

MB 7/2/19

Search Result for HOWARD COUNTY

View Map		View GroundRent Redemption				View GroundRent Registration					
Tax Exempt:		Special Tax Recapture:									
Exempt Class:		AGRICULTURAL TRANSFER TAX									
Account Identifier:		District - 05 Account Number - 437067									
Owner Information											
Owner Name:		MCDANIEL JOHN P MCDANIEL ELLEN G T/E				Use:		AGRICULTURAL			
Mailing Address:		13032 HIGHLAND RD HIGHLAND MD 20777				Principal Residence:		NO			
						Deed Reference:		/06780/ 00061			
Location & Structure Information											
Premises Address:		13126 ISLE OF MANN WAY HIGHLAND 20777-0000				Legal Description:		LOT 27 3.0000 A 13126 ISLE OF MANN WAY KOANDAH GARDENS ESTATES			
Map:	Grid:	Parcel:	Sub District:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:	15632	
0034	0022	0078		0000			27	2017	Plat Ref:		
Special Tax Areas:						Town:		NONE			
						Ad Valorem:		100			
						Tax Class:					
Primary Structure Built		Above Grade Living Area		Finished Basement Area		Property Land Area		County Use			
						3.0000 AC		000000			
Stories	Basement	Type	Exterior	Full/Half Bath	Garage	Last Major Renovation					
Value Information											
		Base Value		Value		Phase-in Assessments					
				As of		As of		As of			
				01/01/2017		07/01/2018		07/01/2019			
Land:		1,500		1,500							
Improvements		0		0							
Total:		1,500		1,500		1,500		1,500			
Preferential Land:		1,500						1,500			
Transfer Information											
Seller: SANBORN JAMES M				Date: 01/13/2003				Price: \$600,000			
Type: ARMS LENGTH MULTIPLE				Deed1: /06780/ 00061				Deed2:			
Seller:				Date:				Price:			
Type:				Deed1:				Deed2:			
Seller:				Date:				Price:			
Type:				Deed1:				Deed2:			
Exemption Information											
Partial Exempt Assessments:		Class		07/01/2018		07/01/2019					
County:		000		0.00							
State:		000		0.00							
Municipal:		000		0.00 0.00		0.00 0.00					
Tax Exempt:		Special Tax Recapture:									
Exempt Class:		AGRICULTURAL TRANSFER TAX									
Homestead Application Information											
Homestead Application Status: No Application											
Homeowners' Tax Credit Application Information											
Homeowners' Tax Credit Application Status: No Application						Date:					

-
1. This screen allows you to search the Real Property database and display property records.
 2. Click [here](#) for a glossary of terms.
 3. Deleted accounts can only be selected by Property Account Identifier.
 4. The following pages are for information purpose only. The data is not to be used for legal reports or documents. While we have confidence in the accuracy of these records, the Department makes no warranties, expressed or implied, regarding the information.

SEPTIC SPECIFICATIONS WORK-SHEET

SUBDIVISION: Kaundah Garden Est

A 511371A

STREET NAME: Isle of Manu Way

LOT NUMBER: 27

AVERAGE PERCOLATION RATE: _____ SQUARE FEET PER BEDROOM: _____

NUMBER OF BEDROOMS: _____ LINEAR FEET OF TRENCH PER BEDROOM: _____

TOTAL LINEAR FEET OF TRENCH: _____ SEPTIC TANK CAPACITY: 1500

TOP SEAMED TANK REQUIRED? YES NO

COMPARTMENTED TANK REQUIRED? YES NO

TRENCH DIMENSIONS: Trench to be _____ feet wide. Inlet _____ feet below original grade. Bottom maximum depth _____ feet below original grade.

Effective area begins at _____ feet below original grade. _____ feet of stone below distribution pipe.

=====
PUMPED SYSTEM PROPOSED: YES NO

PUMPED SEPTIC SYSTEM DETAIL: _____ gallon pump chamber.

YES NO Top seamed pump chamber required?

Note 1: Septic pump detail to be provided by installer prior to issuance of septic permit.

Note 2: Pump performance test is necessary prior to Health Department approval of pumped septic system.

=====

LOCATION: _____

ADDITIONAL NOTES: _____

Reviewer: _____

Date: _____

APPLICATION

PERCOLATION TESTING

A _____

P _____

HOWARD COUNTY HEALTH DEPARTMENT
BUREAU OF ENVIRONMENTAL HEALTH
3525-H ELLICOTT MILLS DRIVE/ELLICOTT CITY, MARYLAND 21043
TELEPHONE: 313-2640

DISTRICT _____

DATE _____

TO: THE COUNTY HEALTH OFFICER
ELLICOTT CITY, MARYLAND

I HEREBY APPLY FOR THE NECESSARY TEST PRIOR TO APPLICATION FOR PERMIT TO CONSTRUCT (OR RECONSTRUCT) A SEWAGE DISPOSAL SYSTEM.

PROPERTY OWNER _____

ADDRESS _____ PHONE _____

AGENT OR PROSPECTIVE BUYER _____

ADDRESS _____ PHONE _____

PROPERTY LOCATION:

SUBDIVISION _____ LOT NO. _____

ROAD AND DESCRIPTION _____

TAX MAP _____ PARCEL # _____

SIZE OF LOT _____ TYPE BLDG. _____
(SINGLE FAMILY DWELLING OR COMMERCIAL)

THE SYSTEM INSTALLED UNDER THIS APPLICATION IS ACCEPTABLE ONLY UNTIL PUBLIC FACILITIES BECOME AVAILABLE. I FULLY UNDERSTAND THE FEE CONNECTED WITH THE FILING OF THIS PERC TEST APPLICATION IS NON-REFUNDABLE UNDER ANY CIRCUMSTANCES. I ALSO AGREE TO COMPLY WITH ALL M.O.S.H.A. REQUIREMENTS IN TESTING THIS LOT.

(SIGNATURE OF APPLICANT)

APPROVED BY _____ FOR _____ DATE _____

DISAPPROVED BY _____ FOR _____ DATE _____

HOLD PENDING FURTHER TESTS _____

REASONS FOR REJECTION OR HOLDING _____

PERCOLATION TEST PLAT/PRELIMINARY PLAT - TITLE OR I.D. # _____ DATE _____

SITE DEVELOPMENT PLAN/FINAL PLAT - TITLE OR I.D. # _____ DATE _____

THIS IS NOT A PERMIT

COUNTY # _____

SOIL PROFILE

0'

SOIL PROFILE

0'

INDICATE NORTH - NAME ADJOINING ROADWAY AS BASE LINE.

DATE	TEST NO.	DEPTH	PRE-WET		TEST - 1" DROP		TIME
			START	STOP	START	STOP	

REMARKS _____

TYPE OF SOIL _____

TESTED BY _____ ALSO PRESENT _____

TRENCH DESIGN DATA: AVERAGE PERCOLATION TIME _____ TRENCH WIDTH _____

INLET DEPTH _____ MAXIMUM BOTTOM DEPTH _____ SQ. FT/BEDROOM _____

212.7347	247219.3348
750.2173	247239.0661
733.0383	247248.1068
744.2947	247235.4530
732.8917	247240.2052
729.3634	247211.1206
727.8838	247234.1610
716.6188	247197.6897
704.4587	247211.3494
822.9584	247472.2008
832.1212	247458.5533
867.2478	247190.1573
032.1484	247234.8324
061.0981	247261.8878
043.8570	247280.5499
867.8030	247243.6826
1846.2480	247331.5558
2022.6574	247368.0280
2073.8651	247358.6572
9713.6022	247220.2087

LOT 1
KOANDAH GARDENS
ESTATES
(PLAT #6700)

