

# Geraghty & Miller, Inc.

GROUND-WATER CONSULTANTS

North Shore Atrium  
6800 Jericho Turnpike  
Syosset, New York 11791  
Cable: WATER

Telephone: 516/921-6060

April 5, 1984

Mr. Robert I. Shearer  
Groundwater Management Coordinator  
Oswego County Health Department  
70 Bunner Street  
Oswego, New York 13126

Dear Mr. Shearer:

As requested, we have reviewed the HRS ground-water route score for the Volney Landfill in Oswego County. The results are summarized below:

<u>Summary</u>		
<u>Item</u>	<u>Original Score</u>	<u>Geraghty &amp; Miller Score</u>
Observed Release	45	45
Waste Characteristics		
Toxicity/Persistence	18	18
Hazardous Waste Quantity	7	2
Targets		
Ground-Water Use	9	6
Distance to Nearest Well/ Population Served	30	20

The attached re-evaluation of the HRS ground-water score provides more detail that supports our opinion.

In view of these findings, we recommend that the State revise its score for the Volney Landfill to more accurately reflect waste characteristics, ground-water use and flow conditions, as well as the population distribution.

Sincerely,

GERAGHTY & MILLER, INC.

*Michael R. Warfel*  
Michael R. Warfel  
Senior Scientist

*Frits van der Leeden*  
Frits van der Leeden  
Vice President

FvdL/mc

Re-evaluation of HRS Ground-Water Route Score -  
Volney Landfill, Oswego County - April 4, 1984

by Geraghty & Miller, Inc.

1. Observed Release - Score 45.

Because several inorganic and organic contaminants have been observed in ground water, Geraghty & Miller, Inc. is of the opinion that the score of 45 is appropriate.

4. Waste Characteristics - Score 20.

A toxicity/persistence score of 18 has been used by Dames & Moore, although the predominant organic constituent in the wastes is methylethylketone which has a toxicity/persistence rating of 6. The higher value represents a conservative assumption and reflects trace occurrences of PCBs, chloroform, and carbon tetrachloride in the leachate. Geraghty & Miller, Inc. agrees with the score of 18 because these trace occurrences can be considered indicative of "the most hazardous substances at the facility that could migrate." The hazardous waste quantity score of 2 is based on information provided by Barton and Loguidice, indicating that of the 8,000 P.A.S. barrels reportedly buried at the landfill, less than 200 barrels may have been full of liquid wastes and the other 7,800+ barrels were substantially empty.

5. Targets - Score 26Ground-Water Use - Score 6

The ground-water use score is based on a descriptive table which assigns a value of 0 to 3. The maximum score of 3 assumes that an alternative source of water supply for the potentially affected water-table aquifer (used for residential water supply in the area of the Volney Landfill) is not available. This assumption is not valid, since a bedrock aquifer (Medina Formation) occurs in the area and is capable of yielding potable water to domestic wells. Many of the residences located within a three-mile radius of the Volney Landfill are supplied with water from the bedrock aquifer.

Available hydrogeologic data indicate that the bedrock aquifer is separated from the water-table aquifer by lodgement till, a dense layer of silty clay which was deposited by glacial action. Logs of test wells and residential wells show the till layer to be about 25 feet thick in the vicinity of the Volney Landfill. In addition, the static water level in a bedrock well (upper Medina Formation) near the landfill was above land surface in March 1984, indicating an upward hydraulic gradient from the bedrock into the water-table aquifer. This upward gradient would prevent downward migration of contaminants from the water-table aquifer into the bedrock aquifer.

Considering the existence of the bedrock aquifer and the fact that local residential wells tap this source of water supply, we believe the assigned value from the Ground-Water Use table should be 2. When this value is multiplied by the factor of 3, the revised Ground-Water Use score becomes 6.

Distance to Nearest Well/Population Served - Score 20

The score for Distance to Nearest Well/Population Served is determined from a matrix, matching values for distance to nearest well versus population served by the aquifer of concern (water-table aquifer). The distance to the nearest well is less than 2,000 feet, resulting in a maximum value of 4. This value is unchanged from the original Dames & Moore ranking.

The Population Served is determined by counting dwellings which could be served by the aquifer of concern within a three-mile radius of the disposal site, then multiplying the number of dwellings by 3.8 people per dwelling. Geraghty & Miller, Inc. analyzed the U.S. Geological Survey topographic maps showing surficial geology, roads, streams, and building structures to determine water-table drainage boundaries and the extent of the water-table aquifer where a potential impact might occur within a three-mile radius from the site. This analysis is depicted on Figure 1.

As the concern is with the water-table aquifer (a shallow flow system), ground-water flow would be toward the nearest surface-water

body or swamp and would not cross these drainage boundaries. Because of the water-table conditions at the site and the absence of major pumping, the ground-water flow pattern will be very localized in nature. That is, flow lines will be short and contaminants would move toward the nearest stream or swamp area. The limits of the water-table system which could be affected by the landfill are shown in Figure 2.

Within this water-table drainage, Geraghty & Miller, Inc. counted a total of 59 dwellings for a population of 225 if 3.8 people per household are assumed. Therefore, the population is in the 100 to 1,000 range and the assigned value from the table should be 2. When the Distance to Nearest Well value (4) and the Population Served value (2) are extended into the final table, the final score for the Distance to Nearest Well/Population Served is 20. The original Dames & Moore ranking considered the entire area within the three-mile radius as being served by the aquifer of concern, and calculated a score of 30 for this item.

File on eDOCs  Yes \_\_\_\_\_ NO  
Site Name Volney  
Site No. 738003  
County OSwego  
Town Volney  
Foitable  Yes \_\_\_\_\_  
File Name 1984-04-05, MRS GW Route Score  
Scanned & eDOC \_\_\_\_\_