

2002-04

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FEB 11 2002



Fred Schramm PLANNING ADMINISTRATION

Chief of Staff

Date: 2-6-02

To: BOB WALKER, LINDA SUMMITT
DENIS CANAVAN

The attached papers are referred for the purpose indicated by the check:

- ☐ Please advise.
- ☐ Please answer, sending me copy of your response.
- ☐ Please see me about this.
- ☐ Please prepare a reply for County Executive Owens' signature.
- ☐ Please take charge of this.
- ☐ To be signed.
- ☐ Please take charge and report disposition.
- ☐ Your comments please.

☒ FYI

Remarks:

COPY: Jim C.
FYI



631-3000 3
JEL

MARYLAND DEPARTMENT OF THE ENVIRONMENT

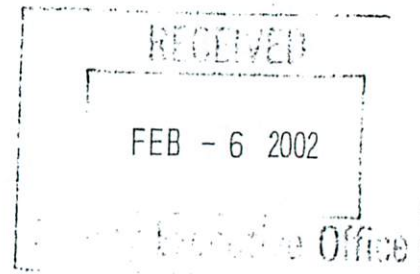
2500 Broening Highway • Baltimore, Maryland 21224
(410) 631-3000 • 1-800-633-6101 • <http://www.mde.state.md.us>

Parris N. Glendening
Governor

February 4, 2002

Jane T. Nishida
Secretary

Mr. Warren Halle, President
The Halle Companies
2900 Linden Lane, Suite 300
Silver Spring MD 20910



Dear Mr. Halle:

On January 11, 2002, the Maryland Department of the Environment (the "Department") received ten copies of an addition to a hydrologic report entitled "Response to Comments, Phase II Hydrologic Report, for the Chesapeake Terrace Rubble Fill", containing responses to comments made concerning the Phase II Report. This report was submitted on your behalf by Mark Schultz Associates. This was submitted in support of your application for a Refuse Disposal Permit for the Chesapeake Terrace Rubble Landfill, which is proposed to be located south of Odenton, in Anne Arundel County, Maryland

By copy of this letter, the additional hydrologic report is being transmitted to all interested agencies for their review and comment. These agencies are hereby requested to submit any written comments regarding the report to the Department by March 6, 2002. Please refer to document control number 1993-WRF-0225 when writing the Department regarding this application.

The Department's response to you may take longer than 60 days. At this time, we anticipate that we can provide a response on this portion of the application process by April 15, 2002. This notification is provided to you in accordance with Code of Maryland Regulations (COMAR) 26.04.07.15B(5). If you have any questions concerning this matter, please contact Mr. Kassa Kebede, Project Manager, at (410) 631-3424.

Sincerely,

Edward M. Dexter, P.G., Administrator
Solid Waste Program

EMD:KK:kt

Enclosure

cc: See next page

January 9, 2002

Mr. Kassa Kebede
Maryland Department of the Environment
Solid Waste program
Field Operations and Compliance Division
2500 Broening Highway
Baltimore, MD 21224

**Re: Letter to Halle Companies from Edward Dexter Dated March 29, 2001
- Chesapeake Terrace Rubble Fill**

Dear Mr. Kebede:

This letter contains responses to comments in the above referenced letter that relate to the hydrogeology of the Chesapeake Terrace Rubble Fill site, specifically, to Paragraphs 4 and 5 (the final two paragraphs) on the second page of the Mr. Dexter's letter. Paragraph 4 asks us to submit written responses to old letters from various state agencies. Responses to those comments that relate to site hydrogeology are attached.

Paragraph 5 of Mr. Dexter's letter states the following:

Additionally, since it has been many years since the Phase II Report site investigation was conducted, the Department is concerned that the previously submitted report may not accurately represent site conditions today. As such, you will be required to update the Phase II Report with confirmatory groundwater level measurements during that phase of the current application process.

