

C1 3158

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND WELL COMPLETION REPORT FILL IN THIS FORM COMPLETELY PLEASE TYPE

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

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

COUNTY NUMBER

ST/CO USE ONLY

DATE WELL COMPLETED

Depth of Well

PERMIT NO. FROM "PERMIT TO DRILL WELL"

DATE Received MM DD YY

07 25 11

2X

22 320 26 (TO NEAREST FOOT)

9/26/11 0.K. [Signature] 28 29 30 31 32 33 34 35 36 37

OWNER STREET OR RFD SUBDIVISION SECTION LOT

WELL LOG Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

Table with columns: DESCRIPTION (Use additional sheets if needed), FEET (FROM, TO), check if water bearing. Rows: Soft Brown (0-26), Hard Gray (26-320)

GROUTING RECORD WELL HAS BEEN GROUTED (Circle Appropriate Box)

TYPE OF GROUTING MATERIAL (Circle one) CEMENT [CM] BENTONITE CLAY [BC] NO. OF BAGS 19 NO. OF POUNDS 437

CASING RECORD casing types insert appropriate code below MAIN CASING TYPE

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

SCREEN RECORD screen type or open hole insert appropriate code below

DEPTH (nearest ft.) A 8 9 11 15 17 21 C 23 24 26 30 32 36 S 38 39 41 45 47 51 R E N

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED YES [Y] NO [N]

CIRCLE APPROPRIATE LETTER A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT...

DRILLERS LIC. NO. M D 304 David Kelly

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION) LIC. NO. 1 AW D 897 Josh Holmes

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

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

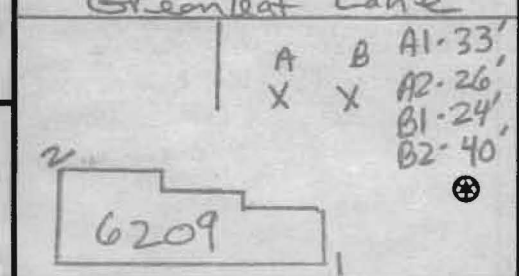
C 3

PUMPING TEST HOURS PUMPED (nearest hour) 8 9 PUMPING RATE (gal. per min.) 11 15 METHOD USED TO MEASURE PUMPING RATE WATER LEVEL (distance from land surface) BEFORE PUMPING 17 20 WHEN PUMPING 22 25 TYPE OF PUMP USED (for test) A air P piston T turbine C centrifugal R rotary O other J jet S submersible

PUMP INSTALLED

DRILLER INSTALLED PUMP YES 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) 31 35 PUMP HORSE POWER 37 41 PUMP COLUMN LENGTH (nearest ft.) 43 47 CASING HEIGHT (circle appropriate box and enter casing height) LAND SURFACE (nearest foot)

LOCATION OF WELL ON LOT SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



B 1 4226

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND APPLICATION FOR PERMIT TO DRILL WELL please type

STATE PERMIT NUMBER

HO-95-2062 fill in this form completely

Date Received (APA)

OWNER INFORMATION

8 MM DD YY 13 PUPPA Robert & Elaine 15 Last Name Owner First Name 34 36 6209 Greenleaf Lane Street or RFD 55 Elkridge, MD 21075 57 Town 70 State 72 Zip 76

B 3

LOCATION OF WELL

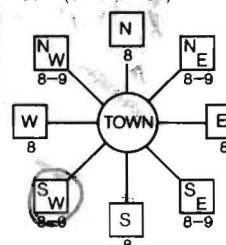
8 COUNTY Howard 21 # W534487 23 SUBDIVISION 42 SECTION 44 46 LOT 48 50 Elkridge 52 NEAREST TOWN 71 MILES FROM TOWN (enter 0 if in town) 3 MI 73 76 77 78

DRILLER INFORMATION

Driller's Name Daniel Patton M S D 163 76 License No. 81 Firm Name Patton Well Drilling Address 6810 Cornell Road Middle River, MD 21220 Signature Daniel Patton Date 2/16/11

