New Castle County
Department of Public Works
Albert W. Madora
Director
Melvin A. Slawik
County Executive
2701 Capitol Trail • Newark, Delaware 19711 • (302) 571-7600

M. Apgar
OFFICE OF DIRECTOR
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OCT 31 1975

October 30, 1975

N. C. Vasuki, Director
Division of Environmental Control
Edward Tatnall Building
Dover, Delaware 19901

Dear Mr. Vasuki:

Attached is a copy of Interim Report No. 2 on groundwater monitoring at the Tybouts Corner Landfill prepared by Edward H. Richardson Associates, Inc.

If you have any comments, please contact this office.

Very truly yours,

Albert W. Madora
Director of Public Works

AWM:mac

Attachment

cc: Mr. Pasquale Canzano

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EDWARD H. RICHARDSON ASSOCIATES, INC.

CONSULTING ENGINEERS • LANDSCAPE ARCHITECTS
PLANNERS • SURVEYORS

GENERAL OFFICES: RICHARDSON BUILDING • 910 SOUTH CHAPEL STREET • NEWARK • DEL
MAIL ADDRESS: P.O. BOX 675 • NEWARK • DELAWARE 19711 PHONE (302) 738-3551

PUBLIC WKS-ADM
OCT 29 2 00 PM '75

COMM. NO.: 1233-47-2 OCTOBER 27, 1975

NEW CASTLE COUNTY
DEPT. OF PUBLIC WORKS
2701 CAPITOL TRAIL
NEWARK, DE. 19711

ATTENTION: MR. DAVID CLARK

RE: TYBOUTS CORNER LANDFILL,
INTERIM REPORT NO. 2,
GROUNDWATER MONITORING

GENTLEMEN:

AS INDICATED IN OUR LETTER OF SEPTEMBER 24, 1975, WE HAVE COMPLETED THE FIRST ROUND OF GROUNDWATER QUALITY SAMPLING AS PER OUR PROPOSAL OF AUGUST 19, 1975. THE RESULTS OF THE QUALITY ANALYSES, SHOWN ON THE ENCLOSED SUMMARIES, INDICATE THAT, WITH THE POSSIBLE EXCEPTION OF MONITOR POINT 5G, THE MEASURED LEVEL OF GROUNDWATER CONTAMINANTS IS ESSENTIALLY UNCHANGED OVER THE PAST YEAR OF RECORD. ALTHOUGH THERE IS AN INDICATION OF A SLIGHT DECREASE IN THE LEVEL OF CERTAIN PARAMETERS, PRINCIPALLY C.O.D., SINCE MARCH, 1975, THESE ARE WITHIN THE RANGE OF TESTING ACCURACY AND SEASONAL FLUCTUATION. ADDITIONAL SUPPORTING ANALYSES WILL BE REQUIRED BEFORE ANY SIGNIFICANCE CAN BE ATTACHED TO THIS POSSIBLE TREND. HOWEVER, AN APPARENTLY SIGNIFICANT INCREASE IN CONTAMINANT LEVELS AT MONITOR POINT 5G IS INDICATED. THIS AREA WILL REQUIRE CONTINUED CAREFUL MONITORING, AND WE ANTICIPATE OBTAINING A SAMPLE FROM MONITOR POINT 5F DURING THE NEXT SAMPLING INTERVAL TO DETERMINE IF AN INCREASE IN THE CONTAMINANTS IN THE DEEPER POTOMAC STRATA IS ALSO OCCURRING.

THE WATER-LEVEL READINGS OF SEPTEMBER 17, 1975 INDICATE A MARKED RISE IN THE WATER-LEVEL ACROSS THE EASTERN THIRD OF THE SITE (SEE ENCLOSED SUMMARY). ACROSS THE REMAINDER OF THE SITE, THE WATER-LEVELS ARE ESSENTIALLY UNCHANGED OR SLIGHTLY BELOW THOSE MEASURED IN MARCH, 1975. THIS MARKED RISE IS CONTRARY TO THE SEASONAL WATER-TABLE FLUCTUATIONS, TYPICAL FOR THIS AREA. THE PROGRAMMED MONITORING OF THE SITE WILL FACILITATE AN EVALUATION OF THIS CONDITION.

