

Well Management Section  
625 North Robert Street  
P.O. Box 64975  
St. Paul, Minnesota 55164-0975  
651-201-4600 or 800-383-9808  
health.wells@state.mn.us  
www.health.state.mn.us/wells



Permit No.: VL554  
Date Received: 3/11/2022  
Date Approved: 4/27/2022

## Bored Geothermal Heat Exchanger Permit

Permit issued to: **Willie Borstad Well Drilling**, License Number **4161**

Bored Geothermal Heat Exchanger (BGHE) system located at:

920 Anne St. NW, Bemidji  
NW¼ SE¼  
Township 147, Range 33W, Section 32  
Bemidji Township  
Beltrami County, Minnesota

Property Owner: **Peterson Sheet Metal, Inc.**

Minnesota Department of Health (MDH) is granting this permit to install a Bored Geothermal Heat Exchanger (BGHE) system at the above location. MDH approval is based on the permit application information as well as any accompanying letters, maps, plans, and other supporting data that was submitted. These documents are now a part of and referenced in this permit.

The BGHE system must be constructed in accordance with the requirements of Minnesota Statutes, chapter 103I, Minnesota Rules, chapter 4725, and the following requirements.

### General Requirements

- The contractor must notify **Chris Prokosch (218-308-2114, [chris.prokosch@state.mn.us](mailto:chris.prokosch@state.mn.us)) or Mark Malmanger (218-308-2118, [mark.malmanger@state.mn.us](mailto:mark.malmanger@state.mn.us))** at least 24 hours before starting construction by telephone, fax, email, or in person between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, excluding holidays.
- No change shall be made of any items of work contained in the approved permit without MDH written permission.
- This permit does not release the permittee/contractor from any liability or obligation imposed by state law or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.
- No liability shall be imposed upon or incurred by the state of Minnesota or any of its officers, agents, or employees, officially or personally, on account of the granting of this permit or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors relating to or discussed in this permit. This permit shall not be construed as stopping or limiting any legal claims or right of action of any person other than the state against the permittee, its agents, employees, or contractors for

violation of or failure to comply with the provisions of the permit or applicable provisions of the law.

## Specific Permit Requirements

- Heat transfer fluid: Propylene Glycol
- Piping: High Density Polyethylene
- Grouting material: Thermally Enhanced Bentonite  
Note: If bedrock or flowing conditions are encountered, neat-cement or cement-sand grout must be used as required by Minnesota Rules, chapter 4725.
- Marking method: Tracer Wire

## Attention Property Owner

- MDH must be provided access to the property during regular business hours to inspect the portions of the BGHE regulated by MDH, as required in Minnesota Statutes, section 103I. 641, subdivision 3, paragraph (b).
- Only heat transfer fluids approved in Minnesota Rules, part 4725.7050, subpart 1, item D must be used in a BGHE system. No other fluids or additives may be used for heat transfer fluids, except potable water. For questions on approved heat transfer fluids, contact MDH Well Management Section at 651-201-4600 or [health.wells@state.mn.us](mailto:health.wells@state.mn.us).
- In the event the BGHE system loses pressure or leaks, you must notify MDH and the Minnesota Duty Officer within 24 hours after becoming aware of the pressure loss or leakage. This is required by Minnesota Rules, part 4725.7050, subpart 10.
  - Contact MDH Well Management Section at 651-201-4600 or [health.wells@state.mn.us](mailto:health.wells@state.mn.us).
  - Contact Minnesota Duty Officer at 651-649-5451, 1-800-422-0798, or fax 651-296-2300.
- You must hire a licensed well contractor or licensed BGHE contractor to seal the BGHE system if it is removed from service or meets any of the sealing provisions of Minnesota Statutes, section 103I.301.
- Report any transfer of rights, or sale or lease of property to MDH. Contact MDH Well Management Section at 651-201-4600 or [health.wells@state.mn.us](mailto:health.wells@state.mn.us), or by mail at 625 North Robert Street, P.O. Box 64975, St. Paul, Minnesota 55164-0975.
- Provide this permit and documents related to the BGHE to the new owner or lessee of the property following a property transfer or sale.