Response

The monthly water level measurement record is complete for the twelve months from September 1989 to August 1990 with the exception that measurements were not made in March 1990. Based on water level elevation trends it does not appear that March 1990 was a month of either seasonal high or low water levels

Several water level measurements were also made in 1997. Water level elevations derived from these measurements are summarized in Table 1 which is excerpted from the Mark Schultz Associates (MSA) report titled Response to Comments - Phase 2 Hydrogeologic Report for the Chesapeake Rubble Fill which was submitted to the MDE on March 23, 1998. This report also describes other post-Phase 2 work including the drilling of additional borings and the installation of additional monitoring wells.

Water levels were lowest during December 1989 and highest during May 1990 (see last column in Table 1). The average difference in water level elevations in all of the wells was 1.22 feet between these two months. The highest water level elevations observed in each of the wells are summarized in the last row of Table 1.


Potentiometric surface contour maps based on the water level measurements made after the Phase 2 report were included in the March 23, 1998 Response to Comments report.

In response to Mr. Dexter's March 29, 2001 letter, MSA conducted an inventory of the onsite monitoring wells and measured water levels on April 24, 2001. The status of all of the water wells drilled in association with the Chesapeake Terrace project is given in Table 2. The water level measurements made on April 24, 2001 are provided in Table 3.

With two slight exceptions, water level elevations on April 24, 2001 were well below recorded highs even though the spring measurement date is generally a time of high water levels (see Table 3). The exceptions were adjacent wells MW-1 and MW-11 which had water levels slightly above the previous recorded highs (0.02 and 0.04 feet higher). Wells MW-1 and MW-11 are located 800 feet outside the proposed perimeter of the landfill.

Please call me if you need any additional information.

Sincerely

A handwritten signature in black ink that reads "Mark Schultz". The signature is written in a cursive, slightly stylized font.

Mark Schultz, PG

Enclosures

RESPONSES TO COMMENTS ON SITE HYDROGEOLOGY
MADE IN LETTERS FORWARDED TO THE HALLE COMPANIES
BY THE MDE ON 3-29-01

Letter Date: February 15, 1989
From: John Lawther, Chief, Solid Waste Division, MDE
To: Mark Weber, Leimbach Development Corporation

Item #1 on Page 1

Groundwater is an essential source of drinking water in the area, and must be protected from contaminant releases from the landfill. In Phase II you must determine the groundwater flow paths and the current and future groundwater use in the area, including locations and depths of wells and aquifers. Identification of water wells must go beyond existing records from the State and other sources to include a field survey by the applicant.

2nd Paragraph on Page 2

Additionally, your Phase II report should include logs of existing borings on-site, as well as all new boring logs. A detailed geologic map must be submitted with the Phase II report. A clear copy of the aerial photograph of the site would greatly enhance the information available from the topographic map submitted in Phase I.

Response - This letter was written after the MDE's review of the Phase 1 Report but before the Phase 2 investigation (see attached Chronology of Site Investigations). The comments were designed to provide guidance for the subsequent of the Phase 2 investigation and preparation of the Phase 2 report. The requested information was provided in the Phase 2 report dated March 19, 1990 and was supplemented by MSA's Response to Comments report which was submitted to the MDE on March 23, 1998.

Letter Date: March 8, 1989
From: Charles Wheeler, Program Director, Watershed Management Program
To: John Lawther, Chief, Solid Waste Division, MDE

Item #3 on Page 2

3. An approximate one-mile quadrant around the perimeter of the site was selected and defined by Maryland grid coordinates 867N to 884N and 433E to 449E (Attachment #1). A computer search of the water appropriation and use permit files was conducted to determine the number of water users in the vicinity of the proposed rubble fill.

Within the quadrant, 11 active appropriators using the Patapsco and Patuxent Aquifer were identified (Attachment #2). A total of 92 wells were drilled in the quadrant from 1969 to the present (Attachment #3). The list of well permits, however, should not be considered a complete listing since it does not include

wells installed without a permit or wells installed prior to 1969. Well permits are broken down by use in Table #1 and by depth in Table #2.