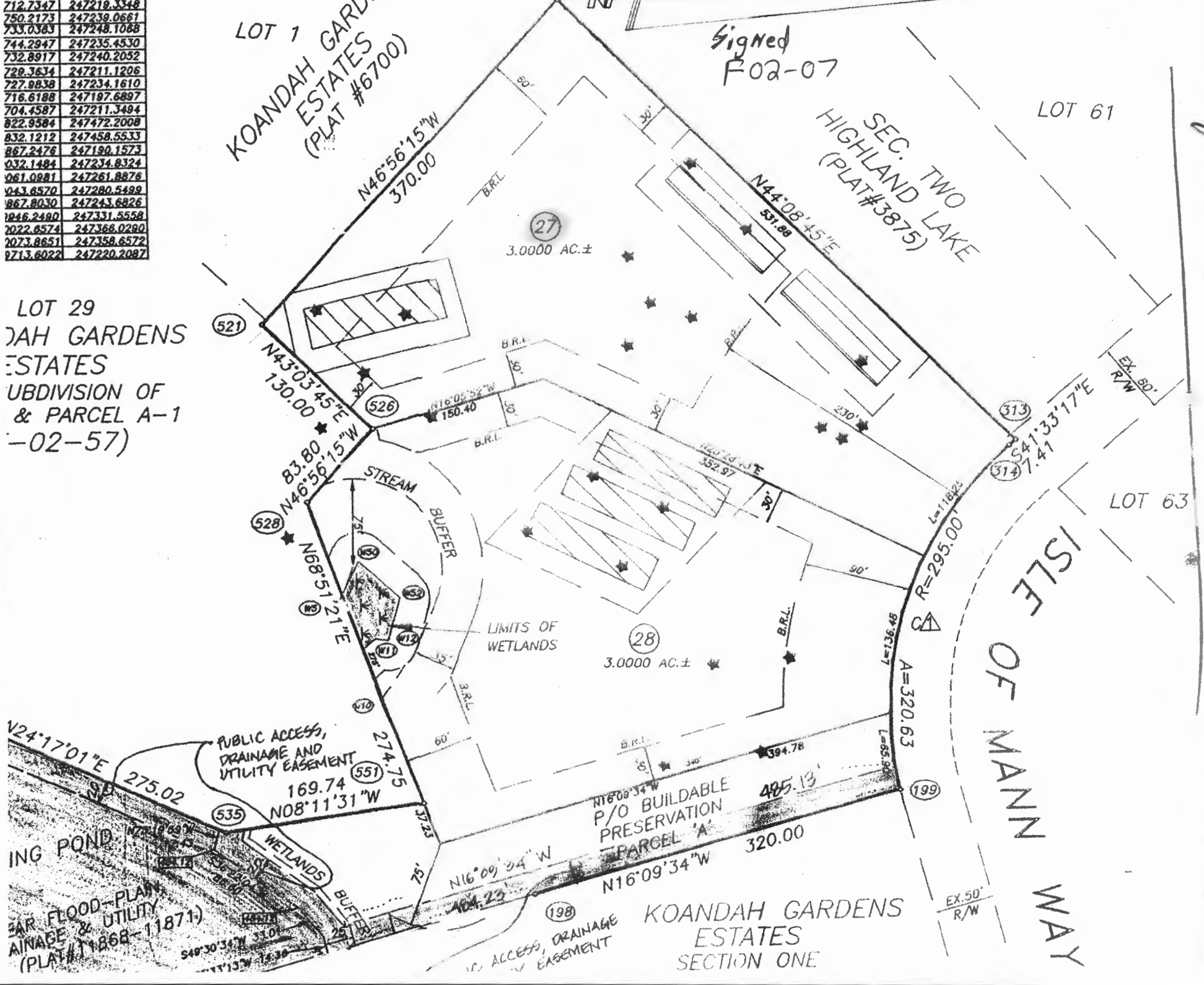
Signed
FO2-07

SEC. TWO LAKE
HIGHLAND LAKE
(PLAT #3875)

LOT 61

LOT 29
DAH GARDENS
ESTATES
DIVISION OF
& PARCEL A-1
-02-57)

ING POND
EAR FLOOD-PLAN
AINAGE & UTILITY
(PLAT # 11868-11871)



All perc test holes not shown

ISLE OF MANN
WAY

KOANDAH GARDENS
ESTATES
SECTION ONE

Areas 12, 13, 14
Not acceptable as Shown
Sand Handlots

Need to show 3 SM, Footprints in SDA's to prove sufficing
Needs True wet Season eval of water table if wish to use design less than

KOANDAH GARDENS
Phase 2
Septic Disposal Areas (SDA)
(Infiltrometer Testing)

24" of Sand Fill in SM.
- S.M. Footprints must be \perp to slope on site.
- S.M.'s Needs adequate access way for Materials + equipment during SM Construction
(Suggest 25' rather than
- see lots 13 + 14) - property lines should be at least 30ft from Downslope side of Sand Mound SDA's (20' downslope + 10' SDA setback) - Person see plan
- where less than 2ft Sand Fill for Conventional SM's are proposed; the limiting factors will be LLD's and Effective Basal area (@ 0.5 gpd/ft²)
for perc's to 30 mpi 18 gpd/ft LLD is OK
30-60" LLD
where plots, Franjo's site on day 1/2 @ 2-4' ure 8 gpd LLD

13 on plan

SDA 12 (11,040 sf)

① Failed Test is Not Shown is beside #13 in SDA ② upper + lower Triangle portion Minutes ③ all comments in A apply (especially inferred access driveway for New lot 29 - these are primary reasons for SM, heading in Testberry's observations).

Test	Yr.	Depth	Minutes
26A	2/99	18"	30
26B	2/99	18"	48
27B	2/99	18"	53

14 on plan

SDA 13 (10,670sf)

① Site Needs More Testing; ② Lower left part of SDA protrudes into Swale, ③ Test Hole 29B Fails (SDA Shown + Test Hole location do not fit as they did in section submitted) ④ SDA only 5' to side property line.

Test	Yr.	Depth	Minutes
29A	2/99	14" (17-21")	17
29B	2/99	14" - 14"	53
29C	2/99	14" (20-24")	23
29D	2/99	14" (20-24")	33

23 mpi (OK)
53 slowed to 1/16" in 17 min; 22 1/32 / 14 min @ 224 mpi (fail)
23 x 19 mpi (OK)
15/32 in 14 min @ 53 min (OK)

12 on plan

SDA 14 (10,200 sf)

① Lower left corner in Swale ② Failed perc hole 25D has No good Test Hole Nearby. ③ all comments of A above apply ④ Needs confirming 1st. Testing in Heart of SM area only has one or 2 feet downslope of SDA and 2 in uppermost part that may not actually be in basal area.

Test	Yr.	Depth	Minutes
25A	2/99	14"	42
25B	2/99	14"	17
25C	2/99	14"	5
25E	7/99	30"	57
25D			

Failed NM - shallow Fracture Suspected

- all 3 SM - SDA's do Not conform to as discussed + stated area in field during test round of Testing
- well also for lots 28, 29, 30 are all downslope of SDA's; Drainage ways.
- similar well site concerns for lots 16, 17, 21, near Parcel (SDA 5)
- lot 30 - wetland Needs a 75' buffer from wetland area on all sides
∴ some of 75' wetland buffer will be in lot 30 Area - Not allowable.

8/24/99
Heating C - Dave, DK, JCL, RPP,
and Engineer

TEST DATA

Dale Gray (Janora)
Mr Sanford
Robinson, Mike (Janora)

NAME _____ FILE NO _____
 LOCATION Kochindah Garden COUNTY Howard
 DATE 2/23/99
 GRID _____ E
 RECORDED BY Transcribed from Record of R. P. Kelly 2/25/99 N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
LT = Long Term 24LT 24C°		19-23"	12:50		8"	$\frac{1}{2}$ " in 28 min ≈ 19 sp/100
			1:13		6 $\frac{1}{4}$ "	
			1:41	2/11	5 $\frac{3}{16}$ "	
			1:43		8"	
			3:18		2 $\frac{15}{16}$ "	
			3:21 4:00	2/11	8" 5 $\frac{13}{16}$ "	
25LT "C" → "D"		20-24"	12:30		8"	$\frac{2}{3}$ " in 50 min ≈ 20 sp/100
			12:56		6 $\frac{4}{16}$ "	
			1:17		5 $\frac{9}{16}$ "	
			1:46		4 $\frac{3}{16}$ "	
			3:10	2/11	2 $\frac{14}{16}$ "	
			3:13 3:58		2" 4 $\frac{13}{16}$ "	

TEST DATA

NAME _____ FILE NO. _____

LOCATION Koandah Gardens COUNTY Ho CO

DATE 2/23/99

GRID _____ E

RECORDED BY Amy McMiller N

240

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
24A	24A	16"	1:47 2:07 2:24 2:49 3:03		11" 10 14/16 10 11/16 10 9/16 10 6/16	1/2" in 1 hr @ 120 npi (fail)
	24B	16"	1:51 2:07 2:25 <u>2:76</u> 2:34 2:53		10" 7 2/16 4 3/16 <u>7 7/16</u> 6 7/16 3 2/16	> 6 npi 18 npi > 3 5/8" in 20 min = 6 npi
	24C	16	2:01 2:08 2:25 2:34 2:54		9" 8 6/16 -7.0 6 2/16 4 11/16	1 3/16 in 19 min @ 224 npi ? > 5 1/3 in 20 min
	24D	16"	2:04 2:10 2:16 2:35 2:47 2:56 3:08		8" 7 10/16 6 12/16 6 1/16 5 8/16 5 2/16 4 9/16	1" in 21 min

TEST DATA

NAME _____	FILE NO _____
LOCATION <u>KOANDAM GARDENS</u>	COUNTY <u>HO CO</u>
_____	DATE <u>2/23/99</u>
_____	GRID _____
RECORDED BY <u>Amy McMillen</u>	_____

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
	25A	14"	11:37 11:49 11:52 12:02 12:10 12:17		10" 8 2/16" 10 14/16" 9 5/16" 7 10/16" 6 1/2"	<p>1/2" @ 10 min > 1 2/3" in 8 min 1 1/2" in 7 min</p> <p align="center"><u>6 psi</u></p>
	25B	14"	11:43 11:50 12:04 12:12 12:25 12:41		8" 7.5" 6 4/16" 5 13/16" 5 1/16" 4 5/16"	<p>2" in 37 min = <u>18 psi</u></p>

