

C1 41959

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND WELL COMPLETION REPORT

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

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

COUNTY NUMBER

ST/CO USE ONLY DATE Received

DATE WELL COMPLETED

PERMIT NO. FROM "PERMIT TO DRILL WELL"

OWNER Stevenson Samuel & Julie WELL SITE ADDRESS 9202 Waycross Rd. TOWN Ellicott City SUBDIVISION Macalpine SECTION LOT 20

WELL LOG Not required for driven wells

Table with columns: DESCRIPTION (Use additional sheets if needed), FEET (FROM, TO), check if water bearing. Includes handwritten entries: top soil, Silty sands, brown, moist, weathered Rock, Bed Rock, Gneiss.

GROUTING RECORD

WELL HAS BEEN GROUTED (Y/N), TYPE OF GROUTING MATERIAL (CEMENT/BENTONITE CLAY), NO. OF BAGS, NO. OF POUNDS, GALLONS OF WATER, DEPTH OF GROUT SEAL.

CASING RECORD

MAIN CASING TYPE, Nominal diameter top (main) casing, Total depth of main casing.

OTHER CASING (if used) diameter, depth (feet).

SCREEN RECORD screen type or open hole, insert appropriate code below.

PUMPING TEST

HOURS PUMPED, PUMPING RATE, METHOD USED TO MEASURE PUMPING RATE, WATER LEVEL (distance from land surface) BEFORE PUMPING, WHEN PUMPING, TYPE OF PUMP USED.

NUMBER OF UNSUCCESSFUL WELLS: 0, WELL HYDROFRACTURED (Y/N)

DEPTH (nearest ft.) table with rows A through N.

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

SLOT SIZE 1, 2, 3, DIAMETER OF SCREEN (NEAREST INCH).

PUMP INSTALLED

DRILLER INSTALLED PUMP (YES/NO), IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS, TYPE OF PUMP INSTALLED, CAPACITY: GALLONS PER MINUTE, PUMP HORSE POWER, PUMP COLUMN LENGTH, CASING HEIGHT, LAND SURFACE.

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. MWD 572, DRILLERS SIGNATURE, LIC. NO. D

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

LATITUDE 39.266115, LONGITUDE 76.830589 (DEFAULT COORD. WGS 84)

Pursuant to §10-624 of the State Govt. Article of the Maryland Code personal info. requested on this form is used in processing this form pursuant to COMAR 26.04.04. Failure to provide the info. may result in this form not being processed.

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

TELESCOPE CASING, LOG INDICATOR, OTHER DATA

1 2 3 4 5 6
1 41960

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.

COUNTY
NUMBER

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

ST/CO USE ONLY
DATE Received
MM DD YY
06 20 16

DATE WELL COMPLETED
MM DD YY
05 12 2016

Depth of Well

22 400' 26
(TO NEAREST FOOT)

PERMIT NO.
FROM "PERMIT TO DRILL WELL"
6/24/16 SC HD - 15 - 0236

OWNER: Stevenson Samuel & Julie
WELL SITE ADDRESS: 9202 Waycross Rd TOWN: Ellicott City
SUBDIVISION: Maplepine SECTION: _____ LOT: 20

WELL LOG
Not required for driven wells

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

| DESCRIPTION (Use additional sheets if needed) | FEET | | check if water bearing |
|---|------|-----|------------------------|
| | FROM | TO | |
| top soil | 0 | 1 | |
| Silty sand brown, moist | 1 | 70 | ✓ |
| weathered rock | 70 | 80 | ✓ |
| Bed Rock Gneiss | 80 | 400 | ✓ |

Installed 1.25 x 400' 4-Bend closed loop HDPE

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) Y N
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM BENTONITE CLAY BC
NO. OF BAGS ⁴⁵ ₄₆ 21 NO. OF POUNDS ⁴⁵ ₄₆ 1,050
GALLONS OF WATER 399
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 400' ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
 ST STEEL CO CONCRETE
 PL PLASTIC OT OTHER
 MAIN CASING TYPE Nominal diameter top (main) casing (nearest inch) Total depth of main casing (nearest foot)
 60 61 63 64 66 70

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

SCREEN RECORD
screen type or open hole insert appropriate code below
 ST STEEL BR BRASS HO OPEN HOLE
 PL PLASTIC OT OTHER