Appropriator and well permit locations suggest that they will probably not be affected by the presence of the proposed rubble fill in the near future. However, with several major public users of the Patapsco Aquifer within three to four miles of the site, the potential for contamination exists if residential and commercial development of the area continues.

Response - These comments pre-date the Phase 2 investigation. The Phase 2 investigation included a door-to-door well inventory that extended 1/2 mile from the proposed rubble fill. The results of this inventory were included in the Phase 2 report. The door-to-door survey was increased to a 3/4-mile radius in May 1993. The locations of the wells identified in the expanded well inventory are shown on Plate 5 of MSA's March 23, 1998 Response to Comments report and are listed on Table 4 of the report.

It should be noted that the comments were made before there was a liner requirement for rubble landfills. The landfill will meet all requirements for liner, leachate collection and for monitoring of groundwater quality adjacent to the rubble fill.

Letter Date: August 21, 1989

From: Charles Wheeler, Program Director, Wetlands and Waterways Program

To: John Lawther, Chief, Solid Waste Division, MDE

None of the comments relate to hydrogeologic issues.

Letter Date: May 23, 1990

From: Charles Wheeler, Program Director, Wetlands and Waterways Program

To: Jill Longacre, Nontidal Wetlands Division

None of the comments relate to hydrogeologic issues.

Letter Date: September 6, 1990

From: Charles Wheeler, Program Director, Wetlands and Waterways Program

To: John Lawther, Chief, Solid Waste Division, MDE

2. The Patapsco Formation outcrops on this property. This formation exists primarily as a complex series of lens-shaped and channel deposits rather than as broad sheets of uniformly graded materials. The site is in the recharge area for the Patapsco aquifer system. The excavation in this outcrop will prevent water from recharging this portion of the aquifer, which is heavily used in Anne Arundel County.

Response - Construction of the landfill will not have a significant impact on recharge to the Patapsco aquifer. The outcrop area of the Patapsco Formation covers over 100

square miles (64,000 acres) in Anne Arundel County according to geologic maps of the area (Glaser, 1976 and MDNR, 1982). The landfill comprises less than 1/2 of 1 percent of the outcrop area. Furthermore, as described in the Phase 2 report and the March 23, 1998 Responses to Comments Report, most of the site is underlain at shallow depth by a massive very low permeability clay deposit (1×10^{-8} cm/sec range) which naturally prevents recharge.

The portion of the landfill that is underlain by unconfined sandy deposits is referred to as Hydrogeologic Area A in the Responses to Comments Report. Groundwater flow under this portion of the site is to the Little Patuxent River and the precipitation that infiltrates to the water table in this area naturally discharges to the Little Patuxent River rather than to deeper portions of the aquifer. This pattern of groundwater flow is similar to that described in MGS R.I. No. 54, Simulated Hydrogeologic Effects of the Development of The Patapsco Aquifer system in Glen Burnie, Arundel County, Maryland (Achmad, 1991).

3. Excavation of the floor of the landfill will dewater the perched water table. Potential impacts to nearby shallow hand dug wells and springs used for water supply should be evaluated.

Response - Drain installation, overburden removal and rubble fill construction will intercept lateral recharge to the perched aquifer south of the site and dewater the perched water table aquifer adjacent to the rubble fill. Therefore, overburden removal and landfilling could affect the water supply in the shallow wells located south of the site along Conway Road. To address this concern, two post-Phase 2 monitoring wells (MW-15 and MW-16) were installed along the southern side of Hydrogeologic Area B (see Plate 1 in Response to Comments Report).