TEST DATA

NAME _____ FILE NO _____

LOCATION KO ANDAH GARDENS COUNTY HO. CO

DATE 2/23/99

GRID _____ E

RECORDED BY Amy McMillen N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
25C	14"		11:57 12:07 12:13 -- 12:15 12:19 12:28		9" 5 13/16 4 3/16 -- 7 3/16 6 5/16 4 7/16	14" in 9 min at top
* 25D	14"		12:03 12:18 12:35 12:51 1:30		7" 6 1/4" 6 1/4" no mmt 6 1/16	1/2" in the soil

TEST DATA

NAME Koondah Gardens Lts 25 (old 25) FILE NO _____

LOCATION _____ COUNTY Howard

DATE 7/7/99

GRID _____ E _____ N _____

RECORDED BY [Signature]

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
25E	Infl E	(start 30" 1mb 28"± Reate 1/16")	9:14 10:20 10:57 11:52 12:11 12:12 1:16	> 1 1/2' deep 55 min > 7/16 in 19 min Reate poured > 64 min	13 min hot 25" 53 min 1" deep 29.5-28.5° 7" 6" 5:9/16 7" 5 7/8"	in St+dark Brn. 2 CAz 9/8" in 64 min 257 mpi

TEST DATA

NAME <u>Koondah Garden Community</u>	FILE NO <u>A511381</u>
LOCATION _____	COUNTY <u>Harvard</u>
_____	DATE <u>7/7/99</u>
_____	GRID _____ E
RECORDED BY <u>P.P. Pinsky / B. Baker Present</u>	_____ N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
	2	19-23"	1:01 1:28 1:49 2:25 2:51 4:18	> 36 min > 26 min > 87	8" 7 9/16" 7 13/32" 7.0 6 14/16 6 19/32	in yellow hl-cl 1 3/32 ≈ 89 mpi 2 1/16 ≈ 208 mpi 4 1/32 ≈
	①	19-21"	1:08 1:31 1:51 2:27 2:50 4:20	> 36 min > 23 min > 90 min	8" 7 9/16" 7 1/2" 6 12/16 6 9/16 6 1/16	in yellow hl 5 1/16 ≈ 115 mpi 3 1/16 ≈ 128 mpi 8 1/16 ≈ 180 mpi
	②	19"-22"	1:44 1:53 2:18 2:56 3:16 4:31	> 38 min > 20 min > 95 min	8" 7 9/16" 6 15/16 6 8/16 6 5/16 6 even	intra str. Ann. red brown hl 7 1/16 ≈ 89 mpi 3 1/16 ≈ 107 mpi 240 mpi

(Hole 26B same sed Bt + separate colors until hit 66" below grade then going from
Banded Red-brown SIL to dark gray + green + white banded vs micaceous micaceous (saturated) water level @ 72" from 66")

MARYLAND DEPT. OF THE ENVIRONMENT				FILE NO.			
ONSITE SEWAGE DISPOSAL SYSTEM				MD. GRID:			
SITE EVALUATION REPORT				TAX MAP/B/P:			
SOIL PROFILE DESCRIPTION				SUBDIVISION: <i>Koondah Gardens</i>			
LOT 27/26A SECTION				DATE: <i>2/25/99</i>			
				BY: <i>R.P. [unclear]</i>			
DEPTH	TEXTURE	MATRIX COLOR	MOTTLES DESCRIPTION	STRUCTURE	CONSISTENCE	% ROCK BY VOL.	REMARKS (Caving, moisture, etc.)
0-9"	L	7.5YR 3/4 3	dark brown	Aggr - v f s b k	mvfr	—	m f roots Moist
16"	CL-HL	5YR 4/6	dark brown	3 F m s b k	red sticky mfr-Mi	e f roots	3 m clay skins c f roots Moist
36"	CL-HL	2.5YR 4/8	red	3 m - f s b k	red sticky mfi	2 layers very strong + 26	denser, 3 m clay skins Moist very strong c f roots
42"	CL	2.5YR 4/8	5YR 4/6 from mix & below separate	1-2 m - c s b k - MASSIVE	mfi	—	3-2 clay skins sl Moist
50"	HL	Mix color	Red + Mid Brown	Massive	mfr	—	Moist
54"	mic L	Mix color	dark brown + many shiny mica flecks!	Massive	mvfr	—	Very micaceous Moist
66"	F'SL'	yellow banded	yellow + red band	Massive	mfr-Ls	—	v Moist
84"	F mic brown	Neutral brown & some red grey colors		Massive	—	—	wet-saturated
stand water level @ 74" = 6'2" below grade (hole open all time)							
Slope% - <i>2.4% to 4.6%</i> EL. (ft) -							
Landscape Position - <i>Toe slope</i>		Chroma 2 -		Least Permeable Layers - <i>Bt2 under good structure helps.</i>			
Additional Remarks -		Water BLS - <i>66-74"</i>		Limiting Zones - <i>water table @ 5 1/2 ft est.</i>			

A
Bt1
Bt2
BC
C
D-3

Separate

TEST DATA

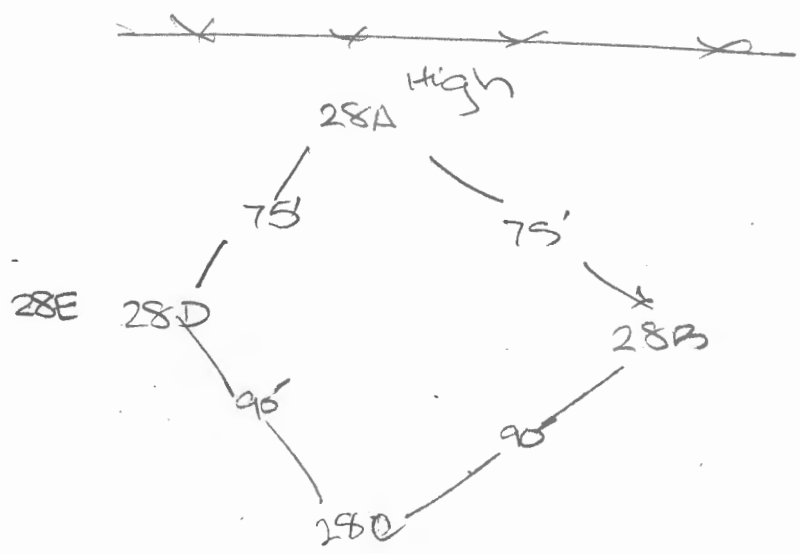
NAME _____	FILE NO _____
LOCATION <u>Kandah Gardens</u>	COUNTY <u>Howard</u>
<u>Lot 26</u>	DATE <u>2/25/99</u>
_____	GRID _____ E
RECORDED BY <u>JKS</u>	_____ N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
26C		15"-19"	11:38		7"	> 4/32 > 6/32 > 6/32 > 6/32 > 4/32 > 6/32 > 6/32
			11:53		6 ²⁸ / ₃₂ "	
			12:08		6 ²² / ₃₂ "	
			12:23		6 ¹⁶ / ₃₂ "	
			12:38		6 ¹² / ₃₂ "	
			12:53		6 ⁶ / ₃₂ "	
			1:08		6"	
						x = 5/32" in 15 min x = 90 mpi
26D ₁		15"-19"	11:46		7"	> 0/32 > 0/32 > 0/32 x = 0/32" in 15 min
			12:01		7"	
			12:16		7"	
			12:31		7"	
26A ₂						

TEST DATA

NAME _____	FILE NO _____
LOCATION <u>Koanolah Gardens</u>	COUNTY <u>Howard</u>
<u>Lot 26</u>	DATE <u>2/25/99</u>
RECORDED BY <u>DCS</u>	GRID _____ E N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
26A		15"-19"	11:10 11:25 11:40 11:55 12:10 12:25 12:40		7" 6 1/2" 5 3/4" 5 1/4" 4 3/4" 4 1/4" 4"	> 20/32 > 14/32 > 16/32 > 16/32 > 16/32 > 16/32 > 14/32 $\bar{x} = 16/32$ in 15 min $\bar{x} = 30$ mpi
26B		15"-19"	11:25 11:40 11:55 12:10 12:25 12:40 12:55 1:10	"	7" 6 1/4" 6 8/32" 5 3/4" 5 2/32" 5 1/2" 5 1/32" 4 2/32" 4 1/32"	> 16/32 > 8/32 > 10/32 > 8/32 > 10/32 > 8/32 > 8/32 > 8/32 $\bar{x} = 10/32$ in 15 min $\bar{x} = 48$ mpi

