

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY MANAGEMENT

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TITLE: Principles for Ground Water Pollution Prevention and Remediation

AUTHORITY: The Clean Streams Law Act of 1937, P.L. 1987, No. 394, as amended, The Land Recycling and Environmental Remediation Standards Act, Act 2 of 1995, and related regulations.

POLICY: This guidance sets forth the principles for a consistent statewide program for prevention of ground water pollution and remediation of contaminated ground water.

PURPOSE: This guidance is a revision to the 1992 Ground Water Quality Protection Strategy. It sets forth principles to guide ground water quality protection and remediation programs consistent with state statutes and program regulations and policies.

APPLICABILITY: This guidance applies to all persons who are subject to the regulations of the Department with regard to prevention of ground water pollution through permitted activities and remediation of contaminated sites.

DISCLAIMER: The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the Department to give these rules that weight or deference. This document establishes the framework within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

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PRINCIPLES FOR GROUND WATER POLLUTION PREVENTION AND REMEDATION

I. Introduction

Background

Pennsylvania's ground water is a critical resource which provides environmental benefits and contributes to the well-being of the citizens and the economic growth potential of the Commonwealth. Ground water supplies the drinking water needs of nearly 50 percent of our population, and in rural areas it represents the only practical source of water for domestic uses. High quality ground water is important to industry and agriculture. Ground water is also important to the protection of Pennsylvania's surface streams since it provides the sustaining baseflow to the Commonwealth's 50,000 miles of surface waters. As a trustee of Pennsylvania's natural resources under Article I, Section 27 of the Pennsylvania Constitution, the Clean Streams Law, the Solid Waste Management Act and other statutes, the Department of Environmental Protection is obligated to conserve and maintain our ground water for the benefit of all Pennsylvanians, including future generations.

Pennsylvania's ground water has traditionally been available in adequate volume and quality to satisfy the state's needs. In some areas of the state, however, rapid population growth and commercial development have begun to tax the quantity and quality of this resource. Ground water can be vulnerable to the impact of human activities. The effects of on-lot sewage disposal systems in densely populated areas, overuse of fertilizers and pesticides, surface runoff from developed areas, industrial site contamination and from oil, gas and mineral extraction are some of the concerns facing the Commonwealth.

Ground water pollution is not inevitable; careful management, strong protective measures, and restoration of polluted water is possible through the coordinated efforts of state and local government, industrial, commercial, and agricultural interests, and the public. This document describes the principles established by the Department to address the protection of ground water through permitting and other prevention activities, requirements for ground water monitoring and for ground water quality restoration, and consideration of priority ground water areas for protection and remediation. The Department will also continue and, where possible, expand its efforts to increase public and local government awareness of ground water quality protection issues.

Definition

For purposes of this document, ground water is defined as water beneath the surface of the ground that exists in a zone of saturation.

Goal

The ultimate goal of the Department's ground water quality protection program is prevention of ground water contamination whenever possible. The Department intends to strive toward this goal because it provides the best protection of this valuable and vulnerable resource for future generations. The Department recognizes, however, that basic human activities have impacts on ground water. In those cases where complete prevention of contamination is not possible due to demographics and the practicalities of technology and economics, the Department will consider the use and value of the resource in establishing protection measures. These principles define the framework for establishing program requirements which will provide for careful stewardship of the resource and advance the highest feasible level of ground water protection through the use of control technologies, management practices, and pollution prevention measures at activities which may impact ground water quality.

II. Protection/Prevention

Reaching the ultimate goal of prevention of contamination of ground water may at times be limited by the practicalities and limitations of technology and economics. Given these considerations, the Department will continue to implement program specific technologies and management practices which have been demonstrated to minimize ground water contamination from all sources. The Department will also continue to evaluate new technologies and management practices for ground water quality protection, and will strive to implement them where it is demonstrated that it is practical and effective to do so.

In addition, ground water protection plans must be developed for those activities for which such plans are a requirement of regulation. These plans should comprehensively describe specific performance requirements that, when implemented, will ensure that the source does not adversely affect ground water quality. These plans should consider:

- Description of hydrogeology and ground water quality at the site;
- Use and value of the ground water resource;
- Performance-based practices directed toward preventing releases, spills, or leaks to ground water;
- Surveillance programs to demonstrate the effectiveness of specific protection practices and provisions for regular inspection;
- Reasonable recordkeeping requirements
- Education and training

III. Priority Ground Water Areas

For a variety of reasons, certain ground water areas in the state may be determined to be the highest priority for protection. The following factors, which are excerpted from the Final Comprehensive State

Ground Water Protection Program Guidance, EPA 100-R-93-001, December 1992, not exclusive of additional factors, can be used to determine or set such priorities.

- Quantity and potential yield;
- Background ground water quality as determined by monitoring;
- Potential for remediation where contamination already exists;
- Current use;
- Reasonably expected future use based on demographics, land use, remoteness, quality, and availability of alternative water supplies or sources;
- Interactions and potential contamination impacts between surface and ground water and the value of ground water quality to the maintenance of ecosystem integrity; and
- Inter-jurisdictional characteristics

IV. Monitoring

In any ground water protection program, monitoring is essential to the assessment of ground water quality. Monitoring is necessary in determining background conditions, detecting, measuring, and locating contamination should it occur, and determining when contamination has been successfully remediated. The Department will use monitoring data to evaluate cumulative and site-specific effects of activities, assess the effectiveness of source control technologies, determine permit compliance, assure that compliance actions are appropriately triggered, confirm that remediation is carried out in accordance with applicable statutory and regulatory requirements, and establish background water quality. Background is defined, consistent with Act 2 of 1995, the Land Recycling and Environmental Remediation Standards Act as “the concentration of a regulated substance determined by appropriate statistical methods that is present at the site, but is not related to the release of regulated substances at the site.”

Unless otherwise established by Department rule or regulation, the owner or operator of a regulated facility or activity should conduct and report all ground water monitoring in accordance with procedures set forth in the Department’s Ground Water Monitoring Guidance Manual. All monitoring activities should use quality control and quality assurance procedures that are consistent with existing program regulations and policies.

V. Assessment and Remediation

Assessment

The purpose of assessment is to document, prior to implementation of remediation measures, that suspected ground water pollution is factual and is attributable to activities at the site. The Department will require that assessment be initiated when ground water monitoring for an analyte generated by the activity indicates a statistically significant change from background conditions.

Remediation

The purpose of ground water remediation is to provide for protection of human health and the environment through implementation of appropriate treatment and removal technologies and/or engineering and institutional controls. Remediation activities must be consistent with the requirements of Act 2 of 1995, the Land Recycling and Environmental Remediation Standards Act and related regulations, or other specific state or federal program regulations.

VI. Attainment of and Compliance with These Principles

Specific provisions for attainment of and compliance with the principles outlined in this document can be found in the Pennsylvania Comprehensive State Ground Water Protection Plan (CSGWPP). The CSGWPP is a USEPA initiative in which states and EPA work together to develop a comprehensive and consistent statewide approach to ground water protection. The CSGWPP describes and assesses Pennsylvania's program for ground water protection relative to the EPA guidance and these principles. This document is currently under development.