The purpose of wells MW-15 and MW-16 was to establish baseline conditions prior to overburden removal in order to quantify the impact of site activities on the perched water table aquifer. Prior to the initiation of overburden removal the applicant also wishes to establish a water level monitoring program in conjunction with the Anne Arundel County Health Department (AACHD) for the residential wells along Conway Road. This was proposed in a February 11, 1991 letter to the AACHD in response to their concerns on the potential impact of site operations on residential wells. The health department was satisfied with this response and with the applicant's proposal to bear the cost of replacing impacted wells with replacement wells screened below the confining bed (see letter in Appendix A of the Response to Comment report).

Overburden removal may require a groundwater appropriation permit. The application process for a groundwater appropriation permit requires an assessment of impact on nearby residential water supplies

Letter Date: February 4, 1992
From: John Lawther, Chief, Solid Waste Division, MDE
To: Claude Vannoy, National Waste Managers

None of the comments relate to hydrogeologic issues.

Letter Date: September 2, 1992
From: Janet Neundorfer, Division of Standards and Certification
To: Linda Milching, U.S. Army Corps of Engineers

The comments in this letter were addressed in the attached letter from Andy Chisholm of Halle Enterprises to Janet Neundorfer dated September 9, 1992. Following is a more complete response to Comment 4.

4. Since groundwater and seeps on the site may contribute to base flow of the Little Patuxent River, the applicant must provide information explaining whether excavation and fill of the landfill cells will affect these springs and seeps.

Response - Mining has removed much of the surficial sand at the site and in some areas has exposed the underlying clay. The remainder of the sand in the cell areas will be mined before landfill construction. This mining operation will remove the thin layer of perched water that overlies the clay. Removal of the perched zone will not result in a net loss of flow to the Little Patuxent River. The water that formerly entered the perched zone and ultimately discharged to the Little Patuxent River will be collected in a drain system that will direct the flow to the Little Patuxent River after temporarily detaining the water in stormwater retention ponds following storm events.

The drainage area of the Little Patuxent River above the landfill site is over 125 square miles. There is a USGS flow gage on the Little Patuxent River (Gage No. 01594) approximately 10 miles upstream of the landfill site. The low flow (7Q10) at this upstream gage is reported to be 961 cfs (474,000 gpm) in MGS R.I. 35 (Carpenter, 1983) suggesting that any impact on streamflow caused by construction of the landfill would be unmeasurable (in the background) compared to natural low streamflow.

REFERENCES

Achmad, G. 1991. Simulated Hydrogeologic Effects of the Development of The Patapsco Aquifer system in Glen Burnie, Arundel County, Maryland MGS R.I. No. 54.

Carpenter, D.H. 1983. Characteristics of Streamflow in Maryland. Maryland Geological Survey Report of Investigation No. 35.

Glaser, J.D. 1976. Geologic Map of Anne Arundel County. Maryland Geological Survey

Maryland Department of Natural Resources (MDNR). 1982. The Quantity and Natural Quality of Groundwater in Maryland

Table 1

Summary of Groundwater Elevations
(in ft msl)