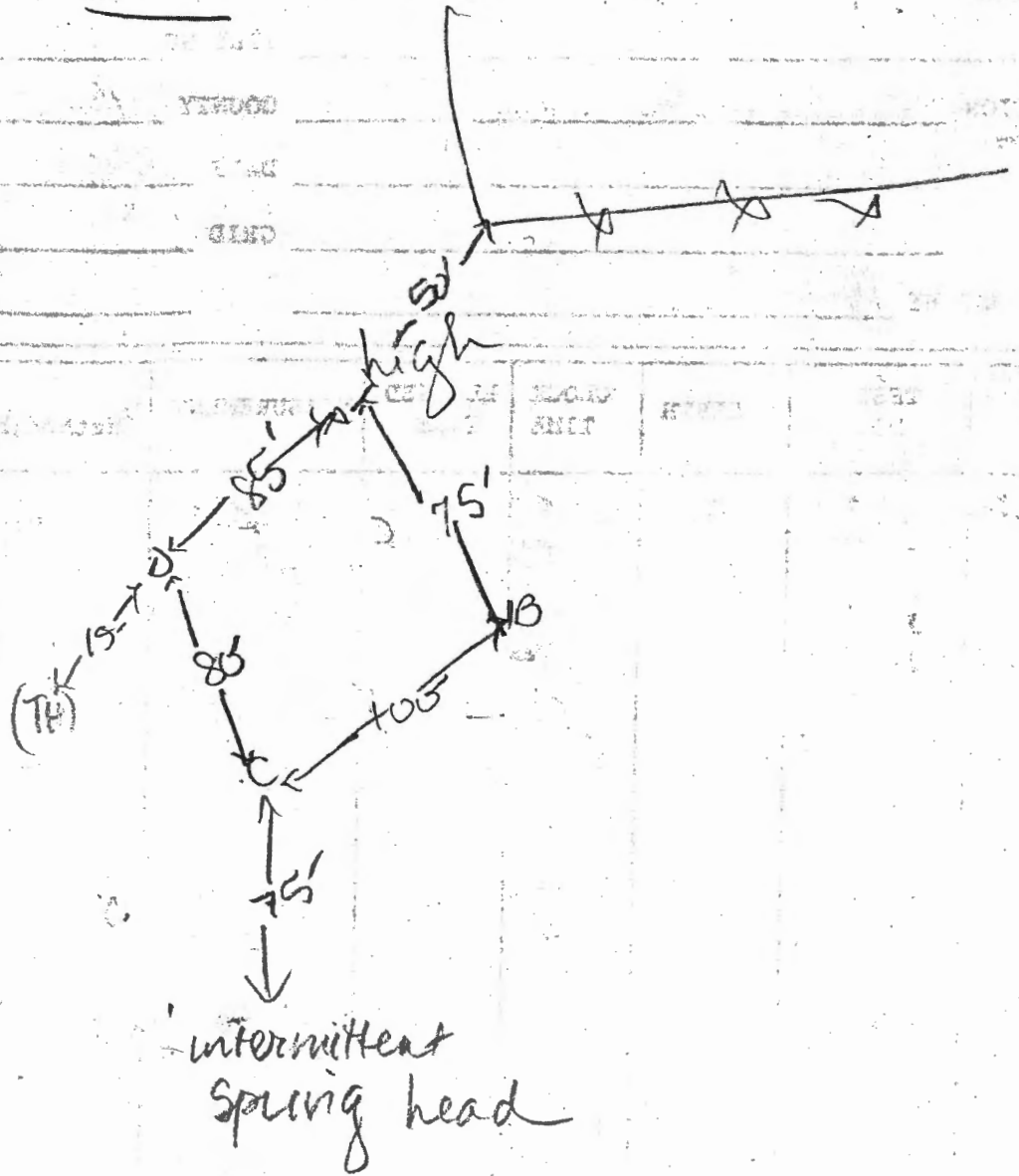


TEST DATA

NAME _____	FILE NO _____
LOCATION <u>Roanoke Gardens lot 29</u>	COUNTY <u>Howard</u>
_____	DATE <u>2/25/99</u>
_____	GRID _____
RECORDED BY <u>R. P. Kelly</u>	E N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
<u>TP 27/26A</u>	<u>Infiltrometer</u> <u>27A</u>	<u>20"-23"</u>	2:05		7" start	> 1 6/32
			2:23		5 26/32"	> 1 2/32
			2:41		4 24/32"	> 1
			2:59	refill	3 24/32"	> 1
			3:03		7"	> 1
			3:18		6"	> 1
			3:33		5 4/32"	> 2 6/32
			4:06		3 16/32	> (5 4/32 in 33 min)
			4:22		2 24/32	> 2 6/32 in 15 min
						2 4/32 in 16 min
						2 4/32
						2 8/32 in 64 min
						≈ 20 psi
	<u>27B</u>	<u>21"-24"</u>	2:09		7" start	> 10/32
			2:24		6 22/32"	> 6/32
			2:39		6 14/32"	> 8/32
			2:54		6 8/32"	> 7/32
			3:09	} 28 min	6 1/32"	> 7/32 in 15 min
			3:24		5 26/32"	> (14/32 in 30 min)
			3:54		5 12/32"	= 7/32 in 15 min
			4:09		5 6/32"	> 6/32 in 15 min
			4:25		4 30/32"	> 8/32 in 16 min
						1 8/32 in 76 min
			≈ 1 hr/psi			

LOT 27



TEST DATA

NAME _____ FILE NO. _____

LOCATION Koandah Gardens COUNTY Howard
lot 27

DATE 2/5/99

GRID _____ E _____

RECORDED BY RJP _____ N _____

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
TP 27C	27C	20"-24"	2:13		7" start	> 10/32
			2:28		6 24/32"	> 10/32
			2:43		6 17/32"	> 10/32
			2:58		6 2/32"	> 10/32
			3:13		5 24/32"	> 10/32
			3:28		5 14/32"	> 10/32
			4:03		4 22/32	(24/32 in 35 min)
			4:19		4 10/32	10/32 in 15 min 12/32 in 16 min
<u>224 mpi</u>						
	27A (Closed to Test Hole TP27B 15' from TP27B 100ft from 2 tubes in 2 directions (90° angle apart))	20"-23"	2:20		7"	> 12/32
			2:35		5 30/32"	> 0/32
			2:50		5 20/32"	> 0/32
			3:05		5 27/32"	> 0/32
			3:20		5 30/32"	(10/32 in 41 min)
			4:01		5 20/32	(4/32 in 19 min)
			4:20		5 16/32	3/32 in 15 min
			4:35		5 14/32	2/32 in 15
6 8/32 in 1hr = (240 mpi approx) <u>Fail</u>						

R TO RESIDENTIAL OCCUPANCY TO INSURE
CY VEHICLES PER THE FOLLOWING MINIMUM

F SERVING MORE THAN 1 RESIDENCE)
OF COMPACTED "CRUSHER RUN" BASE WITH
(1/2" MIN.)
DE, MAV. 10% GRADE CHANGE AND MIN. 45'

ES)--CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING)
ABLE OF SAFELY PASSING 100-YEAR FLOOD WITH
TH OVER DRIVEWAY SURFACE;
IT TO ENSURE ALL WEATHER USE.

N IS HEREBY DEDICATED TO THE HOMEOWNERS
F THIS SUBDMISION, AND RECORDING REFERENCES
N AND RESTRICTIONS ARE SHOWN HEREON.

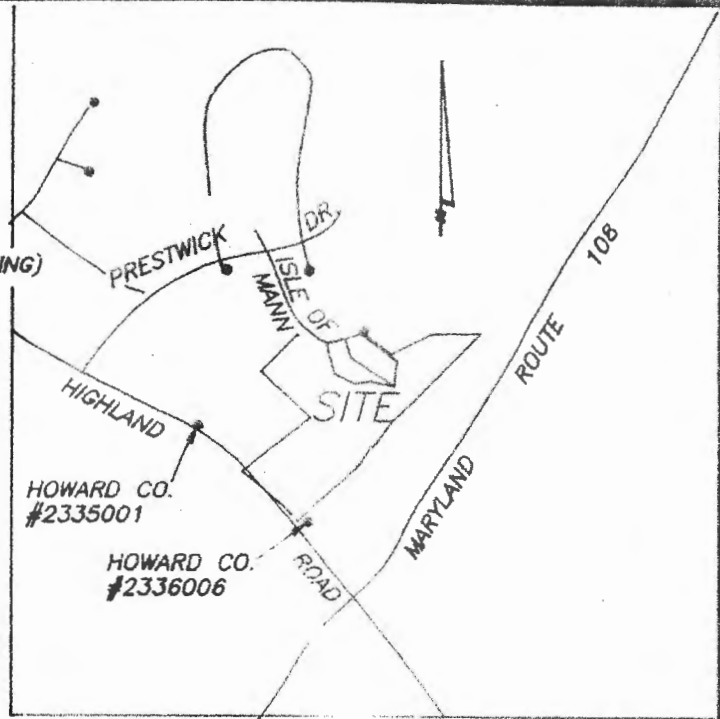
ED FOR KOANDAH COURT BY MEANS OF A PRIVATE
E LOT 22.

FOR THIS PROJECT WAS PREPARED BY
SEPTEMBER 17, 1997 AND WAS SUBMITTED IN

ROJECT WAS PREPARED BY SHANABERGER AND LANE
H F-90-76.

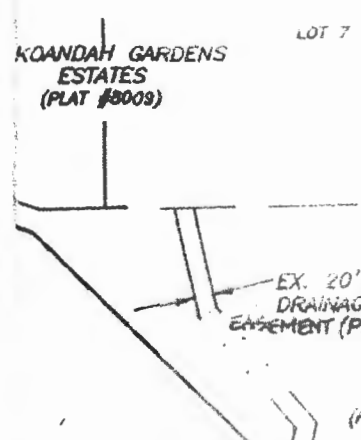
IT HAS BEEN ESTABLISHED TO FULFILL THE
OF THE HOWARD COUNTY CODE AND FOREST
GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE
HOWEVER, FOREST MANAGEMENT PRACTICES AS
CONSERVATION EASEMENT ARE ALLOWED.