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED Y N

CIRCLE APPROPRIATE LETTER
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
E ELECTRIC LOG OBTAINED
P TEST WELL CONVERTED TO PRODUCTION WELL

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, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MWD 573
DRILLERS SIGNATURE: Samuel M. Connelly
(MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: D

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

C 2 DEPTH (nearest ft.)

| | | | | | | |
|---|----|----|----|----|----|----|
| 1 | 8 | 9 | 11 | 15 | 17 | 21 |
| 2 | 23 | 24 | 26 | 30 | 32 | 36 |
| 3 | 38 | 39 | 41 | 45 | 47 | 51 |

SLOT SIZE 1 _____ 2 _____ 3 _____
DIAMETER OF SCREEN (NEAREST INCH)
56 60
from _____ to _____

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
 70 72 74 75 76
 TELESCOPE CASING LOG INDICATOR OTHER DATA

C 3 PUMPING TEST

HOURS PUMPED (nearest hour) N/A
 PUMPING RATE (gal. per min.) N/A
 METHOD USED TO MEASURE PUMPING RATE N/A
 WATER LEVEL (distance from land surface)
 BEFORE PUMPING 70' ft.
 WHEN PUMPING N/A ft.
 TYPE OF PUMP USED (for test)
 A air P piston T turbine
 C centrifugal R rotary O other (describe below)
 J jet S submersible

PUMP INSTALLED
 DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) 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. 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)
 + above } LAND SURFACE
 - below } -3 (nearest foot)

LATITUDE 39.266124 #2
LONGITUDE 76.830516
(DEFAULT COORD. WGS 84)

Pursuant to §10-624 of the State Govt. Article of the Maryland Code personal info. requested on this form is used in processing this form pursuant to COMAR 26.04.04. Failure to provide the info. may result in this form not being processed. You have the right to inspect, amend, or correct this form. The Maryland Department of the Environment is subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and is subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by federal or state law.

| | | | |
|------------|---|---|---|
| B 1 | SEQUENCE NO. (MDE USE ONLY) 46358 | STATE OF MARYLAND APPLICATION FOR PERMIT TO DRILL WELL please type 558060 | STATE PERMIT NUMBER HO - 15 - 0236 <small>fill in this form completely</small> |
|------------|---|---|---|

OWNER INFORMATION

Date Received (APA) **03/28/16**

8 MM DD YY 13

15 Last Name **Stevenson** Owner First Name **Samuel + Julie** 34

36 Street or RFD **9202 Waycross Rd.** 55

57 Town **Ellicott City MD** 70 State 72 Zip **21042** 76

B 3 LOCATION OF WELL

8 COUNTY **Howard** 21

23 SUBDIVISION **Macalpine** 42

SECTION **44 46** LOT **20** 48 50

52 NEAREST TOWN **Ellicott City** 71

DRILLER INFORMATION

Driller's Name **Samuel A. Connelly** M W D **572** 76 License No. 81

Firm Name **Connelly + Associates, Inc.**

Address **200 Interstate Ct, Frederick, MD 21704**

Signature **Samuel A. Connelly** Date **3/29/16**

B 4 SOURCES OF DRILLING WATER

1. **private**

11 STREET ADDRESS **9202 Waycross Rd** 30

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

NORTH
 WEST
 EAST
 SOUTH

34 **50** 37 DISTANCE FROM ROAD ENTER FT OR MI **FT** 38 39

TAX MAP: **24** BLK: **11** PARCEL **201**

B 2 WELL INFORMATION

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

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) **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

OPEN LOOP GEOTHERMAL

CLOSED LOOP GEOTHERMAL

NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL

COUNTY NAME **Howard** COUNTY NO. **(13)**

STATE SIGNATURE _____ INSERT S → 41

DATE ISSUED **4/15/16** CO SIGNATURE **S.A. Connelly** EXP. DATE **4/15/17**

43 MM DD YY 48

APPROXIMATE DEPTH OF WELL **400** FEET 24 28

APPROXIMATE DIAMETER OF WELL **6** INCH NEAREST INCH

PROPOSED LOCATION OF WELL ON LOT SHOW PERMANENT STRUCTURES SUCH AS BUILDINGS, SEPTIC SYSTEM, ROADS AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCE MEASUREMENTS TO WELL