To obtain this information in a different format call 651-201-4600.  
Publications\Form BGHE Permit 03/18/2021R

Well Management Section  
625 North Robert Street  
P.O. Box 64502  
St. Paul, Minnesota 55164-0502  
651-201-4600 or 800-383-9808  
health.wells@state.mn.us  
www.health.state.mn.us/wells



**MDH Use Only**

Date Received 4.11.22  
Amount Received 815.00 00.67010  
Deposit Number 205  
Application Number 5445  
\$275 BGHE < 10 Tons (272) \_\_\_\_\_  
\$515 BGHE 10 to 50 Tons (273) \_\_\_\_\_  
\$740 BGHE > 50 Tons (274) X  
Date Approved KED 4/27/2022

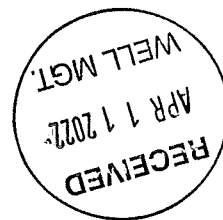
## Bored Geothermal Heat Exchanger (BGHE) Construction Permit Application

- Please print or type the requested information.
- Incomplete applications cannot be processed and will be returned to the applicant.
- Submit the completed application, the appropriate nonrefundable application fee, site plan, and required signatures.
- Make check or money order payable to the Minnesota Department of Health or pay by credit card using the attached Credit Card Payment Information form.
- **Mail completed application and fee to address listed above or fax to 877-434-9853.**

See variance TN6264

### Indicate Heating/Cooling Capacity

☐ < 10 Tons – \$275      ☐ 10 to 50 Tons – \$515      ☒ > 50 Tons – \$740



### Licensed Well or BGHE Contractor

Willie Borstad 4138  
Certified Representative Name Certified Representative No.  
Willie Borstad Well Drilling 4161  
Company Name Company License No.  
williecc2014@gmail.com jaimeq@psmhvac.com 218-556-7179  
Email or Mailing Address Where Approved Permit Should be Delivered Telephone No.

### BGHE Location

Beltrami City of Bemidji 800544202  
County Township Name Property Identification No.  
147 033 32  
Township No. Range No. Section No. Qtr  
920 Anne St. NW Bemidji MN 56601  
Street Address City State ZIP Code

### Property Owner

(If BGHE Owner is different, provide BGHE Owner name, address, and email address on an attached sheet.)

Peterson Sheet Metal, Inc. Jaime Quello  
Property Owner Name Contact Person  
3728 Bemidji Ave NW Suite 300 Bemidji MN 56601  
Street Address City State ZIP Code  
jaimeq@psmhvac.com 218-751-4502  
Property Owner Email Address Telephone Number

**BGHE Construction Detail**☐ Vertical Bore Hole(s)      ☒ Directionally Drilled Bore Hole(s)Number of Bore Holes 48      Number of Pipe Loops per Hole 1Bore Hole Depth(s) 15, 22.5, 30      Anticipated Depth to Bedrock N/ABore Hole Length(s) (For directionally drilled bore hole[s].) 500Geologic materials expected to be encountered by borings. SandFlowing artesian conditions expected? ☐ Yes    ☒ NoPiping: ☐ High Density Polyethylene    ☐ PEXa    ASTM Standard HDPE STR11    Diameter(s) 1" 1/4Grout: ☐ Neat Cement    ☐ Cement Sand    ☒ Thermally Enhanced Bentonite    ☐ BentoniteBentonite or Thermally Enhanced Bentonite Product Name TBDEnhancement Material (for Thermally Enhanced Bentonite): ☐ Sand    ☒ GraphiteMarking Method: ☒ Tracer Wire    ☐ Underground Marking Tape    ☐ Ferromagnetic Metal MarkersHeat Transfer Fluid: ☐ Potable Water    ☒ Propylene Glycol    ☐ Ethanol-Water Solution (<=20% ethanol)  
☐ Propylene Glycol with Additives (Must be NSF HT1 Certified.)Product Name (if not potable water) TBDFor Ethanol Products – **Attach a complete list of product ingredients and concentrations.**System Operating Pressure (psi) 15**BGHE Location Site Plan**

The location(s) of the BGHE bore hole(s) must be provided on an attached site plan diagram. The diagram must show property lines and structures. Include locations of water-supply wells, power lines, gas lines, and LP tanks with distances to the BGHE.

**Certified Representative Signature**

As a condition of this permit, I agree to construct this BGHE under the provisions of Minnesota Statutes, chapter 103I and Minnesota Rules, chapter 4725.