1) FOREST CONSERVATION EASEMENTS
ITS SUCCESSORS AND ASSIGNS, ALL EASEMENTS
SEWER, STORM DRAINAGE, OTHER PUBLIC UTILITIES
ED AS "FOREST CONSERVATION AREA"), LOCATED IN,
ELS, ANY CONVEYANCES OF THE AFORESAID LOTS/PARCELS
ITS HEREIN RESERVED, WHETHER OR NOT EXPRESSLY
SAID LOT(S)/PARCELS. DEVELOPER SHALL EXECUTE AND
HEREIN RESERVED UNTO HOWARD COUNTY WITH A
THE FOREST CONSERVATION AREA. UPON COMPLETION
ACCEPTANCE BY HOWARD COUNTY, AND IN THE CASE OF
T(S), UPON COMPLETION OF THE DEVELOPERS
NSERVATION INSTALLATION AND MAINTENANCE AGREEMENT
THE COUNTY, AND THE RELEASE OF DEVELOPERS
IT. THE COUNTY SHALL ACCEPT THE EASEMENTS
MENT IN THE LAND RECORDS OF HOWARD COUNTY.



VICINITY MAP

SCALE: 1"=2000'



22. LANDSCAPING FOR LOTS 16-28 IS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN ON FILE WITH THE APPROVED ROAD CONSTRUCTION PLANS IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
23. THIS PLAT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BY ON-SITE RETENTION (2.06 ACRES RETENTION) & OFF-SITE RETENTION (4.18 AC.).
24. THIS SUBDIVISION IS RECEIVING 3 DEO UNITS FROM THE HOLTZINGER PROPERTY (TAX MAP 1 & 6, PARCEL 7)
25. LANDSCAPING SURETY HAS BEEN PROVIDED IN THE AMOUNT OF \$ 17,250.00 FOR PERIMETER LANDSCAPING AND \$ 4800.00 FOR STREET TREES.
26. FOREST CONSERVATION OBLIGATIONS ARE MET THROUGH RETENTION. SURETY HAS BEEN PROVIDED IN THE AMOUNT OF \$ 54,275.76
27. PRESERVATION PARCEL 'A' IS OWNED BY JAMES M. & EMILIE S. SANBORN WITH EASEMENT RIGHTS GRANTED TO THE HOMEOWNERS ASSOCIATION AND HOWARD COUNTY, MD.
28. THE HOA ARTICLES OF INCORPORATION WERE ACCEPTED BY THE STATE ON 8/29/2002 *ifiling # 160036 1987482668*
29. THIS PLAN IS SUBJECT TO COMPLIANCE WITH THE FOURTH EDITION OF THE SUBDIVISION REGULATIONS. IN ADDITION, BECAUSE IT HAD PRELIMINARY PLAN APPROVAL PRIOR TO NOVEMBER 1, 2001, IT IS SUBJECT TO THE OCTOBER 18, 1993 ZONING REGULATIONS

ADVANCE SYSTEMS

INNOVATIVE ONSITE WASTEWATER SOLUTIONS

A Division of DTD, Inc.

1318 New Windsor Road
New Windsor, MD 21776

email: advsystem@cct.infi.net

Office 410-875-9370

FAX 410-635-9960



April 19, 2000

Mr. James M. Sanborn
4967 Ten Oaks Road
Dayton, Maryland 21036

Re: Septic Disposal Areas for Proposed Lot 21, 26, 27 and Preservation Parcel A
Koandah Gardens Estates

Dear Mr. Sanborn:

A review of the abovementioned proposed lots and parcel as to the suitability for installation of onsite septic disposal systems has been made based on the percolation data and groundwater monitoring data as collected by Howard County Health Department and our office.

Percolation data on these sites was obtained primarily during July, 1999 and were satisfactory for conventional tile fields on Lot 21 and the Preservation Parcel A. These tests ranged from 2 - 7 minutes at an average depth of 39 inches.

Groundwater monitoring wells, placed at the direction of the Howard County Health Department, have been periodically checked since Fall 1999. Readings taken to date suggest that the groundwater levels fluctuate relative to climatic events but have remained at or below the acceptable levels in the respective sites. Monitoring well readings in the vicinity of Lot 21 and Preservation Parcel A should allow for the placement of standard tile field systems on these lots in the proposed SDA sites. Although some water levels were above the seven-foot level (5+/- feet at MW #7), the three-foot elevation differential from the SDA on the Preservation Parcel A and water levels (>7 feet at MW#8) would suggest that adequate unconsolidated, unsaturated conditions exist. The readings taken on the well located on Lot 21 are in the acceptable range of 7-8 1/2 feet and are also down gradient of the proposed SDA.

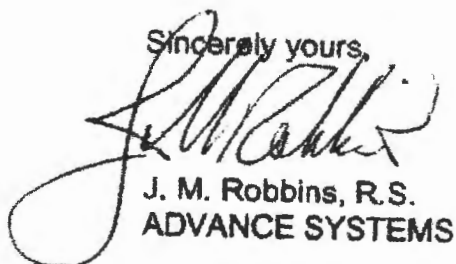
Koandah Garden Estates

Page 2

Conventional sand mound (infiltrometer) testing was conducted on Lots 26 and 27, and were also satisfactory; averaged times were 15 minutes for Lot 26 and 26 minutes for Lot 27. These tests were conducted in the upper soil horizon at depths ranging from 10-14 inches. In the case of Lot 26, monitor well levels ranged from 3.8 feet to 5.7 feet. Sufficient separation above saturated zones, as required in COMAR 26.04.02.04-C, on these lots may be achieved with sand fill of 24 inches. No monitoring wells were placed in the vicinity of the SDA on Lot 26; the site elevations suggest that groundwater is not a determinant factor on this site.

It is my professional opinion that functional conventional septic systems and replacement areas can be designed and suitably placed on all of these proposed sites as indicated on the accompanying plans.

Sincerely yours,



J. M. Robbins, R.S.
ADVANCE SYSTEMS



April 24, 2000

Mr. James Sanborn
4967 Ten Oaks Road
Dayton, MD 21036

7540 Main St. Suite 7
Sykesville, MD 21784

PHONE 410-795-4626
FAX 410-795-4611
www.alwi.com

Re: Letter of Opinion; Domestic Wastewater Disposal Feasibility Study
ALWI Project No. HO5K022

Dear Mr. Sanborn,

Following our meeting of March 30, 2000, Advanced Land and Water, Inc. (ALWI) is pleased to present our professional opinion concerning the hydrogeological aspects of the above referenced project. ALWI understands that you seek to develop lots 19, 24, 25 and the "preservation parcel" of the Koandah Gardens Estates (a portion of Howard County Tax Map No. 34, Block 23 and Parcel 78). The site is located on the northeast side of Highland Road, south of Isle of Mann Drive and approximately 0.2 mile northwest of MD Route 108, in southwestern Howard County, Maryland.

ALWI's professional opinion of the site's hydrogeologic suitability for on-lot wastewater disposal is presented pursuant to COMAR 26.02.02.06.D(1), which provides for professional consultants to prepare hydrogeological reports. ALWI's credentials and background are presented in the attached resume and brochure.

BACKGROUND

ALWI understands that the proposed lots will be served by individual wells and on-lot wastewater disposal systems. During our meetings of March 20 and 26, you requested a written professional opinion relative to the following: (1) the use of certain monitoring pipes installed on-site in determining the depth of the water table and (2) the potential effect of drought in depressing the water table at this location. ALWI further understood that these opinions were sought in the context of assessing the hydrogeologic viability of on-lot septic system development. Neither water supply issues nor the pedologic/agronomic aspects of wastewater disposal are addressed herein.

The requirements for approval of an on-lot septic system are set forth in COMAR 26.04.02 and require four feet of unsaturated soil thickness between the bottom of the trenches of each proposed wastewater disposal drainfield and the top of the "seasonally high" water table. ALWI understands that Howard County Health Department (HCHD) personnel, possibly in consultation with Maryland Department of the Environment (MDE) personnel, have directed and assisted you in constructing several piezometers on-site for the purpose of monitoring water levels (the design of these pipes and its significance are discussed below). ALWI also understands that HCHD personnel have advised that it will be necessary to add three feet to

measured water table elevations to correct for a continuing drought that is interpreted to be depressing on-site water levels.

PROFESSIONAL OPINIONS

In preparing the professional opinions enumerated below, ALWI has utilized its best level of effort consistent with its professional standards, present scientific judgment and knowledge. ALWI has upheld accepted industry practice and used and relied on (1) published scientific literature and textbooks (cited where appropriate); (2) information you provided regarding prior fieldwork conducted prior to ALWI's involvement; (3) your accounts of conversations with regulatory officials and ALWI's March 26, 2000 conversation with Ronald J. Pinkley, R.S. (HCHD) and (4) public domain data available from the U.S. Geological Survey (USGS) and over the internet.

