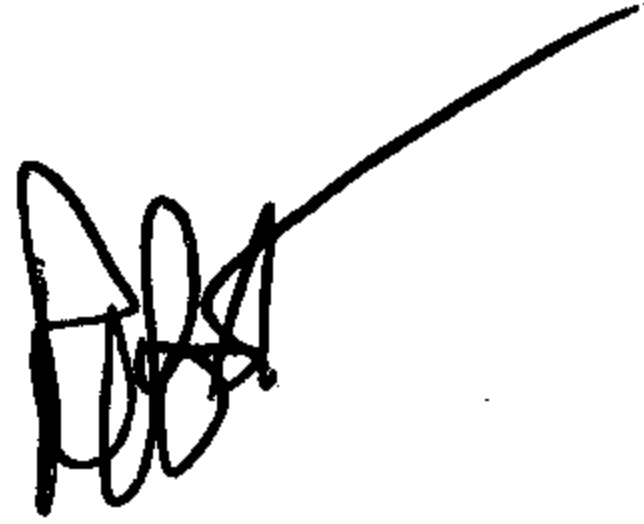



## Memorandum

# Florida Department of Environmental Protection

TO: District Waste Program Administrators  
District Solid Waste Engineers

FROM: Richard B. Tedder, Program Administrator  
Solid Waste Section 

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Office of General Counsel 

DATE: January 31, 2006

SUBJECT: Secondary Ground Water Standards at Solid Waste Facilities  
SWM-13.9

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A number of questions have been raised recently about the appropriate response to the discovery of exceedances of secondary ground water standards at solid waste management facilities. While we remain committed to the concept that all ground water should meet applicable standards and criteria, there are some circumstances where flexibility and discretion are still required. This is particularly true when it comes to secondary ground water standards.

Virtually all facilities are required to meet primary ground water standards outside of a permitted zone of discharge. Virtually all drinking water wells are required to meet the primary drinking water standards. These statements are not as universally applicable to secondary ground water standards. For example, consider the following three cases.

Case 1: Existing installations<sup>1</sup>, which include most facilities which were legally discharging in 1982, are not required to meet secondary ground water standards outside their zones of discharge unless the ground water is being used or likely to be used as a potable water source, Rule 62-520.520, Florida Administrative Code, (F.A.C.)

Case 2: Private drinking water wells, limited use public water systems (regulated by the Department of Health) and public non-community water systems are not required to meet secondary ground water standards. Only "community water systems" that serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents are required to meet secondary ground water standards, Rule 62-550.320, F.A.C.

Case 3: Several of the parameters which have secondary ground water standards are naturally occurring substances, and it is not always clear that an elevated concentration of these parameters in a monitoring well actually indicates a discharge from the monitored facility. Example parameters include aluminum, iron, manganese and sulfate. Because it is ubiquitous in the soils, iron appears to be particularly problematic. For example, assuming a surficial monitoring well has been properly

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<sup>1</sup> Existing installations are defined in Rule 62-522.200(1), F.A.C.

installed and maintained, it is often very difficult to know whether iron detected in that monitoring well indicates a plume of iron-containing leachate, a plume with properties that causes iron to artificially go into solution, or even a change in the redox potential of the soil/water system that is causing iron to be released possibly due to shadowing effects<sup>2</sup>.

In order to assist the Department's District Solid Waste staff in responding consistently to elevated levels of secondary constituents in ground water monitoring wells, we offer the following guidance. In this area more than most, site-specific conditions and professional judgment will play a large role in evaluating these exceedances. Nonetheless, we have set out three likely scenarios with our recommendations for the appropriate Department responses. The following assumptions apply to all three scenarios:

1. Only exceedances of secondary ground water standards are found.
2. Exceedances are significantly above background concentrations.
3. The impacted monitoring wells have been properly installed and maintained.
4. Facilities are not "existing installations."
5. There is no direct threat to drinking water wells or surface waters.

