

C 1 11098

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

ST/CO USE ONLY DATE Received

DATE WELL COMPLETED

Depth of Well

PERMIT NO. FROM "PERMIT TO DRILL WELL"

OWNER WELL SITE ADDRESS SUBDIVISION SECTION LOT

WELL LOG

Not required for driven wells STATE THE KIND OF FORMATIONS PENETRATED...

Table with columns: DESCRIPTION, FEET (FROM, TO), check if water bearing. Includes entries for Top Soil, Orange Clay & sand, Gray Clay, Hard Gray Rock.

GRROUTING RECORD WELL HAS BEEN GROUTED... TYPE OF GROUTING MATERIAL... CEMENT... BENTONITE CLAY... NO. OF BAGS... NO. OF POUNDS... GALLONS OF WATER... DEPTH OF GROUT SEAL...

CASING RECORD casing types insert appropriate code below... MAIN CASING TYPE... Nominal diameter... Total depth...

OTHER CASING (if used) diameter inch depth (feet) from to

SCREEN RECORD screen type or open hole... insert appropriate code below... DEPTH (nearest ft.)

NUMBER OF UNSUCCESSFUL WELLS: WELL HYDROFRACTURED

CIRCLE APPROPRIATE LETTER A WELL WAS ABANDONED AND SEALED... ELECTRIC LOG OBTAINED... TEST WELL CONVERTED TO PRODUCTION WELL

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

DRILLERS LIC. NO. DRILLERS SIGNATURE

LIC. NO. SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

DEPTH (nearest ft.)... SLOT SIZE 1 2 3... DIAMETER OF SCREEN (NEAREST INCH)

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

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER) T (E.R.O.S.) W Q

TELESCOPE CASING LOG INDICATOR OTHER DATA

C 3

PUMPING TEST

HOURS PUMPED (nearest hour) PUMPING RATE (gal. per min.) METHOD USED TO MEASURE PUMPING RATE WATER LEVEL (distance from land surface) BEFORE PUMPING WHEN PUMPING TYPE OF PUMP USED (for test)

PUMP INSTALLED

DRILLER INSTALLED PUMP YES NO (CIRCLE) (YES or NO) IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS. TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. CAPACITY: GALLONS PER MINUTE (to nearest gallon) PUMP HORSE POWER PUMP COLUMN LENGTH (nearest ft.) CASING HEIGHT (circle appropriate box and enter casing height) LAND SURFACE (nearest foot)

LATITUDE 39.201343 LONGITUDE 76.738724 (DEFAULT COORD. WGS 84)

NOTES: Includes handwritten notes and a diagram of a well layout with 'front' label and coordinates 39.201368, 76.738670.

01-209493

EMERGENCY/TEMP NO. IF ANY

B 1 17621

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER
HO-95-2644
fill in this form completely

Date Received (APA)

OWNER INFORMATION

8 MM DD YY 13
Brennan Keith J
15 Last Name Owner First Name 34
P.O. Box 8058
36 Street or RFD 55
Elkridge MD 21075-8058
57 Town 70 State 72 Zip 76

B 3 **LOCATION OF WELL**

Howard
8 COUNTY 21
23 SUBDIVISION 42
SECTION 44 46 LOT 48 50
Elkridge
52 NEAREST TOWN 71

DRILLER INFORMATION

C. John Hess MWD 553
Driller's Name 76 License No. 81
Allied Environmental Service
Firm Name
P.O. Box 129 Annapolis Junction MD
Address
C. John Hess 01/16/14
Signature Date

B 4 **SOURCES OF DRILLING WATER**

1. Public
2. 61502 Hunt Club Rd
11 STREET ADDRESS 30
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)
NORTH
WEST 32 EAST
SOUTH
34 37
DISTANCE FROM ROAD
ENTER FT OR MI 38 39
TAX MAP 0038 BLK: 0007 PARCEL 0300

B 2 **WELL INFORMATION**

1 2 APPROX. PUMPING RATE (GAL. PER MIN.) 8 12
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 14 20

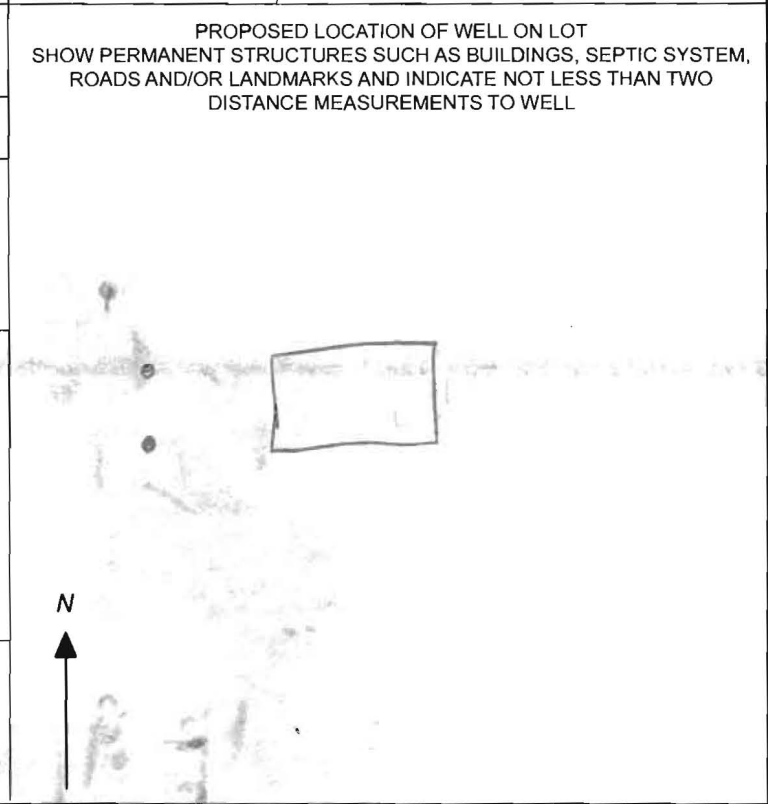
USE FOR WATER (CIRCLE APPROPRIATE BOX)