1. **The data obtained from the on-site network of monitoring pipes likely record erroneously shallow water table depths.** The depth to water measured in this network of informally installed pipes likely reflects a higher-than-actual groundwater elevation due to (1) the high porosity and permeability of the backfilled materials adjacent to the pipes (compared to undisturbed soil strata); (2) the absence of perforations on the sides of the pipes at the true water table interface (true groundwater monitoring wells have such perforations) and (3) their open air construction allows rainfall to enter through direct precipitation.
2. **The on-site monitoring pipes do not measure the water table.** COMAR 26.04.02.01(43) defines "unconfined aquifer" as "an aquifer not bounded above by a bed of distinctly lower permeability than that of the aquifer itself and containing groundwater under pressure approximately equal to the atmosphere." Conversely, COMAR 26.04.02.01(8) defines a "confined aquifer" as an "aquifer bounded above and below by beds of distinctly lower permeability than that of the aquifer itself and which contains groundwater under pressure greater than that of the aquifer". COMAR correctly states that the terms "unconfined aquifer" and "water table aquifer" are synonymous and that the terms "confined aquifer" and "artesian aquifer" are also synonymous. On March 26, 2000, Mr. Pinkley indicated that the invert depths of the on-site monitoring pipes terminate in sandier water-bearing strata after penetrating distinctly less permeable clayey strata higher in section. Mr. Pinkley also stated that he has observed that water rises in the pipes (in response to this relief in pressure). By these facts, the on-site monitoring pipes do not record the depth to the water table under unconfined conditions¹ but merely a potentiometric surface² under confined conditions. On Page No. 114, Fetter (1994) states that to measure the water table or make a water table map, "...all wells should have

¹ Fetter (1994) states that "water table aquifers" have "continuous layers of materials of high intrinsic permeability extending from the land surface to the base of the aquifer".

² Fetter (1994) defines "potentiometric surface" for a confined aquifer as the "...level to which water level will rise in a well cased to the aquifer."

an open borehole or well screen at the depth of the water table. Fetter (1994) continues by stating that a potentiometric surface map (though not a water table map) can be made using wells in which the water table depth is cased off.

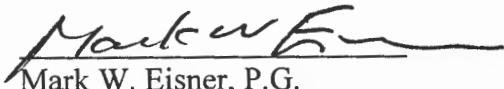
3. **The on-site pipes are not proper groundwater monitoring wells.** – COMAR 26.04.04.07 specifies well construction standards for water supply as well as groundwater monitoring. The on-site pipes were not constructed in accordance with this regulation nor by a master well driller as also required. To be accordance with COMAR and good scientific practice, had the on-site monitoring pipes not already been constructed, ALWI would have recommended differing construction. Specifically, ALWI would have recommended installation of one-or more standard monitoring wells in accordance with provisions of COMAR 26.04.04.07 so as to seal the annulus from flashy responses from short-circuiting precipitation and overland flow.
4. **Drought conditions no longer prevail in the shallow soil strata underlying the site.** ALWI understands that the HCHD has proposed the addition of three feet to correct for its belief that continued regional drought conditions are artificially suppressing what otherwise would be seasonally higher groundwater levels. Recent official press releases indicate that regional drought conditions no longer prevail (see attached). In taking a more site-specific approach to this, ALWI developed a hypothesis that the artificial pond located on-site intercepts the water table. ALWI then verified this hypothesis by designing a program for making a series of closely spaced hand-auger borings radially outward from the pond. ALWI understands that these borings document a local groundwater mound (not a perched pond). Insofar that the pond has been reported as full-to-overflowing since the tropical storms of September 1999, drought conditions no longer prevail in the shallow strata (first seven feet, based on the reach of ALWI's hand auger) in the proximity of this pond.
5. **The basis for the 3-foot "drought correction factor" appears inapplicable.** ALWI understands the technical basis for the HCHD's 3-foot drought correction factor may be a network of groundwater hydrographs maintained by the U.S. Geological Survey. One such hydrograph is No. HO Ce-38, which does record a three foot difference between present water levels and mean water levels for this time of year. However, ALWI notes that this well has 51 feet of casing yet measures water levels between 25 and 38 feet below land surface. By virtue that this well never records water levels within the range of the on-site monitoring pipes (shallower than 10-12 feet), it is not applicable to interpreting the existence and magnitude of drought-depressed groundwater level on-site. Insofar that all groundwater hydrographs maintained by the USGS in central Maryland also record confined conditions in fractured bedrock aquifers, no publicly available data exists to contravene the information in the attached news release. By extension, no publicly available data supports the three-foot drought correction factor as reportedly applied by HCHD.

SUMMARY

In summary, when not overprinted by rainfall events the on-site pipes merely monitor a potentiometric surface that likely is shallower than the true water table. If water levels are measured within one to three days of a rainfall event (i.e., 0.5 inches of precipitation or more), the resultant data are likely to be biased beyond objective use. The technical basis for the "drought correction factor" is similarly predicated on a potentiometric surface unrelated to the water table height in the shallow soils on-site. Limited on-site observations indicate that drought conditions are not prevalent in the shallow soils on site, and neither on-site nor publicly available regional data counter this. ALWI recommends that HCHD consider this information in supporting a decision to proceed with wet weather Soil Test as prescribed in COMAR 26.04.02.04.B, but without further drought correction.

Thank you for the opportunity to be of service. Please do not hesitate to call should you have any questions or wish our assistance in presenting our opinion and/or implementing our recommendations.

Respectfully submitted,



Mark W. Eisner, P.G.
President

Attachments

Fetter, C.W. 1994, Applied Hydrogeology, Third Edition, Prentice-Hall, Inc., Englewood Cliffs, NJ, 691 p.

cc: David Duree (Advanced Systems)



News Release

U.S. Department of the Interior
U.S. Geological Survey

Address
8987 Yellow Brick Rd.
Baltimore, MD 21237

Release
March 7, 2000

Contact
Mick Senus

Phone
(410) 238-4241

Fax
(410) 238-4210

WATER CONDITIONS IMPROVING IN MARYLAND, DELAWARE, AND D.C.

LEVELS INCREASE IN GROUND-WATER AND STREAMFLOW DURING FEBRUARY

Precipitation in February helped to replenish ground-water levels and reservoir supplies in the Maryland-Delaware-D.C. region, according to hydrologists at the U.S. Geological Survey (USGS) in Baltimore, Maryland. **However, improved water-supply conditions will be sustained only if precipitation remains near normal in the coming months.** Ground-water levels at the end of February have increased throughout most of the area and are in the normal range throughout the entire bi-state area. Contents of the Baltimore reservoir system increased from 60,740 million gallons (60.74 billion gallons) in January to 65,750 million gallons near the end of February, which was 87 percent of average and 94 percent of last year at this time. End-of-month contents in February 1999 were about 69,490 million gallons.

Flow into the Chesapeake Bay was 80% of average (68.5 billion gallons per day or bgd) for the month of February and was estimated to be about 55 bgd. February streamflow has increased in bi-state area local streams and has moved from the below normal range to the normal range for this time of year. Streamflow at Potomac River near Washington, D.C. has moved from the deficient into the normal range.

MARK W. EISNER, P.G.

C.V.

Mr. Mark W. Eisner, P.G. is President of Advanced Land and Water, Inc. (ALWI). Possessing more than thirteen years experience in environmental and hydrogeological consulting, Mr. Eisner directs corporate environmental and hydrogeologic investigations for both private and public sector clients and is fully proficient in designing and executing environmental assessment and remediation projects. Mr. Eisner has personally completed nearly a thousand Phase I and Phase II Environmental Site Assessments (ESAs), as well as several hundred Transaction Screens, subsurface hydrogeologic investigations and environmental remediation designs. This work met or exceeded applicable standards published by the American Society for Testing and Materials (ASTM), other industry and professional organizations, and federal and state regulatory agencies.

In addition to ESAs and related field investigations, Mr. Eisner consults for clients nationwide on a wide range of technical, managerial and loss prevention aspects of environmental assessment, regulatory compliance, remediation and site closure issues. Additional areas of his technical expertise include mathematical modeling of hydrogeologic systems; pumping tests and matters relating to groundwater supply contamination. On numerous occasions, Mr. Eisner has testified as an expert on matters related to groundwater resources, hydrogeological environmental contamination and due diligence studies.