#### Scenario 1: Confirmed detections in detection wells

- *Triggers:* Evaluation monitoring as required by Rule 62-701.510(7)(a), F.A.C.
- *Enforcement impacts:* None, unless permittee fails to initiate evaluation monitoring.
- *Permitting impacts:* None, except that permittee is to make "all reasonable efforts" to prevent further degradation of water quality from the landfill activities. Assuming the permittee is conducting evaluation monitoring in good faith, there is no reason to think that the permittee cannot provide reasonable assurance of future compliance.
- *Discussion:* If only iron, aluminum, manganese, sulfates, and/or total dissolved solids (TDS) are detected, then only these parameters should be analyzed for in the representative background wells, affected detection wells and downgradient compliance wells required by evaluation monitoring in Rule 62-701.510(7), F.A.C. In addition, if the facility is unlined, the parameters specified in Rule 62-701.510(8)(a), F.A.C. should be analyzed for in the affected detection wells and downgradient compliance wells; a single sampling event will normally be sufficient unless additional contaminants are discovered in the ground water. We intend to revise Chapter 62-701, F.A.C. as soon as possible to incorporate this change.

#### Scenario 2: Confirmed detections in compliance wells

- *Triggers:* Corrective actions as required by Rule 62-701.510(7)(b)2, F.A.C.
- *Enforcement impacts:* Discretionary.

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<sup>2</sup> The "shadowing effect" refers to the possibility that large facilities, such as landfills or even parking lots, may cause geochemical changes to the aquifer/soil systems underlying them resulting in the release of redox sensitive or pH sensitive parameters from the soils. One mechanism may be reduced aquifer recharge from rainfall caused by the physical presence of the facility, hence called a shadowing effect.

- *Permitting impacts:* For renewal of an operation permit, you do not need to delay the renewal because of these detections as long as the permittee is undertaking corrective actions in good faith. If the final remedial action involves closing the facility, that closure can be addressed through enforcement and a Consent Order rather than in the permit. For lateral expansion of the facility, however, the Department should not be authorizing new activities unless the applicant can provide reasonable assurance of future compliance. This may require a change in operations, a change in materials accepted, or a change in design.
- *Discussion:* If the shadow effect is real, it is possible requiring a liner for expansions of C&D debris disposal facilities, which have exceedances for iron in compliance wells, may not eliminate the problem of iron being released into ground water. There may also be no improvement in ground water quality for iron by changing operations or changing materials accepted at the C&D debris disposal facility. The Department intends to continue studying this and other potential causes of exceedances of secondary ground water standards downgradient from these facilities.

**Scenario 3: Confirmed exceedances beyond the property boundary**

- *Triggers:* Corrective actions as required by Rule 62-701.510(7)(b)2, F.A.C.
- *Enforcement impacts:* Discretionary. If there is a chance of impact on drinking water wells, funding for alternate drinking water sources may be required.
- *Permitting impacts:* Same as Scenario 2.
- *Discussion:* If the exceedance of secondary standards is discovered during a site assessment, then notification to the affected property owner may be required. Notification of neighbors may make formal enforcement more likely.

**Caveat**

This guidance memorandum does not constitute a rule of the Department. It is intended solely as internal guidance to District staff, and is not intended to create additional requirements for the regulated community or to affect the rights of substantially affected parties to any agency decision. Please do not cite any part of this memorandum as though it were a standard, rule, or requirement.

Attachment – Relevant Statutes and Rules

## **ATTACHMENT - Relevant Statutes and Rules**

### **62-520.420 Standards for Class G-I and Class G-II Ground Water.**

(1) In addition to the minimum criteria provided in Rule 62-520.400, F.A.C., waters classified as Class G-I and Class G-II ground water shall meet the primary and secondary drinking water quality standards for public water systems established pursuant to the Florida Safe Drinking Water Act, which are listed in Rules 62-550.310 and 62-550.320, F.A.C.

### **62-520.520 Exemptions from Secondary Drinking Water Standards Outside a Zone of Discharge in Class G-II Ground Water.**

(1) An existing installation discharging to Class G-II ground water is exempt from compliance with secondary drinking water standards unless the Department determines that compliance with one or more secondary standards by such installation is necessary to protect ground water used or reasonably likely to be used as a potable water source. Such determination shall be based upon:

(a) A determination that the portion of the aquifer(s) reasonably likely to be affected by the discharge:

1. is used as a potable water source, or
2. is identified in a planning document as a future potable water source by a state agency, water management district, regional water supply authority, or local government, and is reasonably likely to be used as such.

(b) A site specific hydrogeologic characterization of the receiving aquifer which defines:

1. direction and rate of ground water flow, and
2. depth and degree of confinement.