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THE TRENDS INDICATED BY THESE DATA ARE IN LINE WITH THOSE ANTICIPATED IN OUR ENGINEERING REPORT OF MARCH 24, 1975. WE SUGGEST THAT THE MONITORING PROGRAM, OUTLINED IN THAT REPORT, STILL BE MAINTAINED. SIMILARLY, WE EMPHASIZE THAT THE REMEDIAL GRADING PROGRAM, OUTLINED IN THAT REPORT, BE CONSIDERED, IN LIGHT OF THE APPARENT INCREASING WATER-LEVELS IN THE TRASH FILL. ALONG THESE LINES, THE NEXT WATER-LEVEL MONITORING IS SCHEDULED FOR THE LAST WEEK IN OCTOBER AND THE NEXT WATER QUALITY SAMPLING IS TENTATIVELY SCHEDULED FOR MARCH, 1976.

IF YOU HAVE ANY QUESTIONS REGARDING THE ABOVE, OR IF WE CAN BE OF FURTHER SERVICE, PLEASE DO NOT HESITATE TO CONTACT US.

VERY TRULY YOURS,

EDWARD H. RICHARDSON ASSOCIATES, INC.

Glenn K. Elliott

GLENN K. ELLIOTT

GKE:DDC

ENCLOSURES

CC: MR. ALBERT MADORA
MR. JAMES F. DUFFIELD

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GROUNDWATER ELEVATION
AT
TYBOUTS CORNER LANDFILL

MONITOR NUMBER	10-7-74	1-23-75	3-5-75	9-17-75	Fm
P-1	37.4 FT.	37.4 FT.	37.6 FT.	38.9 FT.	
P-2	37.7 FT.	---	---	---	
P-3	30.2 FT.	31.0 FT.	31.2 FT.	---	
P-5	29.3 FT.	30.6 FT.	30.2 FT.	30.4 FT.	
P-7	38.6 FT.	38.6 FT.	38.6 FT.	40.8 FT.	
MP-1	38.7 FT.	38.7 FT.	38.6 FT.	40.8 FT.	
MP-2	35.7 FT.	36.0 FT.	35.3 FT.	36.2 FT.	Qc
MP-3	32.0 FT.	33.3 FT.	33.2 FT.	33.5 FT.	
MP-3A	31.9 FT.	33.5 FT.	33.2 FT.	33.4 FT.	
MP-4	34.6 FT.	35.3 FT.	35.9 FT.	36.6 FT.	Qc
MP-5F	22.9 FT.	24.5 FT.	24.0 FT.	24.3 FT.	
MP-5G	38.6 FT.	38.6 FT.	38.5 FT.	40.4 FT.	Qc
MP-6	5.5 FT.	5.4 FT.	6.2 FT.	6.0 FT.	
MP-7	27.5 FT.	29.5 FT.	29.2 FT.	28.6 FT.	Qc
MP-8	24.9 FT.	---	25.3 FT.	25.1 FT.	
MP-10	26.2 FT.	27.2 FT.	27.2 FT.	26.7 FT.	Qc
MP-11	30.7 FT.	31.7 FT.	31.9 FT.	31.5 FT.	Qc
MP-12	36.1 FT.	37.0 FT.	36.7 FT.	37.5 FT.	Qc
MP-13	24.2 FT.	26.8 FT.	24.8 FT.	---	
MP-14	29.3 FT.	30.6 FT.	30.1 FT.	29.9 FT.	
MP-15	19.5 FT.	20.7 FT.	20.0 FT.	---	
MP-16	12.0 FT.	12.8 FT.	11.8 FT.	---	
MP-17	15.2 FT.	16.3 FT.	15.5 FT.	15.0 FT.	
MP-18	24.3 FT.	27.4 FT.	26.2 FT.	27.0 FT.	
MP-18A	32.2 FT.	32.8 FT.	32.5 FT.	33.0 FT.	
MP-19	5.8 FT.	6.6 FT.	5.9 FT.	---	
MP-20	8.1 FT.	9.3 FT.	8.6 FT.	---	
MP-21	7.0 FT.	7.1 FT.	6.5 FT.	6.2 FT.	
MP-23	2.3 FT.	2.9 FT.	2.8 FT.	2.5 FT.	Kp
MP-24	3.3 FT.	3.5 FT.	3.3 FT.	3.2 FT.	
MP-27	34.8 FT.	36.0 FT.	36.8 FT.	---	Kp
MP-28	4.6 FT.	5.2 FT.	4.5 FT.	4.5 FT.	Kp
-29	16.5 FT.	16.8 FT.	16.6 FT.	16.7 FT.	
MP-30	24.1 FT.	24.8 FT.	24.6 FT.	24.1 FT.	