Mr. Eisner is a former senior regulator and environmental policy maker with the State of Maryland. The respect, which Mr. Eisner commands among his peers and former coworkers at the Maryland Department of the Environment (MDE), combines with his abundant local experience to provide ALWI's Maryland-based clients with the highest level of technical service and regulatory expertise. His credentials and experience for the proposed project are as follows:

1. **ENVIRONMENTAL INVESTIGATION AND REMEDIATION** - Mr. Eisner is fully proficient in designing and executing environmental assessment and remediation projects. Mr. Eisner has personally completed nearly a thousand Phase I and Phase II ESAs, as well as several hundred Transaction Screens, subsurface hydrogeologic investigations, and environmental remediation designs. This work met or exceeded applicable standards published by the ASTM, other industry and professional organizations, and federal and state regulatory agencies. Also, Mr. Eisner consults for clients nationwide on a wide range of technical, managerial and loss prevention aspects of environmental assessment, regulatory compliance, remediation and site closure issues. On numerous occasions, Mr. Eisner has testified as an expert on matters related to environmental contamination and due diligence studies.
2. **PROJECT MANAGEMENT** - Mr. Eisner's project management skills are exemplary: work is performed on time and within budget. ALWI uses the latest in project management software and techniques to provide state-of-the-art timeline and budgetary control on all projects. Clients are kept informed as to the work underway through regular written progress reports. Moreover, clients are afforded the means to contact their ALWI Project Manager around the clock via e-mail, pager and cellular services.
3. **WATER RESOURCES EXPLORATION AND DEVELOPMENT** - Mr. Eisner possesses an outstanding track record of developing many of the highest yielding and quality wells ever drilled in southern Pennsylvania and northern Maryland. Specific areas of his technical expertise include fracture trace analysis; well design and construction management; pumping test design and analysis; wellhead protection delineations and plans; surface water studies; mathematical modeling of hydrogeologic systems; spray irrigation permitting and other waste water application studies. Mr. Eisner's expertise extends from the field to the courtroom and he is fully experienced and qualified to tackle the most daunting groundwater supply challenges.
4. **REGULATORY AFFAIRS** - Mr. Eisner is a former senior state regulator and groundwater allocation policy maker, which commands him respect among professional colleagues at MDE and similar agencies in neighboring jurisdictions. Accordingly, his unique insights allow ALWI to provide its water supply clients with the highest level of technical service and regulatory expertise.

EDUCATION

B.S., Geology, University of Maryland
M.S., Geology, University of Delaware

REGISTRATION AND AFFILIATIONS

Professional Geologist, Commonwealth of Pennsylvania
Member, Geological Society of America
Member, Assoc. Groundwater Scientists and Engineers
Member, National Groundwater Association

SEMINARS AND PRESENTATIONS

- 40-HR OSHA-Trained For Hazardous Waste Site Operations, including supervisory and excavation/shoring components.
- "IBM PC Applications in Groundwater Hydrology", Assoc. of Groundwater Scientists and Engineers, Nat'l Groundwater Assoc., Boston, Massachusetts, 1994.
- "The Use of U.S. Geol. Survey (USGS) MODFLOW for Analysis of Groundwater Flow Systems", Assoc. of Groundwater Scientists and Engineers, Nat'l Groundwater Assoc., Tampa, Florida, 1989.
- "Fluid Flow Through Fractured Media", Dept. of Eng. Professional Development, Univ. of Wisconsin, Madison, Wisconsin, 1988.
- "When client, hydrogeological and regulatory interest collide; a case study from southern Pennsylvania", orally presented at the Northeastern sectional meeting, Geol. Society of America, Providence, RI, 1999.
- "Do large-scale groundwater withdrawals cause the failure of neighboring septic systems? New data from a site in southern Pennsylvania", orally presented at the annual state-county groundwater symposium, MDE, Baltimore, MD, 1999.
- "Forum on Geologic Mapping Applications in the Washington-Baltimore Urban Area", USGS Circular No. 1148, invited participant in technical forum, Reston, Virginia, 1998.

FUEL SPILL ASSESSMENTS AND CLEANUP EXPERIENCE

- Rapid Response and Initial Abatement - Managed on-scene operations at sites of petroleum leakage and spillage from both above-ground (AST) and underground storage tanks (UST). Coordinated for emergency response, initial spill assessment work using field-screening equipment. Acted as liaison between client and regulatory officials inspecting work site. Prepared Health and Safety Plans and acted as Project Health and Safety officer. Oversaw rapid-response excavations, stockpiling and composite waste profiling. Directed the lateral and vertical extent of excavations and supporting characterization efforts. Completed manifests for transport, treatment and disposal of contaminated soils and waters. Prepared final technical reports for regulatory submittal and site closure.
- UST Program Management - Managed \$1,000,000 MDE and Virginia Department of Environmental Quality (VDEQ) contracts to provide assessment and remediation services at leaking UST sites referred for State lead throughout Maryland. Also, managed a \$1,500,000 UST compliance upgrade and rapid response contract for Bell Atlantic.
- Remedial Action - Designed and installed a rapid-deployment environmental remediation system at a location where leakage from a residential fuel UST had caused neighborhood-wide contamination of domestic supply wells. System consisted of pump-and-treat, aeration, carbon filtration, soil vapor extraction, off-gas treatment and in-site bioremediation.
- Risk Assessment, Remedial Design and Construction - Designed and installed a groundwater remediation system at a police barracks where long-standing petroleum contamination of shallow groundwater had resulted in airborne VOCs within the barracks building after rainstorms. Once remediation was implemented (two recovery wells, a cut-off-trench, and positive ventilation of a sump pump area), instances of lost work time for illness decreased substantially.
- Fuel Spill Investigation - Performed environmental risk assessment of farm threatened by off-site contamination by salt, fecal coliform bacteria, solvents and heavy metals. Extensive sampling confirmed groundwater contamination by salt. Provided litigation support in pursuit of various courses of action in appeal of MDE permitting decisions. Adjudicatory hearing is set for 2000.
- Environmental Impact Study - Performed a comprehensive environmental impact study of a retail gasoline service station planned in a sensitive watershed. Collected and interpreted hydrogeologic data

on which were based construction and operations recommendations designed to lessen the future risk of an environmental impact due to a hypothetical fuel spill. Testified at planning and zoning hearings and helped secure project approval.

- Environmental Trespass Investigation - Designed and executed an environmental assessment of commercial property located down gradient from a fuel spill site. Identified gasoline-contaminated groundwater and used trace element chemistry to fingerprint the source. Performed a limited risk assessment and assisted counsel in preparation of legal documents charging environmental trespass. Strength of deposition testimony allowed settlement with defendant (a major oil company) on highly favorable but sealed terms.

HYDROGEOLOGIC SITE CHARACTERIZATION EXPERIENCE

- Hydrogeologic Site Characterization - Designed and installed groundwater monitoring systems in both unconsolidated and fractured bedrock settings. Designed and executed aquifer pumping tests to evaluate the extent of subsurface contamination and to quantify hydraulic parameters. Conducted investigations to determine the extent of dissolved and non-aqueous phase groundwater contaminants.
- Subsurface Sampling and Monitoring - Designed and implemented investigations to characterize the degree of subsurface contamination at leaking UST sites, employing a wide variety of geological, soils, geophysical and analytical techniques. Designed and installed groundwater monitoring systems using a full spectrum of drilling and well construction techniques in a broad range of geological, hydrological and chemical environments.
- Computer Modeling of Groundwater Systems - Developed and employed numerical groundwater flow and contaminant transport models to evaluate remedial alternatives optimize remedial design and evaluate off-site impacts. Designed, calibrated and executed computerized groundwater flow models to identify capture zones and perform time-of-travel assessments necessary for delineating wellhead protection areas (WHPAs) in sensitive and contaminated aquifers.
- Wellhead Protection - Prepared comprehensive wellhead protection plans for eight municipal community groundwater supplies in northeastern Maryland. Also, provided wellhead protection and source water assessment assistance to fulfill MDE grant objective to assess and survey 100 non-community wells in western Maryland. Delineated WHPAs based on hydrologic water balances supported by fracture trace analyses, time of travel calculations, geologic mapping, land use planning reviews and ordinance development. Identified contaminant hazards within each WHPA and developed specific recommendations for mitigating future hazards and providing community outreach and emergency supply.
- Quarry Dewatering Impact Investigation - Designed and executed a comprehensive monitoring program to assess the hydrologic effects of existing and future dewatering activities at a limestone quarry in Washington County, Maryland. Collected and interpreted hydrologic data from 16 observation wells, 12 stream gauging stations, two flowmeters and four rain gauges over a 100-day monitoring period. Predicted future dewatering rates, off-site well impacts and future occurrences of sinkholes.
- Domestic Well Failure Evaluation - Testified for defendant in a civil action on the failure of a domestic supply; assisted attorney in providing key testimony, which helped to secure a "directed verdict" dismissing case.
- Groundwater Development - Located and developed municipal production wells for several municipalities in northern Maryland and southern Pennsylvania. Developed water supply facilities and implemented wellhead protection programs. Designed and executed aquifer pumping tests to evaluate long-term sustainable well yields, quantify hydraulic parameters, and assess impacts on neighboring supplies. Designed and implemented plan for long-term groundwater monitoring and impact mitigation.

4967 Ten Oaks Road
Dayton, MD 21036
April 24, 2000

Mr. Ronald J. Pinkley, R.S.
Howard County Health Department
Bureau of Environmental Health
Ellicott City, MD 21042-4544

Dear Mr. Pinkley:

Now that HCHD has opened a truncated wet season percolation testing period, it is incumbent on us to do our homework. I appreciate that we have been very generously granted three days of field time. To this end, we need a clear plan with parameters established prior to additional field exploration.

To expedite and facilitate productive use of our time, I have requested Mr. Shanaberger to submit an application for certification of SDAs (Sewage Disposal Areas) on four lots. This submission is based on data that has been collected to date and evaluated by Michael Robbins, R.S.. His evaluation is attached. I certainly hope that you will concur with Mr. Robbins evaluation and conclusions. If you are not in concurrence, however, I would appreciate your being very specific and precise as to what data you believe is still needed.