D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
 F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
22 I INDUSTRIAL, COMMERCIAL, DEWATERING
 P PUBLIC WATER SUPPLY WELL
 T TEST, OBSERVATION, MONITORING
 O OPEN LOOP GEOTHERMAL
 C CLOSED LOOP GEOTHERMAL 2 loops

NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL

Howard 13
COUNTY NAME COUNTY NO.
STATE SIGNATURE INSERT S → 41
DATE ISSUED 2/4/14 Andrew Saint 2/4/15
43 MM DD YY 48 CO SIGNATURE EXP. DATE

APPROXIMATE DEPTH OF WELL 480 240 FEET
APPROXIMATE DIAMETER OF WELL 6 NEAREST INCH



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 DEEPEMED WELLS (CIRCLE APPROPRIATE BOX)

N THIS WELL WILL NOT REPLACE AN EXISTING WELL
 Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
39 S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
 D THIS WELL WILL DEEPEN AN EXISTING WELL
PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPEMED (IF AVAILABLE) 41 52

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

APPROP. PERMIT NUMBER - - - - - G - - - - -
PERMIT No. HO-95-2644
70 71 72 73 74 75 76 77 78 79

SPECIAL CONDITIONS
NOTE APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

GRADE

EACH BORE HOLE (TYP.)

MINIMUM
HORIZONTAL BURY
DEPTH 4 FT

FOR CONT.
SEE PLANS

HORIZONTAL
PIPING

GROUT ENTIRE ANNULAR
SPACE AND VERTICAL
U-TUBE WITH (BENTANITE)
GROUT.

BORE DEPTH



DEPTH MARKINGS IN FEET TO
INDICATE DEPTH OF INSERTION

TAPE

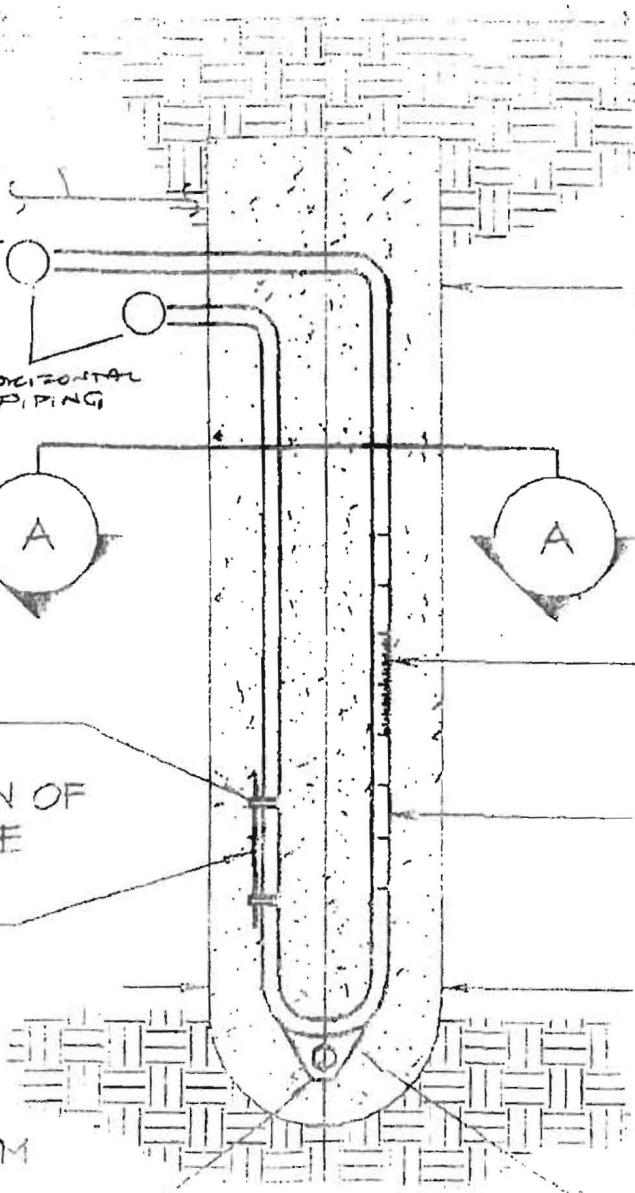
5 TO 10 FOOT SECTION OF
REBAR TO GUIDE TUBE
INTO BORE DURING
INSTALLATION

TYPICAL VERTICAL U TUBE
1.5 INCHES

TYPICAL BORE DIAMETER
6.0 INCHES

ANCHOR FITTING TO
PREVENT U-TUBE FROM
SURFACING AFTER
INSTALLATION

TYPICAL SOCKET U-BEND



HOWARD COUNTY GROUTING PROCEDURE

Boreholes will be grouted from the bottom to the top via a tremie pipe and positive displacement pump. Bentonite grout, known as Quik-Grout will be used according to the manufacturer's specifications to achieve a consistency of at least 20% solids (24 gallons potable water/50 lb. sack of grout) and a permeability no more than $2.5 \text{ E}(-08) \text{ cm/sec}$. Grouting will be completed immediately after installing the geothermal loop and no later than twenty-four (24) hours after installing the geothermal loop. Open boreholes/annular space will be protected as necessary to prevent the entry of surface water or pollutants.