Willie Borstad

Certified Representative Name (print)

[Signature]  
Certified Representative Signature4-6-22  
Date**Property Owner Signature**

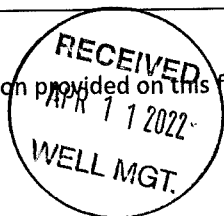
As a condition of this permit, I agree to operate and maintain this BGHE under the provisions of Minnesota Statutes, chapter 103I and Minnesota Rules, chapter 4725 and to allow inspection by the commissioner of health or his/her agent during regular work hours.

Jaime Quello

Property Owner Name (print)

[Signature]  
Property Owner Signature4/6/22  
Date

Information provided on this form is classified as public information under Minnesota Statutes, chapter 13.  
To obtain this information in a different format call 651-201-4600.  
Publications Form BGHE Construction Permit Application 03/18/2021R



April 27, 2022

Refer to: TN 6264

Mr. Jamie Quello  
Peterson Sheet Metal, Inc.  
3728 Bemidji Avenue Northwest, Suite 300  
Bemidji, Minnesota 56601

Mr. Willie Borstad  
Willie Borstad Well Drilling  
License Number: 4161  
12566 Bemidji Road Northeast  
Bemidji, Minnesota 56601

Dear Mr. Quello and Mr. Borstad:

Subject: Request for a Variance from Minnesota Rules, Chapter 4725, to Use High-Density Polyethylene Piping Lighter than SDR 11 in the Construction of a Bored Geothermal Heat Exchanger System (Permit Number VL 5445) Located at 920 Anne Street Northwest, Bemidji, Minnesota Parcel Number 805544202

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This letter is in response to your request to the Minnesota Department of Health (MDH) for a variance from Minnesota Rules, chapter 4725, to use SDR 13.5 high-density polyethylene (HDPE) piping in the construction of main and header components of the subject bored geothermal heat exchanger (BGHE) system.

Minnesota Rules, part 4725.7050, subpart 1, item A (1[a]) require that HDPE piping used in the construction of a BGHE must have a wall thickness of SDR 11 or thicker. Minnesota Rules, part 4725.7050, subpart 1, item A (3) require that HDPE piping used in the construction of a BGHE must have a minimum pressure rating of 160 pounds per square inch (psi) at 73 degrees Fahrenheit.

The permit application VL 5445 proposes using 2.00 and 3.00-inch diameter HDPE, SDR 13.5 piping for six pairs of buried supply and return headers and 6.00-inch diameter HDPE, SDR 13.5 piping for the two main supply and return headers located inside the mechanical room. Documents submitted with or amended to the variance application indicate that the proposed 2.00-inch, 3.00-inch, and 6.00-inch diameter HDPE, SDR 13.5 piping has a pressure rating of 160 psi. This BGHE system is designed to operate at a pressure of 15 psi.

**In accordance with Minnesota Rules, chapter 4725, your request is granted to use the proposed SDR 13.5 HDPE piping in the construction of main and header components of the subject BGHE system.** The variance is granted because the proposed piping meets the minimum pressure rating despite having a wall thickness less than SDR 11. The use of HDPE 4710 high density resin in the manufacture of this product allows the piping to meet the pressure rating standard while using less material, thus reducing the product cost and improving working characteristics, such as flexibility. Requiring SDR 11 piping for this application would unnecessarily increase the overall project cost.

The variance is granted with the following conditions:

1. The variance approval is based on information provided in the variance and BGHE permit (VL 5445) applications submitted to MDH by Willie Borstad Well Drilling. No changes to the system design or construction materials may be made without written MDH approval.
2. You must notify Mr. Chris Prokosch, MDH Bemidji District Office Hydrologist, at 218-308-2114, or Mr. Mark Malmanger, MDH Northern Regional Supervisor, at 218-308-2118 at least 24 hours prior to beginning construction of the proposed BGHE system to schedule an inspection.
3. All other requirements of Minnesota Rules, chapter 4725, are in effect.

Alternative measures or conditions attached to a variance have the force of law and effect of applicable rule. If a party violates the alternative measures or conditions attached to the variance, the party is subject to enforcement actions and penalties provided in the applicable law or rule. Failure by the applicant to comply with the conditions prescribed in the variance may result in the immediate expiration of the variance.

If you have any questions or require further information, please contact Ms. Kara Dennis at 651-201-4589.

