

The substance of the initiatives is fine but the order of the initiatives should be changed. The Subcommittee recommends that the order should be changed as follows: II) Providing for information, education, and incentives; IV) To enhance knowledge; I) To protect through prevention planning, corrective actions, and enhancement of regulatory efforts; III) To better coordinate; and V) Providing funding, noting that funding runs through all the other initiatives.

Presently Initiative I leads off with, "To protect ground and surface water from contamination with pesticides and nutrients..." In changing the order of the Initiatives, the Committee would still like to see this pursued as a goal. It could be stated in the preamble to the strategy that the goal of the strategy is to protect ground and surface water from contamination with pesticides and nutrients.

SPECIFIC WORDING FOR INITIATIVES

Initiative I

To protect ground and surface water from contamination with pesticides and nutrients through prevention planning, corrective efforts and regulatory efforts. (order of techniques changed)

Initiative II

Add to end of initiative II "compatible with maintaining or enhancing water quality".

SPECIFIC COMMITTEE RECOMMENDATIONS FOR INITIATIVES

INITIATIVE I:

Enhance state regulatory and enforcement efforts.

pg. 11 Option 3: Change caption to "Expand and enhance irrigation regulatory programs". This options should be undertaken in cooperation with the farm chemical industry and the commodity growers's groups.

The Committee supports appropriate rules for applying fertilizer through irrigation systems, but they must be distinct from the rules for applying pesticides through irrigation systems. Both sets of rules should best protect the environment and specifics would be worked out in the rule making process.

RECOMMENDATIONS ON THE WATER RESOURCES STRATEGY FOR THE CONTROL OF PESTS AND MANAGEMENT OF NUTRIENTS

GENERAL APPROACH

The strategy needs to be a blend of all the initiatives: No single initiative can be expected to alone achieve the desired results. For example, education is an important tool in the strategy, but incentives and other measures are also needed to prevent pollution. The strategy should also stress that best management practices need to be used by everyone to protect water resources.

Implementation of this strategy may be complicated by the planting requirements of federal commodity programs. Policy barriers built into the farm income support programs are unlikely to change before 1990. Federal efforts to limit crop production through set-asides and paid diversions have been off-set by increased productivity on planted acres through greater applications of nutrients and pesticides.

The federal farm programs and market forces play a significant role in shaping agricultural practices today. In addition to the state and local efforts in the strategy, the state should work to impact the direction of federal farm program as it is drafted in 1989 and 1990.

COMMITTEE RECOMMENDATIONS FOR ADDITIONS

Add recommendation on urban uses.

The strategy should contain a recommendation for managing pesticides and nutrients that are applied to residential and commercial lawns, municipal parks, golf courses, playgrounds and commercial campgrounds. In addition, emphasize application of options to nonfarm use of pesticides and nutrients where appropriate throughout the strategy.

Add recommendation on Best Management Practices (BMP)

The strategy should contain a recommendation that emphasizes that everyone use Best Management Practices when farming and/or using pesticides and managing nutrients. When BMPs are developed both surface and ground water should be considered.

Add recommendation that federal legislation should not preempt state's action.

The strategy should contain a recommendation to Initiative III to indicate that the state should have the right to have stronger requirements than required by federal legislation.

If Minnesota does have stricter regulations than the federal government, then the state has a duty to publicize the differences. Notices in the State Register are not sufficient.

RECOMMENDATIONS FOR OPTIONS TO BE OMITTED FROM THE INITIATIVES

INITIATIVE II:

pg. 19 Option 2: Omit liability option. This option should be omitted, but the question of liability should be reexamined. How would liability be enforced or determined? How would agencies know or an individual prove compliance with management plans?

The issue of liability is presently in a state of flux and needs to be reexamined again. Even if laws protecting farmers from liability were passed, they still could be sued.

INITIATIVE II:

pg. 19 Option 3(a): Omit this option. Reducing property taxes in return for certain actions is bad public policy. Taxes should be neutral. What would be the justification for reducing taxes on organic farms? It appears to punish conventional farmers and is likely to pit conventional farmers against organic growers.