	<u>MW-1</u>	<u>MW-3</u>	<u>MW-4</u>	<u>MW-5</u>	<u>MW-6</u>	<u>MW-10</u>	<u>MW-11</u>	<u>MW-12</u>	<u>MW-13</u>	<u>MW-14</u>	<u>MW-15</u>	<u>MW-16</u>	<u>Average</u>
MP El.:	72.93	84.89	98.71	104.69	99.40	88.30	72.93	99.40	149.01	99.47	169.09	180.53	<u>all wells</u>
<u>Date</u>													
9/14/89	66.85	66.91	70.39	71.47	72.45	66.48	63.10	80.66	75.63	65.31	d	d	69.93
10/30/89	70.04	67.35	70.49	71.36	73.48	67.18	64.69	78.66	75.63	65.94	d	d	70.48
11/20/89	70.66	67.37	70.36	71.40	73.81	67.49	a	77.20	75.53	66.37	d	d	70.37
12/27/89	69.15	67.11	70.17	71.37	73.08	67.00	62.24	76.42	75.54	65.91	d	d	69.80
1/22/90	70.16	67.31	70.28	71.44	73.44	66.28	66.59	76.46	75.59	65.25	d	d	70.28
2/26/90	69.87	67.50	70.42	71.39	73.41	66.48	66.67	76.49	75.57	66.20	d	d	70.40
4/13/90	70.60	67.65	70.57	71.56	73.71	66.71	66.99	76.75	75.62	66.08	d	d	70.62
5/13/90	70.70	68.35	71.42	72.19	74.45	66.97	67.00	77.18	75.80	66.18	d	d	71.02
6/1/90	70.75	67.95(b)	71.02	71.85	74.14	67.20	66.96	77.23	76.01	66.38	d	d	70.95
7/11/90	67.49	67.52(b)	70.59	71.75	72.94	66.13	66.24	76.14	76.58	65.27	d	d	70.07
8/24/90	68.03	67.48(b)	70.55	71.58	72.64	66.27	66.08	76.07	78.66	65.10	d	d	70.25
5/14/91	-	-	-	-	-	-	-	-	-	-	d	d	
4/25-5/1/97	70.14	68.52(b)	71.59	72.68	74.82	65.80	c	77.69	c	64.73	89.45	100.87	
7/1/97	-	67.12	-	72.44	-	-	-	-	-	-	91.17	102.84	
											-	-	
Highest													
Observed:	70.75	68.52(b)	71.59	72.68	74.82	67.49	67.00	80.66	78.66	66.38	91.17	102.84	

- a. Back pressure on cap did not allow water level to stabilize even after 24 hours.
b. Casing bent preventing measurement; elevation interpolated from adjacent well MW-4 (MW-4 elevation - 3.07 feet).
c. Casing damaged or covered preventing measurement.
d. Wells not installed until May 1991.

Table 2

**Status of Monitoring Wells
Chesapeake Terrace Rubble Fill
May 2001**

Well	Status
MW-1	Active
MW-2	Not in landfill area - to be decommissioned (a)
MW-3	Active
MW-4	Active
MW-5	Active
MW-6	Active
MW-7	Not in landfill area - to be decommissioned (a)
MW-8	Not in landfill area - to be decommissioned (a)
MW-9	Screened in low permeability material - to be decommissioned (b)
MW-10	Active
MW-11	Active
MW-12	Active
MW-13	Damaged - to be decommissioned (c)
MW-14	Active
MW-15	Active
MW-16	Active

- a. Well is located on east side of Patuxent River Road over 1/4 mile east of the proposed rubble fill.
- b. Well yields less than 1/10 gallon per day making collection of water samples and water level measurements problematic.
- c. Stick up surface casing was damaged by gunfire with pieces of the PVC entering and blocking the well. Eleven monthly water level measurements were made before the well was damaged.

Table 3

**Water Levels in Monitoring Wells
on April 24, 2001
Chesapeake Terrace Rubble Fill**

Well	TOC Elevation (ft msl)	Depth to Water (feet)	Water Level Elevation (ft msl)	
			on 4/24/01	Previous Highest Observed(b)
MW-1	72.93	2.16	70.77	70.75
MW-3	82.78	15.22	67.56	68.52
MW-4	98.71	28.76	69.95	71.59
MW-5	102.52	31.67	70.85	72.68
MW-6	99.40	25.90	73.50	74.82
MW-10	88.30	23.51	64.79	67.49
MW-11	72.93	5.89	67.04	67.00
MW-12	99.40	23.22	76.18	80.66
MW-13	149.01	a	-	78.66
MW-14	99.47	36.46	63.01	66.38
MW-15	169.09	80.02	89.07	91.17
MW-16	180.53	80.56	99.97	102.84

a. Well damaged and blocked.

b. Based on thirteen measurements made in wells MW-1 through MW-14 during eleven consecutive months in 1989 and 1991 and two months in 1997. For wells MW-15 and MW-16 the highest observed elevation is based on three measurements made in 1991 and 1997.