(c) A waste stream characterization, site specific hydrogeologic characterization, and review of monitoring data which demonstrates that the discharge is likely to cause a violation of one or more secondary standards outside the zone of discharge in:

1. the portion of the receiving aquifer identified in (a)2. above, or
2. a known public or private potable water supply well.

(2) The permittee can avoid the application of one or more secondary standards upon an affirmative demonstration that the economic, social, and environmental costs outweigh the economic, social and environmental benefits of compliance; provided, however, that such demonstration shall not operate to relieve the permittee from compliance with (6) below.

(3) Upon permit renewal the Department shall review available data to determine the need for compliance with secondary standards.

(4) Upon determination by the Department that an existing installation must comply with one or more secondary standards, the Department shall revoke the exemption and require compliance or corrective action considering the factors in Rule 62-522.700(2), F.A.C. Such revocation shall be included in an appropriate Department permit as a specific condition after February 1, 1988.

(5) Secondary drinking water standards constituents may be included as waste characterization, monitoring, and indicator parameters as specified by permit.

(6) All installations discharging to Class G-II ground water are prohibited from causing a violation of the secondary drinking water standards at any private or public water supply well outside the zone of discharge.

(7) Failure of an existing installation to submit monitoring data to the Department as required pursuant to any permit addressing ground water shall be a basis for removal of that installation's secondary standards exemption. The installation may regain such exemption at such time as it can demonstrate compliance with monitoring requirements, unless removal of the exemption is otherwise authorized pursuant to this rule.

(8) Existing cooling ponds approved by the Department for treatment of thermal discharges to surface water as defined in Rule 62-302.520, F.A.C., are exempt from secondary standards so long as the cooling pond waters are monitored pursuant to Department permit to ensure that the pond does not impair the designated use of contiguous ground waters and surface waters. In addition, the Secretary may order such monitoring of ground waters as may be reasonably necessary to ensure that the designated use of affected ground waters and surface waters is not impaired.

**62-522.300 General Provisions for Ground Water Permitting and Monitoring.**

(1) Unless exempted by Rule 62-520.500, 62-520.510, or 62-520.520, F.A.C., no installation shall directly or indirectly discharge into ground water any contaminant that causes a violation in the water quality standards and criteria for the receiving ground water as established in Chapter 62-520, F.A.C., except within a zone of discharge established by permit or rule pursuant to this chapter.

**62-522.700 Ground Water Corrective Action.**

Whether or not an installation is operating under a currently valid Department permit, the Department may order the installation owner to take corrective action under the following circumstances:

(2) Where no imminent hazard exists, but the plume has extended beyond the zone of discharge or otherwise threatens or is likely to threaten in the foreseeable future to impair the designated use of an underground source of drinking water or surface water immediately affected by the ground water, the Department shall require the installation owner to take appropriate action to clean up, increase the degree of treatment prior to discharge, contain or otherwise correct the violation of water quality standards. The type of corrective action shall be based upon the following factors:

(a) Direction of the plume movement in relationship to existing and potential sources of drinking water;

(b) Plume size both in the areal and vertical dimensions;

(c) Rate of migration of the plume;

(d) Level of toxicity of the plume;

(e) Rate at which the plume is being diluted;

(f) The costs of clean up or other corrective action in comparison with the benefits to the public of such corrective action; and

(g) Current and projected future use of adjacent ground and surface waters affected by the plume.

62-550.320 Secondary Drinking Water Standards: Maximum Contaminant Levels.

This section applies only to community water systems. (These standards may also apply as ground water quality standards as referenced in Chapter 62-520, F.A.C.).

(1) The secondary maximum contaminant levels are listed in Table 6, which is incorporated herein and appears at the end of this chapter.

(2) Failure to meet the fluoride secondary standard requires public notification pursuant to Rule 62-560.430, F.A.C.

62-550.200 Definitions for Public Water Systems.

(12) "COMMUNITY WATER SYSTEM" (CWS) means a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

403.161(1) It is a violation to "cause pollution . . . so as to harm or injure human health or welfare, animal, plant, or aquatic life or property."

403.031(7) "Pollution" is the presence in the outdoor atmosphere or waters of the state of any substances, contaminants, noise, or manmade or human-induced impairment of air or waters or alteration of the chemical, physical, biological, or radiological integrity of air or water in quantities or at levels which are or may be potentially harmful or injurious to human health or welfare, animal or plant life, or property or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation unless authorized by applicable law.