Sincerely,

Justine Greene, Interim Manager  
Well Management Section  
Environmental Health Division  
P.O. Box 64975  
St. Paul, Minnesota 55164-0975

JG:RCN:KED:kad

cc: Chris Prokosch, MDH  
Mark Malmanger, MDH



# Bored Geothermal Heat Exchangers

## SUMMARY OF RULES EFFECTIVE MARCH 22, 2021

### Rulemaking Process and Timeline

In 2013, the Minnesota Legislature amended Minnesota Statutes, chapter 103I ([www.revisor.mn.gov/statutes/cite/103I](http://www.revisor.mn.gov/statutes/cite/103I)), to include regulating all bored geothermal heat exchangers (BGHEs), not just vertical heat exchangers. The Minnesota Department of Health (MDH) revised Minnesota Rules, chapter 4725 ([www.revisor.mn.gov/rules/4725](http://www.revisor.mn.gov/rules/4725)) (Wells and Borings) to reflect the 2013 statutory amendments and to accommodate varying BGHE construction methods. The new rules went into effect on March 22, 2021.

This document provides a summary of the major rule changes for BGHEs. For questions about the specific rule changes, contact the MDH Well Management Section at 651-201-4600 or [health.wells@state.mn.us](mailto:health.wells@state.mn.us).

### Summary of New Rules

#### Clarified and Added BGHE Definitions

- **Bored Geothermal Heat Exchanger (BGHE):** An earth-coupled heating or cooling device that consists of a closed-loop piping system installed in a boring in the ground to transfer heat to or from the surrounding earth with no discharge. This includes piping installed in a boring for thermal conductivity testing and does not include a closed-loop piping system installed in a boring 15 feet or less below ground surface.
- **BGHE contractor:** A person issued a limited well/boring contractor license to construct, repair, and seal BGHEs.
- **BGHE piping:** Pipe and fittings of a BGHE installed and buried below ground surface, including:
  - the pipe loop installed in a boring,
  - the buried pipe between the boring and header or manifold,
  - the buried header or manifold, and
  - the buried supply and return pipe between the buried header or manifold and the heat pump.
- **Directional drilling:** A drilling method that utilizes a steerable drill bit to cut a bore hole for installing underground pipe, also known as horizontal directional drilling or HDD.

## Limited BGHE Contractor Certified Representative Applicants

Applicants must have three years of experience constructing, repairing, and sealing BGHEs; or in well drilling. The BGHE experience must be obtained under a licensed well contractor or limited BGHE contractor, unless it was obtained during directionally drilling BGHEs that were not regulated by MDH at the time of construction. The well drilling experience must be obtained under a licensed well contractor, and the applicant must also be accredited by the International Ground Source Heat Pump Association, certified by the National Groundwater Association, or have an equivalent certification.

## BGHE Permits and Records

Only licensed well contractors and limited BGHE contractors can construct, repair, or seal BGHEs.

A BGHE must not be constructed until a permit has been issued by MDH. The application must be complete and signed by the licensed contractor and the property owner or their agent. The application must include a plan diagram showing the location of the BGHE borings, property lines, and structures. Incomplete applications cannot be processed and will be returned to the applicant. For the updated BGHE permit application form, visit: [Bored Geothermal Heat Exchanger \(BGHE\) and Groundwater Thermal Exchanger Device \(GTED\) Construction Permit Applications \(www.health.state.mn.us/communities/environment/water/wells/lwcinfo/bghegtedprmts.html\)](http://www.health.state.mn.us/communities/environment/water/wells/lwcinfo/bghegtedprmts.html).

Following permit approval, the licensed contractor must notify MDH of the proposed construction starting time at least 24 hours before starting construction of the BGHE borings.

BGHE construction records must be submitted within 60 days of the completion of the BGHE and must include the following information, in addition to what is required for all records:

- The number of pipe loops in each boring.
- The results of the required pressure test.
- GPS coordinates for the location where each pipe loop enters a boring, or GPS coordinates marking the corners or perimeter of the loop field.
- A scaled map showing the location where each pipe loop enters a boring, with angles and directions from survey property corners, a permanent benchmark, or the corner of a permanent structure. For directional BGHE piping, a scaled map showing the location of the entire length of each pipe loop and a cross-sectional profile showing the depth profile of the pipe loops.