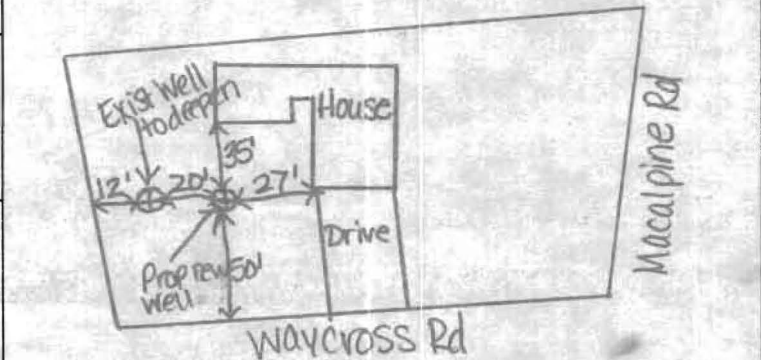
METHOD OF DRILLING (circle one)

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)

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 DEEPEM AN EXISTING WELL

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

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

APPROX. PERMIT NUMBER _____ **G** _____

PERMIT No. **HO - 15 - 0236**

70 71 72 73 74 75 76 77 78 79

SPECIAL CONDITIONS

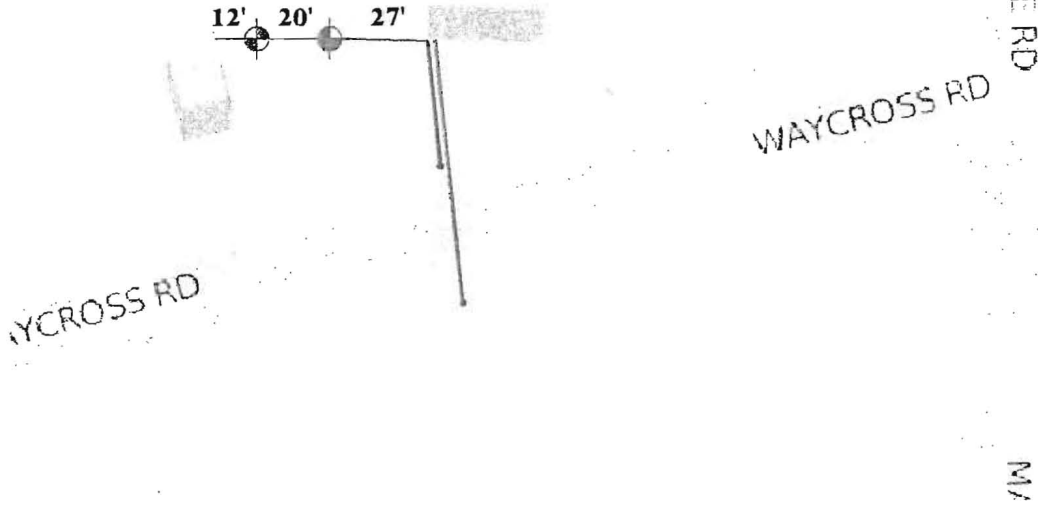
NOTE APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED - Pit well concrete floor must be broken - if no grout around @ COUNTY casing, jet and grout annular space

DO NOT REMOVE THIS TAG
 DEPARTMENT OF THE ENVIRONMENT
 WELL PERMIT NUMBER
 HO-15-0236
 INFORMATION-GIVE NUMBER AND WRITE
 1800 WASHINGTON BLVD
 BALTIMORE MARYLAND, 21230







9202

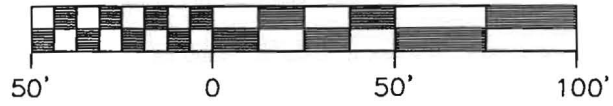
Well sites approved
 4/15/16 SC



L E G E N D

-  PROPOSED GEOTHERMAL WELL LOCATION
-  PROPOSED GEOTHERMAL WELL LOCATION (EXISTING WATER WELL)
-  APPROX. SHC
-  APPROX. WHC

GRAPHICAL SCALE



P:\Geothermal\2016 Projects\Waterrule\Stevenson Residence\Documents\Stevenson Residence - Proposed Geothermal Well Location Plan.dwg