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SUMM' Y

GROUNDWATER QUALITY - TY..OUTS CORNER LANDFILL

MONITOR NO. 2

	2-5-74	2-18-74	3-5-74	10-24-74	1-29-75	3-6-75	10-7-75
PH (UNITS)	5.5	5.5	5.6	5.7	5.7	5.6	5.7
BOD (MG/L)	34000	35000	25500	33500	24500	---	---
C.O.D. (MG/L)	53000	44000	32500	43500	36500	35000	35500
CHLORIDE (CL) (MG/L)	4200	2500	1750	---	5200	2400	4600
CONDUCTIVITY (MICROMHOS/CM)	14000	12300	13000	11800	14600	12600	9700
TOT. KJELDAHL NIT. (T.K.N.) (MG/L AS N)	1460	790	1100	---	---	1100	700
$NO_3 + NO_2$ (MG/L AS N)	---	---	---	0.12	0.18	0.19	0.14
C.O.D./CL	12.62	17.60	18.57	---	7.02	14.58	7.72
T.K.N./$NO_3 + NO_2$	---	---	---	---	---	5789	5000

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GROUNDWATER QUALI[illegible] MONITOR N[illegible]

	2-5-74	2-10-74	3-5-74	10-24-74	1-29-75	3-6-75	10-7-75
[illegible]	5.9	6.1	6.2	[illegible]	[illegible]	6.2	5.5
[illegible] (MG/L)	3500	9000	[illegible]	[illegible]	[illegible]		
C.O.D. (MG/L)	4800	9800	11500	18000	23500	26500	39000
CHLORIDE (CL) (MG/L)	380	770	700	—	3500	1300	3300
CONDUCTIVITY (MICROMHOS/CM)	2500	4200	5000	6900	10000	11300	9000
TOT. KJELDAHL NIT. (T.K.N.) (MG/L AS N)	148	215	265	—	—	2000	1700
$NO_3 + NO_2$ (MG/L AS N)	—	—	—	0.15	0.23	0.26	0.82
C.O.D./CL	12.6	12.72	16.43	—	6.71	20.38	11.82
T.K.N./$NO_3 + NO_2$	—	—	—	—	—	7692	2073

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GROUNDWATER QUALITY - [illegible]

MONITOR NO. 7

	2-5-74	2-18-74	3-5-74	10-24-74	1-29-75	3-6-75	10-7-75
pH (UNITS)	6.0	---	5.5	6.3	6.1	6.0	6.0
BOD (MG/L)	10000	---	23500	13000	17000	---	---
C.O.D. (MG/L)	11000	---	26500	19000	24500	26000	27500
CHLORIDE (CL) (MG/L)	500	---	940	---	4000	1300	2700
CONDUCTIVITY (MICROMHOS/CM)	5600	---	10000	8200	10200	10600	9800
TOT. KJELDAHL NIT. (T.K.N.) (MG/L AS N)	426	---	1300	---	---	950	2250
$NO_3 + NO_2$ (MG/L AS N)	---	---	---	0.18	0.19	0.18	0.11
C.O.D./CL	22.00	---	28.19	---	6.13	20.00	10.19
T.K.N./$NO_3 + NO_2$	---	---	---	---	---	5278	20455

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GROUNDWATER QUALITY – TYBCUTS [illegible]
MONITOR N[illegible].0

	2-5-74	2-18-74	3-5-74	10-24-75	1-29-75	3-5-75	10 7 75
[illegible]	—	—	—	—	6.9	6.6	7.3
[illegible]D (MG/L)	—	—	—	—	<6	—	—
[illegible] (MG/L)	—	—	—	—	27	62	99
[illegible]LORIDE (CL) (MG/L)	—	—	—	—	170	140	130
[illegible]NDUCTIVITY [illegible]ICROMHOS/CM)	—	—	—	—	600	630	630
[illegible]OT. KJELDAHL NIT. [illegible].K.N.) (MG/L AS N)	—	—	—	—	—	5	9.5
$[illegible]_3 + NO_2$ (MG/L AS N)	—	—	—	—	<0.04	<0.04	<0.04
[illegible].O.D./CL	—	—	—	—	0.16	0.44	0.76
[illegible].K.N./$NO_3 + NO_2$	—	—	—	—	—	>125	>238

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SUMMARY
GROUNDWATER QUALITY – TYSOUTS CORNER LANDFILL
MONITOR NO. 11