## BGHE Construction

### New Piping Materials and Connections

High-density polyethylene (HDPE) and cross-linked polyethylene (PEX) are allowed. The pipe must have a minimum pressure rating of 160 pounds per square inch at 73 degrees Fahrenheit. The following requirements apply for the different pipe materials:



- **HDPE:** The pipe must meet ASTM Standards D3035 or F714, and the walls of the pipe must be SDR 11 or thicker. Socket fusion, butt fusion, and electrofusion connections are allowed. Socket fusion and butt fusion connections must be made in accordance with ASTM Standard F2620. Socket fittings must meet ASTM D2683. Electrofusion connections must meet ASTM Standard F1055.
- **PEX:** PEX pipe must be designated as PEXa. All components of the PEXa system must be from the same manufacturer. The pipe must meet ASTM Standard 876. The fittings must meet ASTM Standards F1807, 1960, or 2080. The fittings must also meet ASTM Standard 877. Fittings must not be buried in a pipe loop boring or between a pipe loop boring and the heat pump unit, unless the fitting is located in a vault or other structure accessible from the ground surface or building floor.

### Revised Pressure Testing Requirements

The licensed contractor must conduct a successful pressure test of the BGHE piping after it is installed in the bore hole(s). The pipe must be pressure-tested with potable water at a pressure of 1.5 times the system operating pressure or 100 psi, whichever is greater. Pressure must remain constant for 30 minutes without adding water.

### Grout

Neat-cement grout or cement-sand grout must be used in bedrock and borings with flowing artesian groundwater conditions. Neat-cement grout, cement-sand grout, bentonite grout, or thermally enhanced grout can be used in unconsolidated materials without flowing artesian conditions.

Graphite is allowed as a thermal enhancement material in thermally enhanced grout. Thermally enhanced grout must consist of:

- Maximum of 17.5 gallons of water per 50 pounds of bentonite.
- Thermal enhancement material:
  - Maximum of 200 pounds of sand per 50 pounds of bentonite, with at least 80 percent of the sand passing U.S. Sieve No. 50.
  - OR
  - Maximum of 20 pounds of graphite that meets ANSI/NSF Standard 60 per 50 pounds of bentonite.

### Marking and Accessibility

BGHE piping must be marked from the point where the pipe loop exits the bore hole to the point where the pipe is exposed above ground surface or a building floor by a tracer wire, an underground marking tape detectable from the surface, or a ferromagnetic metal marker above the point where the pipe loop exits the bore hole.

The ends of each BGHE pipe loop must be accessible within a building or buried no deeper than 10 feet below ground surface and must not be built over or made inaccessible. BGHE piping must not be installed on another property without the property owner's written consent.

## New Heat Transfer Fluids

Propylene glycol and ethanol products are allowed as heat transfer fluids:

- Propylene glycol must be food grade or USP grade. A propylene glycol with additives, including corrosion inhibitors or dyes, must be certified as meeting the NSF Category Code HT1 ([info.nsf.org/USDA/psnclistings.asp](http://info.nsf.org/USDA/psnclistings.asp)).
- Ethanol products must be designed by the manufacturer for use in BGHE systems, and they are only allowed for use after approval by MDH. For approval, submit a complete list of product ingredients and concentrations with the BGHE permit application. Ethanol must be used with safety precautions, including that it can only be used in water solutions with 20 percent or less ethanol by volume, and concentrates must not be brought into the building where the heat transfer fluid will be used. Follow safety precautions and procedures specified by the manufacturer and the requirements of NFPA Standard 30.

No other fluids or additives may be used for heat transfer fluids, except potable water. A permanent sign must be attached to the heat pump identifying the heat transfer fluid in the BGHE and specifying that only approved heat transfer fluids may be used.

## Revised Setback Distances

The minimum required isolation distances between a water-supply well and a BGHE are:

- 50 feet from the buried piping of a BGHE or any other closed loop geothermal heat exchanger that is unregulated or not constructed in accordance with the revised rules,
- 35 feet between the well and the buried piping of a BGHE or any other closed-loop geothermal heat exchanger that is more than 15 feet below ground surface and constructed in accordance with the revised rules, and
- 10 feet between the well and the buried piping of a BGHE or any other closed-loop geothermal heat exchanger that is less than 15 feet below ground surface and constructed in accordance with the revised rules.

The point where the drill bit penetrates ground surface for a BGHE boring must be at least 10 feet horizontally from a contaminant source that has contaminants directly entering the soil.

BGHE piping that extends under or within 3 feet horizontally of a building must be at least 10 feet below the lowest part of the building, including foundation and footings.

## Backflow Prevention

Water make-up lines to the BGHE must be protected with backflow prevention according to the Minnesota Plumbing Code, Minnesota Rules, chapter 4714 ([www.revisor.mn.gov/rules/4714](http://www.revisor.mn.gov/rules/4714)).