B 4

1 2 DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



11 Greenleaf Lane 30 NEAR WHAT ROAD ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX) NORTH [X] WEST SOUTH EAST 34 37 DISTANCE FROM ROAD ENTER FT OR MI 38 39 TAX MAP: BLK: PARCEL

B 2

WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.) 8 N/A 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 I INDUSTRIAL, COMMERCIAL, DEWATERING P PUBLIC WATER SUPPLY WELL T TEST, OBSERVATION, MONITORING G GEO-THERMAL 2-320' wells

NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL

Howard COUNTY NAME 13 COUNTY NO. STATE SIGNATURE INSERT S 41 DATE ISSUED 3/17/11 DATE EXP. DATE 3/17/12 43 MM DD YY 48 CO SIGNATURE EAST GRID 0968 000 NORTH GRID 491 000 55 57 63

APPROXIMATE DEPTH OF WELL 320 FEET 24 28

APPROXIMATE DIAMETER OF WELL 6 INCH NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN AIR-ROTary AIR-PERCussion ROTARY (Hydraulic Rotary) CABLE REVerse-ROTary DRive-POINT other

REPLACEMENT OR DEEPEMED WELLS (CIRCLE APPROPRIATE BOX)

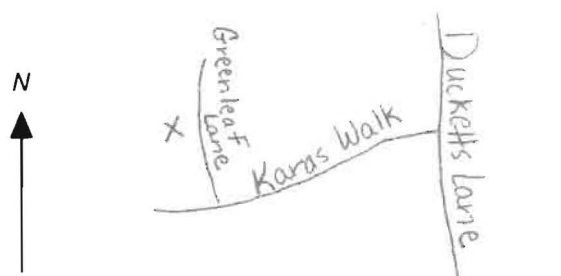
N THIS WELL WILL NOT REPLACE AN EXISTING WELL Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS D THIS WELL WILL DEEPEMED AN EXISTING WELL PERMIT NUMBER OF WELL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

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER 1. 2. 3.

WRITE THE BOX NUMBER FROM THE MAP HERE E 87068 N 490

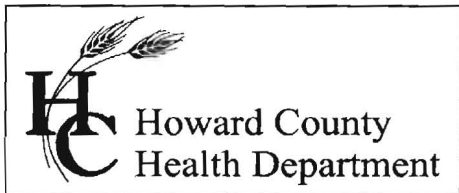
DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



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

APPROP. PERMIT NUMBER G PERMIT No. HO-95-2062 70 71 72 73 74 75 76 77 78 79

SPECIAL CONDITIONS SEE MEMO... NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED



Bureau of Environmental Health
7178 Gateway Drive Columbia, MD 21046
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
website: www.hchealth.org

Peter L. Beilenson, M.D., M.P.H., Health Officer

March 16th, 2011

IMPORTANT

MEMORANDUM - Geothermal Wells

TO: Patton Well Drilling
Attn: Daniel Patton
FILE

FROM: Kevin M Wolf, R.E.H.S./R.S. (KMW)
Environmental Sanitarian
Well and Septic Program

Re: **Geothermal Wells**
6209 Greenleaf Lane, 2 geo-bores

The following comments apply the above aforementioned geothermal well application:

When submitting completion reports for the geo bores, please indicate the type of grout used and the mixture ratios on each report. If you can not fit this information on the completion report(s), please use a separate sheet of paper.

Remember, bentonite alone should be mixed at a ratio of 2 lbs or greater per gallon of water. If *thermal-enhanced* grout is to be used, remember to follow manufactures specifications when mixing. Health Department Sanitarians can inspect this type of grout by requesting the well driller to collect a sample of the grout in a bucket. If it the sand settles out within 1 hour, the grout mix is improper. Thermal enhanced bentonite grouts are a mixture of bentonite and quartz sand. The sand stays suspended in the clay for the life of the well. Please refer to the NGWA published article "Guidelines for the Construction of Vertical Boreholes for Closed Loop Heat Pump Systems" (1997)

Geothermal Wells may be permitted by cluster. The size of the cluster shall be determined by the Delegated Approving Authority.

Any questions please feel free to call me. 410-313-1771

Robert & Elaine Puppa
6209 Greenleaf Lane
Elkridge, MD 21075
2-320' geo wells