	2-5-74	2-18-74	3-5-74	10-24-74	1-29-75	3-6-75	10-7-75
·H (UNITS)	—	—	—	—	5.9	6.8	5.5
3OD (MG/L)	—	—	—	—	1100	—	—
:.O.D. (MG/L)	—	—	—	—	1400	1300	870
CHLORIDE (CL) (MG/L)	—	—	—	—	410	72	130
CONDUCTIVITY MICROMHOS/CM)	—	—	—	—	1360	1390	950
TOT. KJELDAHL NIT. T.K.N.) (MG/L AS N)	—	—	—	—	—	60	70
$NO_3 + NO_2$ (MG/L AS N)	—	—	—	—	< 0.04	0.05	< 0.04
:.O.D./CL	—	—	—	—	3.41	18.06	6.69
T.K.N./$NO_3 + NO_2$	—	—	—	—	—	1200	> 1750

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SUMMAR[illegible]

GROUNDWATER QUALITY – TYB[illegible]S CORNER LANDFILL

MONITOR NO. 12

	2-5-74	2-18-74	3-5-74	10-24-74	1-20-75	3-6-75	10-7-75
H (UNITS)	---	---	---	6.3	6.3	6.1	6.4
[illegible] (MG/L)	---	---	---	7.1	<6	---	---
[illegible].O.D. (MG/L)	---	---	---	97	7.7	23	11
[illegible]HLORIDE (CL) (MG/L)	---	---	---	---	740	96	37
[illegible]ONDUCTIVITY (MICROMHOS/CM)	---	---	---	300	340	425	260
[illegible]OT. KJELDAHL NIT. (T.K.N.) (MG/L AS N)	---	---	---	---	---	1.88	0.85
[illegible]O_3 + NO_2 (MG/L AS N)	---	---	---	0.04	< 0.04	< 0.04	0.40
[illegible].O.D./CL	---	---	---	---	0.01	0.24	0.30
[illegible].K.N./NO_3 + NO_2	---	---	---	---	---	>47	21.3

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SUMMAR

GROUNDWATER QUALITY – TYE JTS CORNER LANDFILL
MONITOR NO. 23

	2-5-74	2-18-74	3-5-74	10-24-74	1-29-75	3-6-75	10-7-75
H (UNITS)	---	---	---	6.1	6.9	6.6	6.5
OD (MG/L)	---	---	---	43	13	---	---
.O.D. (MG/L)	---	---	---	100	27	35	11
HLORIDE (CL) (MG/L)	---	---	---	---	115	40	78
ONDUCTIVITY MICROMHOS/CM)	---	---	---	230	210	205	250
OT. KJELDAHL NIT. T.K.N.) (MG/L AS N)	---	---	---	---	---	4.4	2.88
$C_3 + NO_2$ (MG/L AS N)	---	---	---	<0.04	<0.04	<0.04	<0.04
.O.D./CL	---	---	---	---	0.23	0.88	0.14
.K.N./$NO_3 + NO_2$	---	---	---	---	---	>110	>72

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SUMMARY

GROUNDWATER QUALITY – TYBOU CORNER LANDFILL

MONITOR NO. 27

	2-5-74	2-18-74	3-5-74	10-24-74	1-29-75	3-6-75	10-7-75
UNITS)	—	—	—	6.9	7.2	7.3	6.9
) (MG/L)	—	—	—	99	33	—	—
.D. (MG/L)	—	—	—	190	150	150	30
ORIDE (CL) (MG/L)	—	—	—	—	<50	20	13
DUCTIVITY CROMHOS/CM)	—	—	—	230	170	200	120
. KJELDAHL NIT. K.N.) (MG/L AS N)	—	—	—	—	—	6.5	10.5
$_3$ + NO_2 (MG/L AS N)	—	—	—	<0.04	2.65	0.04	0.05
D.D./CL	—	—	—	—	>3	8.00	2.31
K.N./NO_3 + NO_2	—	—	—	—	—	163	210

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SUMMARY
GROUNDWATER QUALITY - TYBOUTS CORNER LANDFILL
MONITOR NO. 28

	2-5-74	2-18-74	3-5-74	10-24-74	1-29-75	3-6-75	10-7-75
I (UNITS)	---	---	---	6.0	7.1	6.1	6.5
)D (MG/L)	---	---	---	37	51	---	---
O.D. (MG/L)	---	---	---	54	42	74	130
ILORIDE (CL) (MG/L)	---	---	---	---	62	21	34
NDUCTIVITY ICROMHOS/CM)	---	---	---	140	220	150	170
T. KJELDAHL NIT. .K.N.) (MG/L AS N)	---	---	---	---	---	4.4	3.0
$'_3 + NO_2$ (MG/L AS N)	---	---	---	3.7	0.6	3.8	4.5
O.D./CL	---	---	---	---	0.68	3.52	3.82
$K.N./NO_3 + NO_2$	---	---	---	---	---	1.2	0.7

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