Also attached are Mr. Mark Eisener's (Hydrogeologist) evaluations and opinions concerning water table considerations pertinent to our site. Needless to say, his very professional and highly qualified expertise must be taken very seriously and with the greatest respect.

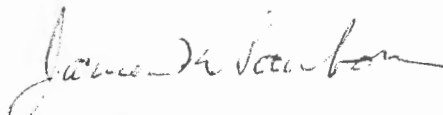
I have assembled a very confident, highly qualified expert team of specialists to address the feasibility of SDAs on this unique site - at least significantly different in various aspects for most local septic situations. I am fully cognizant of the particular features encountered that bear on the suitability here for successful septic systems. It would certainly be unethical for me to be a party to selling lots that are likely to present septic failure to the buyers.

I will assure you that the team I have in place is also of the highest ethical character and employs the highest professional standard. Team members are accomplished in state of the art technology and have a reputation to protect. As objective scientists they come without preconceived biases, but rely on factual data, critical observations, and accepted professional evaluations. Incidentally, I too am a professional research scientist in my own right and understand the necessity for objectivity.

I realize that this application for certification gives you scant time for review, but I believe that it would greatly assist all of us if you could address this application prior to Wednesday.

I look forward to meeting on site and hopefully we'll quickly wrap up this project.

Sincerely yours,


James Sanborn

Cc.: Amy McMillen

C 1 .1608

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED. OK SRH 5/9/01

ST/CO USE ONLY DATE Received

DATE WELL COMPLETED

Depth of Well

PERMIT NO. FROM "PERMIT TO DRILL WELL"

OWNER Sandhwa James STREET OR RFD Dale of Mann TOWN Highland SUBDIVISION Koondah Garden Est. SECTION LOT 27

WELL LOG table with columns: DESCRIPTION, FEET (FROM, TO), check if water bearing. Includes entries for Sand and Gray Mica Rock.

GROUTING RECORD form with fields for material type (CM, BC), bags, pounds, gallons, and depth of seal.

CASING RECORD form with fields for casing type (ST, CO, PL, OT), diameter, and depth.

OTHER CASING (if used) form with fields for diameter and depth.

SCREEN RECORD form with fields for screen type (ST, BR, HO, PL, OT) and depth.

PUMPING TEST form with fields for hours pumped, rate, method, water level, and pump type.

PUMP INSTALLED form with fields for driller, pump type, capacity, and casing height.

WELL HYDROFRACTURED form with YES/NO options.

- Legend for well status: A (abandoned), E (electric log), P (test converted).

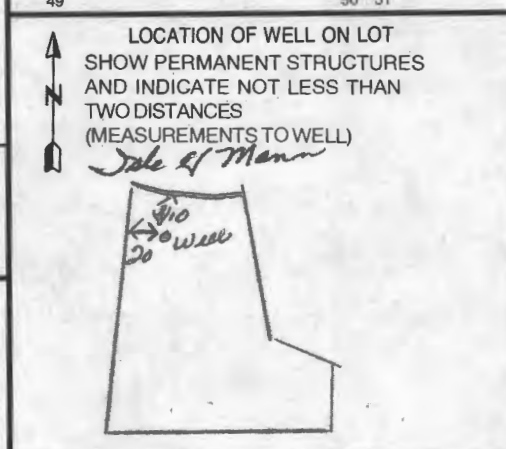
I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04...

DRILLERS LIC. NO. 1 M S D O 2 4 DRILLERS SIGNATURE James C. Mann LIC. NO. 1 D

DEPTH (nearest ft.) form with grid for depth measurements.

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER) form with fields T, W, Q.



SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

TELESCOPE CASING LOG INDICATOR OTHER DATA

B 1	8496	SEQUENCE NO. (MDE USE ONLY)	STATE OF MARYLAND PERMIT TO DRILL WELL please print or type	STATE PERMIT NUMBER HO-94-3058 <small>fill in this form completely</small>
-----	------	--------------------------------	---	---

OWNER INFORMATION

Date Received (APA) 3/15/01

8 MM DD YY 13

15 Last Name Sandborn Owner First Name James 34

36 Street or RFD 4967 Len Oaks Rd 55

57 Town Dayton State Md Zip 21036 76

LOCATION OF WELL

8 COUNTY Howard 21

23 SUBDIVISION Koondah Gardens Estate 42

SECTION 44 46 LOT 27 48 50

52 NEAREST TOWN Highland 71

MILES FROM TOWN (enter 0 if in town) 0 M I 73 76 77 78

DRILLER INFORMATION

Driller's Name Joseph L Mayne M S D O 24 76 License No. 81

Firm Name Joseph L Mayne Well Drilling

Address 5512 Ridge Rd Mt. Airy 21771

Signature Joseph L Mayne Date 3/15/2001

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

11 NEAR WHAT ROAD Isle of Mann Way 30

34 20 37 DISTANCE FROM ROAD FT 38 39
ENTER FT OR MI

TAX MAP: 34 BLK: 23 PARCEL 78

WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.) 5 8 12

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 500 14 20

USE FOR WATER (CIRCLE APPROPRIATE BOX)

DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION

FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)

INDUSTRIAL, COMMERCIAL, DEWATERING

PUBLIC WATER SUPPLY WELL

TEST OBSERVATION, MONITORING

GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL

COUNTY NAME Howard COUNTY NO. A511371A

STATE SIGNATURE _____ INSERT S _____ 41

DATE ISSUED 3/29/01 Ronald Winkley 3/29/02

43 MM DD YY 48 CO SIGNATURE EXP. DATE

NORTH GRID 492 0 0 0 EAST GRID 0810 0 0 0
50 55 57 63

APPROXIMATE DEPTH OF WELL 300 FEET 24 28

APPROXIMATE DIAMETER OF WELL 6 INCH NEAREST INCH

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER

- well
-
-

WRITE THE BOX NUMBER FROM THE MAP HERE

E 810

N 4982

000
000

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN

30 AIR-ROTARY AIR-PERCussion ROTARY (Hydraulic Rotary)

37 CABLE REVERSE-ROTARY DRIVE-POINT

other _____

REPLACEMENT OR DEEPEINED WELLS (CIRCLE APPROPRIATE BOX)

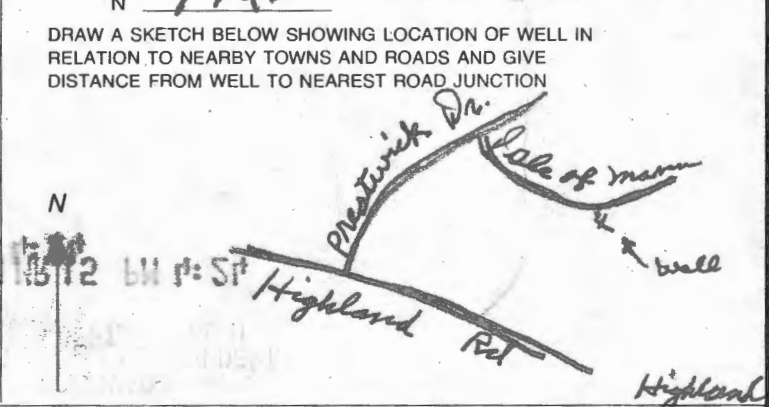
THIS WELL WILL NOT REPLACE AN EXISTING WELL

THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED

39 THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS

THIS WELL WILL DEEPEIN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPEINED (IF AVAILABLE) 41 _____ 52



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER HO 2001 G 006 (01)

PERMIT No. HO-94-3058

FOUNTAIN VALLEY ANALYTICAL LABORATORY, INC.

1413 Old Taneytown Rd. • Westminster, MD • (410) 848-1014 • (410) 876-4554 • FAX (410) 848-0298

WATER ANALYSIS REPORT

Laboratory ID #:	39014	Account #:	4995
Reference:	Koandah Garden Estates, Lot 27	Company:	CASH ACCOUNT
Location:	Isle of Mann Way Highland, MD 20777	Requested by:	James Sandborn
Date/ Time Coll:	05/01/01 1215	Source:	Well
Date/ Time Rec'd:	05/01/01 1430	Site:	Bailer
Chlorine, ppm:	Free: ND Total: ND	Treatment:	None
Collected by:	J. Yeager 6176Y	pH:	6.3
		Well #:	HO-94-3058

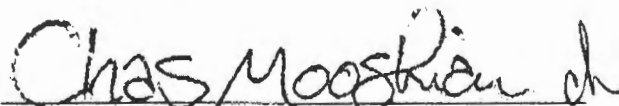
PARAMETER	RESULTS	UNITS	REFERENCE	METHOD
Bacteria, Total Coliform, MPN	<1.0	MPN/100 ml	<1.0	SM9223
Bacteria, E. coli, MPN	<1.0	MPN/100 ml	<1.0	SM9223

NOTES:

1. MPN/ 100 ml = Most Probable Number [of viable bacteria] per 100 ml of sample.
2. ND: None Detected
3. Visual well check: sealed, vented cap
4. New Well

Date Reported: 05/02/01

Laboratory Director:



Chas. Mooshian, BS, MT

MD State Certification #133