260 Interstate Court (301) 696-8820
 Frederick, Maryland 21704 (301) 696-0327 fax

STEVENSON RESIDENCE
 9202 WAYCROSS ROAD, ELLICOTT CITY, MARYLAND

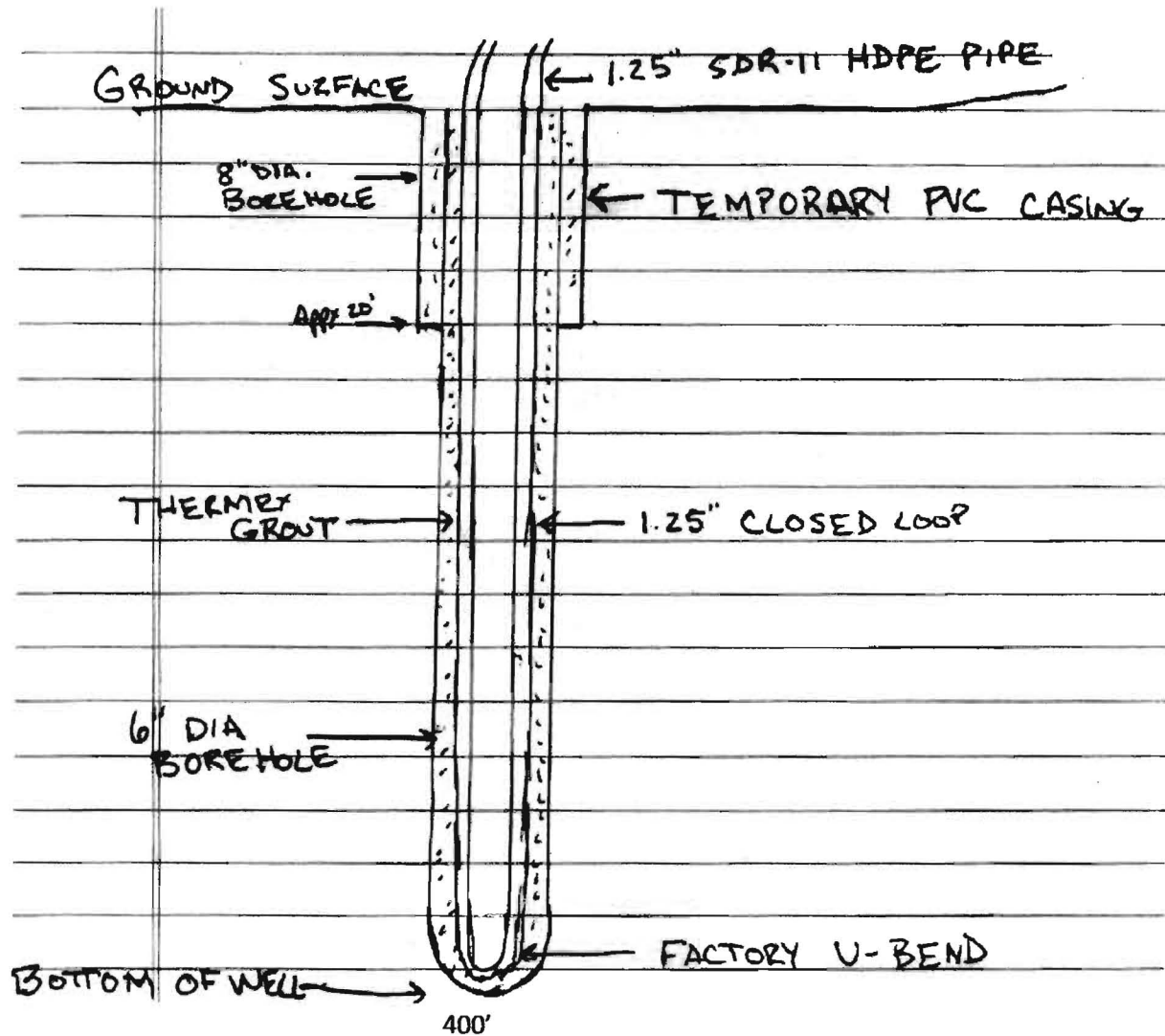
PROPOSED GEOTHERMAL WELL LOCATION PLAN

Scale: AS SHOWN

Fig. 1

| | | | |
|--------------------|-------------------|---------------------|-----------------------|
| Date: MAR. 2016 | Drawn By: J.A. | Checked By: E.S. | Project No.: 00000 |
|--------------------|-------------------|---------------------|-----------------------|

Geothermal Closed Loop – 9202 Waycross Road, Ellicott City, MD



Grout information for this property is as follows:

Thermex grout mixture of 50 lb. grout to 19 gallons water, placed in the well using the tremie method, from bottom to top.