Tax deductions or credits unnecessarily complicate the tax code. Incentives other than the tax code should be used to obtain the desired results. Incentives could be direct cash payments based on compliance and need.

COMMITTEE RECOMMENDATION ON THE STRUCTURE OF GOVERNMENT

This strategy deals with an infinite number of players. It cannot be managed by one single agency from the top down. It will succeed only if those directly involved have a clear sense of understanding and participation in the process.

ADVISORY COMMITTEE RECOMMENDATIONS FOR WORDS NEEDING DEFINITIONS

Integrated Farm Management
Integrated Pest Management
Organically grown
Sustainable Agriculture

Reinjection of Ground Water

Page 19. Proposed Recommendation: The PCA and MDH should consider changes in rules which would facilitate reinjection of ground water, under controlled circumstances, where water to be injected meets appropriate quality standards.

Committee Recommendation

The intent of this recommendation should be clarified and nondegradation must be stressed. Reinjection should not be used to dispose of waste, but may be a useful technique in site clean up (used as a closed system by continually recirculating water or biomanipulation of an aquifer).

The committee recommends that criteria be developed for reinjection that prohibits using injection to dispose of waste, but does not preclude the use of reinjection for certain uses, such as facilitating cleanup through use of a closed flow system. Experimental uses of injection should be permitted if there is no degradation of water quality. Water used for heating and cooling systems should not be reinjected unless the measured water quality can be shown to be essentially unchanged from the intake water (except for temperature).

Aquifer Studies

Page 20. Proposed Recommendation, Need 1: DNR, with advice from the WRC agencies, should prioritize aquifers for evaluation and cooperative studies, and work with the USGS and local governments to develop aquifer study reports;

Page 20. Proposed Recommendation, Need 5: DNR and USGS should expand the observation well network for water level monitoring...

Page 20. Proposed Recommendation, Need 6: MGS and USGS should evaluate the hydrologic properties of aquifers and aquitards...

Committee Recommendation

There is a need for basic research to characterize aquifers in terms of quality and quantity, to ascertain the degree of protection afforded by aquitards, and to measure more accurately the movement of pollutants in aquifer systems. In gathering information about the ground water system, there needs to be clear goals for information needs that outline the purpose, scope, value, and coordination efforts. All levels of government need to be involved in this effort and coordination efforts need to be delineated.

Monitoring/Coordination

Page 21. Proposed Recommendation: Develop a coordinative procedure for review of monitoring programs. Suggestions were made for making this a responsibility of the Water Resources Committee (since Strategy workgroups are not designed to be long-lived).

Committee Recommendation

In developing and reviewing monitoring programs, the state should have clear goals that outline the purpose, scope, value and coordination efforts.

RECOMMENDATIONS ON THE GROUND WATER PROTECTION STRATEGY

ADVISORY COMMITTEE RECOMMENDATIONS FOR ADDITIONS

Mining and its effects on ground water protection should be added to the strategy.

SPECIFIC ADVISORY COMMITTEE RECOMMENDATIONS

Basic Tenets

Page 9. Change the Basic Tenets as follows:

Committee Recommendations

Even in a water-rich state like Minnesota, ground water quantity is finite, although is it renewable in the long-term.

The level of understanding of both state and local government officials and the general public on ground water related issues needs to be increased.

Well Code Program

Page 13. Proposed Recommendation: MDH should initiate a strong program to enforce the requirements for...sealing of wells...

Committee Recommendations

Water well tests for the spectrum of chemicals used in the area should be required at real estate transfers. The cost would be negotiated.

Legislation is needed to require registration of all drilled wells on deeds.

The State should continue its discussions with real estate associations and lenders to encourage having abandoned wells identified during real estate transactions.

A research program should be established to better evaluate the number of abandoned wells, the priorities for sealing, and the methods and process for sealing. However, efforts to find abandoned wells should not wait for this study. Counties could work with groups, such as 4-H, to begin the process of identifying where these wells are located.

Based upon the information from the research program, the State should institute a cost-share program to assist with the abandonment of high priority wells that were constructed before the state well code went into effect.