Collins, Sarah

From: Collins, Sarah
Sent: Friday, April 15, 2016 10:01 AM
To: 'Josh April'
Subject: RE: 9202 Waycross Rd.

Hi Josh,

If you see evidence of grout outside the casing, that is sufficient. If there is no grout present, we'd like you to jet out and grout the depth that you are able. Please contact the Health Dept so we can be on site during breaking up the concrete pit, jetting, and grouting.

I have the permit ready- should I leave it at the front desk or put it in the mail?

Thanks,
Sarah

From: Josh April [mailto:josh@connellygeothermal.com]
Sent: Friday, April 15, 2016 7:10 AM
To: Collins, Sarah
Cc: 'Sam Connelly'
Subject: RE: 9202 Waycross Rd.

Hi Sarah,

If we were to demolish/excavate the concrete vault and find evidence of grout around the steel casing, will this suffice? Otherwise, we do not have the equipment or tools to jet approximately 80 feet of annular space for grout. If there is evidence of grout, I assume we could move forward with altering the well in its current state at that point. If not, we will abandon the existing well and drill two new geothermal wells. We will make sure to coordinate with your team so a representative from your department is on-site for this activity.

Thanks,

Josh

From: Collins, Sarah [mailto:SCollins@howardcountymd.gov]
Sent: Thursday, April 14, 2016 1:39 PM
To: Josh April <josh@connellygeothermal.com>
Subject: Re: 9202 Waycross Rd.

Hi Josh,

I can release the permit on the condition that Connelly breaks up the floor of the pit, jets out the annular space, and grouts the annular space in addition to the standard grout of the geothermal well. Someone from the Health Dept should be on site during the jetting. It doesn't matter when the jetting and grouting occurs.

Let me know if this works.

Collins, Sarah

From: Collins, Sarah
Sent: Friday, April 15, 2016 10:01 AM
To: 'Josh April'
Subject: RE: 9202 Waycross Rd.

Hi Josh,

If you see evidence of grout outside the casing, that is sufficient. If there is no grout present, we'd like you to jet out and grout the depth that you are able. Please contact the Health Dept so we can be on site during breaking up the concrete pit, jetting, and grouting.

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Thanks,
Sarah

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Sent: Friday, April 15, 2016 7:10 AM
To: Collins, Sarah
Cc: 'Sam Connelly'
Subject: RE: 9202 Waycross Rd.

Hi Sarah,

If we were to demolish/excavate the concrete vault and find evidence of grout around the steel casing, will this suffice? Otherwise, we do not have the equipment or tools to jet approximately 80 feet of annular space for grout. If there is evidence of grout, I assume we could move forward with altering the well in its current state at that point. If not, we will abandon the existing well and drill two new geothermal wells. We will make sure to coordinate with your team so a representative from your department is on-site for this activity.

Thanks,

Josh

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Let me know if this works.

Thanks,
Sarah

Sarah Collins, L.E.H.S.
Environmental Health Specialist
Howard County Health Department
Bureau of Environmental Health
~~SCollins@howardcountymd.gov~~
410-313-6287

CONFIDENTIALITY NOTICE

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On Apr 13, 2016, at 11:16 AM, Josh April <~~josh@connellygeothermal.com~~> wrote:

Hi Sarah,

Unfortunately, we don't have the equipment/tools to perforate the casing. Moving forward, is this the final straw? If so, will the homeowner be required to abandon the water well?

Thanks,

Josh

From: Collins, Sarah [mailto:~~SCollins@howardcountymd.gov~~]
Sent: Wednesday, April 13, 2016 9:20 AM
To: Josh April <~~josh@connellygeothermal.com~~>
Subject: RE: 9202 Waycross Rd.

Hi Josh,

I spoke with John Boris and the consensus is that perforating the casing would ensure the annular space is grouted. Does Connely have the ability to perforate steel casing in the ground? If so, I'll put this as a condition on the well permit.

Let me know what you think.

Thanks,
Sarah

From: Josh April [mailto:~~josh@connellygeothermal.com~~]
Sent: Friday, April 08, 2016 3:55 PM
To: Collins, Sarah
Subject: RE: 9202 Waycross Rd.

You too, thanks.