The well code should provide sufficient flexibility so that monitoring wells are not required to meet the same requirements that other wells have to meet. Monitoring wells are constructed for a different purpose than drinking water supply wells, and some changes in construction practices between the two are reasonable. Protecting ground water from contamination due to improperly constructed monitoring wells is of primary concern. However, water supply well technology is not necessarily appropriate for monitoring wells and MDH should adopt a more flexible approach to monitoring well construction which would allow current techniques of monitoring well construction.

Information Management

Page 16. Proposed Recommendation: Develop an information management system for ground water data...,

Page 22. Proposed Recommendation: SWIM Committee should identify needs for additional automation and integration of data systems..., and

Page 22. Proposed Recommendation: WRC should affirm SWIM standards for data compatibility ...

Committee Recommendation

To ensure that the state and local data systems are consistent and usable by all levels of government, the state needs to involve local government in data base development. The Land Management Information Center (LMIC) should play a lead role in this.

The state should ensure data compatibility between agencies as well as with local governments.

Interagency Agreements in Remediation

Page 18. Interagency agreements between DNR, PCA, and MDH should be used to develop a coordinated approach to deal with problems of water supply and ground water pollution remediation...

Committee Recommendation

The Advisory Committee wants the EQB to ensure that monitoring, testing and remediation are tied together.

INSTITUTIONAL ISSUES

JOINT LEGISLATIVE COMMISSION ON WATER

The Advisory Committee recommends the creation of a Joint Legislative Commission on Water to provide a focus at the legislature for water issues and programs. The Legislative Commission on Waste Management currently provides a good model as it unifies various issues and programs relating to solid and hazardous waste management. The Advisory Committee believes that to undertake the measures needed to carry out the strategies, a Joint Commission is needed. This Commission could complement the coordinating function of the Environmental Quality Board (EQB).

Currently, water-related legislation is considered by a number of legislative committees depending upon which agency is the sponsor. This means that water-related health legislation is heard by health committees, water-related agricultural legislation is heard by agricultural committees, and water-related resource legislation is heard by environmental committees.

In addition to addressing and integrating water issues, a Joint Commission would be in a good position to evaluate the present state agency structure for its competence in carrying out the strategies.

ROLE OF THE ENVIRONMENTAL QUALITY BOARD

The Environmental Quality Board (EQB) needs to continue its strong role relating to water issues. Many aspects of the strategies depend upon coordinating and unifying the State's policies and programs to be successful. While the Committee recommends that a new Joint Commission on Water evaluate the present state agency structure, it is essential that the EQB coordinate water-related policies and programs. In addition, the EQB should take a lead role in ensuring that state programs, rules, and other activities recommended in the strategies are communicated to local government.

LOCAL GOVERNMENT

The Advisory Committee recognizes the important role of local government in protecting ground water. A large number of counties and water management organizations are developing water management plans and will need assistance to implement them. The remaining counties need to get their water planning underway. State agencies need to continue to work with local governments, and the state needs to significantly increase funding for local water management activities.

INSTITUTIONAL ISSUES RELATING TO CONTROL OF PESTS AND MANAGEMENT OF NUTRIENTS

In evaluating the Water Resources Strategy for the Control of Pests and Management of Nutrients, the Advisory Committee emphasizes that this strategy deals with an infinite number of players. It cannot be managed by one single agency from the top down. It will succeed only if those that are directly involved have a clear sense of understanding and participation in the process.

FUNDING

The Advisory Committee recognizes that adequate funding is crucial to carrying out the strategies. Funding sources should be a combination of broad based (all potential beneficiaries) and those related to specific impacts on ground water. Thus funding based on a combination of general taxes and user fees or special taxes is recommended. The attached funding worksheet indicates some possible funding sources for various recommended programs.

Every user of water should pay the costs of general, statewide functions, such as coordinating, education, and research. These costs should be supported through the general fund. Possibly, a special tax for water resources could be identified as such on income tax forms.

User fees or special taxes should also be used to influence behavior and underscore the relationship between specific activities and problems or benefits. There should be specific taxes on pesticides and fertilizers. Other possible funding sources include items such as pesticide container deposits to pay for disposal; fines for spill clean-ups, or well drilling fees to pay for well enforcement or monitoring. Fee structures could also provide incentives for water reuse, such as for water used for air conditioning.

Local government plays a crucial role in protecting ground water resources. In view of this, the Committee recommends the State substantially increase funding for local water management activities.

REPORT OF THE EQB GROUND WATER PROTECTION ADVISORY COMMITTEE
JUNE 1988

RECOMMENDATIONS AFFECTING BOTH STRATEGIES

OVERALL FRAMEWORK FOR STRATEGIES

The Advisory Committee would like a single preamble to the two strategies that would provide a context for both documents, and also provide highlights of both documents. Minnesota's water is a valuable resource that needs to be protected. Policies should be written so that a sense of urgency to protect ground water is conveyed.

The preamble should contain but not be limited to the following:

* Indicate that prevention of further contamination must be the cornerstone of Minnesota's ground water protection strategies, and that cleanup of appropriate areas should continue to be an important part of Minnesota's effort.

* Point toward the goal of nondegradation and delineate the actions needed to prevent degradation and to provide remedies where degradation has occurred;

* Convey the integral part each initiative plays in carrying out the strategies, since no single effort or initiative can be expected to alone achieve the desired results. This means education, research, monitoring, incentives, regulation and coordination are all vital parts;

* Denote that local government is a very important part of the strategies, and must be involved with ample funding assistance from the state for the strategies to be effective;

* Note that the federal farm program greatly influences agricultural practices; and

* Provide priorities for implementation including timelines for various elements in the strategy.

NONDEGRADATION

Ground water is an economically vital resource which provides drinking water for most Minnesotans. In many parts of the state, ground water quality has already been impacted by human-induced pollution. The cost of active ground water cleanup is great, and it is not always possible to return the water to pre-impacted conditions. For these reasons, prevention of further contamination must be the cornerstone of Minnesota's ground water protection efforts. In addition, cleanup of appropriate areas should continue to be an important part of Minnesota's effort.

The Advisory Committee recommends that the State adopt a goal of nondegradation (meaning prevention of further contamination) to provide continued impetus for adopting improved technologies as they are developed. "No impact" may not be a practical reality now for some types of practices, but it is important that there be continued movement toward improvement and in lessening the impacts on ground water quality.

In keeping with a goal of nondegradation, detection in ground water of man-made compounds, or levels of naturally occurring compounds beyond background levels, indicate that impacts have occurred. A plan for response actions should be developed commensurate with the observed level of potential health or environmental hazard.

STANDARDS/NUMERICAL LIMITS

The Advisory Committee recommends that the State revise and update the current framework for determining the degree of actions required. The framework must include numerical limits, or a process for developing them, as a way of gaging the severity of contamination, identifying appropriate preventive actions, and defining clean-up requirements.

Given the enormous number of chemicals in commerce, practical problems exist about prioritizing chemicals for standard setting. These priorities could be established by a system that assessed chemicals for their toxicity and structure, where they are used in the environment, their fate and longevity, and the amount that is being used. Numerical limits should be geared toward environmental protection and health concerns.

The Committee does not believe it is prudent for the State to initiate a costly new effort in standard setting, but would rather have funds spent on prevention and cleanup efforts in a manner similar to the approach used in Iowa. The federal government is making progress toward setting drinking water goals and standards for a number of chemicals. These federal goals and standards, along with the use of a process for developing numerical limits of other chemicals found in ground water, would form the basis for the numerical limits which would be used in Minnesota.

CLASSIFICATION/PROTECTION OF VULNERABLE AREAS

The Advisory Committee recommends that the same water quality protections should apply to all ground water, and the goal should be to provide a high degree of environmental protection and protect ground water as a source of drinking water. Aquifers which are currently impacted should be as protected as well as pristine aquifers, and no ground water should be "written off" as too contaminated to warrant further protection. In addition, special protection should be given in areas identified as sensitive to ground water contamination to assure that the same protection goals are met.