To obtain this information in a different format call 651-201-4600.  
Wellmgmt\RM BGHE\BGHE Rules Summary 03-18-2021



Permit No.: VL\_\_\_\_\_

## Bored Geothermal Heat Exchanger (BGHE) Construction Record

### BGHE Location

County		Township Name		Property Identification No.	
Township No.	Range No.	Section No.	Qtr	Qtr	Qtr
Street Address		City	State	ZIP Code	

**Provide GPS coordinates for the location where each pipe loop enters the drilled hole or GPS coordinates marking the corners or perimeter of the loop field. Attach additional pages if needed.**

Coordinate Type: ☐ Decimal Degrees (provide 6 digits after decimal) ☐ Degrees, Minutes, Seconds

1. <input type="checkbox"/> Pipe Loop <input type="checkbox"/> Corner	Latitude _____	Longitude _____
2. <input type="checkbox"/> Pipe Loop <input type="checkbox"/> Corner	Latitude _____	Longitude _____
3. <input type="checkbox"/> Pipe Loop <input type="checkbox"/> Corner	Latitude _____	Longitude _____
4. <input type="checkbox"/> Pipe Loop <input type="checkbox"/> Corner	Latitude _____	Longitude _____

**Property Owner** (If BGHE Owner is different, provide their name and address on an attached sheet.)

Property Owner Name			
Street Address	City	State	ZIP Code

### BGHE Construction Detail

Date Work Completed _____	Total Depth (feet) _____
<input type="checkbox"/> Vertical Bore Hole(s)	<input type="checkbox"/> Directionally Drilled Bore Hole(s)
Drilling Method: <input type="checkbox"/> Rotary <input type="checkbox"/> Cable Tool <input type="checkbox"/> Jetted <input type="checkbox"/> Other _____	
Drilling Fluid _____	
Number of Bore Holes _____	Number of Pipe Loops per Hole _____
Bore Hole Depth(s) _____	Hole Diameter(s) _____
Bore Hole Length(s) (For directionally drilled bore hole[s].) _____	
Static Water Level _____	<input type="checkbox"/> Above <input type="checkbox"/> Below Land Surface Date Measured _____

# BORED GEOTHERMAL HEAT EXCHANGER (BGHE) CONSTRUCTION RECORD

Permit No.: VL \_\_\_\_\_

Geological Material	Color	Hardness of Formation	From	To

**Piping:** ☐ High Density Polyethylene    ☐ PEXa    ASTM Standard \_\_\_\_\_ Diameter(s) \_\_\_\_\_

**If HDPE pipe used, piping joints:** ☐ Butt Fusion    ☐ Socket Fusion    ☐ Electrofusion

**Grout:** ☐ Neat Cement    ☐ Cement Sand    ☐ Thermally Enhanced Bentonite    ☐ Bentonite

Grout Interval(s) (feet) \_\_\_\_\_

Bentonite or Thermally Enhanced Bentonite Product Name \_\_\_\_\_

Enhancement Material (for Thermally Enhanced Bentonite): ☐ Sand    ☐ Graphite

**Marking Method:** ☐ Tracer Wire    ☐ Underground Marking Tape    ☐ Ferromagnetic Metal Markers

**Heat Transfer Fluid:** ☐ Potable Water    ☐ Propylene Glycol    ☐ Ethanol-Water Solution (<=20% ethanol)

☐ Propylene Glycol with Additives (Must be NSF HT1 Certified.)

Product Name (if not potable water) \_\_\_\_\_

**Heating/Cooling Capacity** (tons) \_\_\_\_\_ **System Operating Pressure** (psi) \_\_\_\_\_

**Test Pressure** (psi) \_\_\_\_\_ **Test Duration** (minutes) \_\_\_\_\_

## BGHE Maps

Attach a scaled map that shows the location where each BGHE pipe loop exits the drilled hole and directions relative to surveyed property corners, a permanent benchmark, or the corner of a permanent structure. For directionally drilled bore holes, also attach a scaled map showing the location of the entire length of each pipe loop and a cross-sectional profile showing the depth profile of the pipe loops.

## Contractor Certification

This BGHE was constructed under my jurisdiction and this report is true to the best of my knowledge and belief.

\_\_\_\_\_  
Company Name Company License No.

\_\_\_\_\_  
Certified Representative Signature Certified Representative No.      Date

\_\_\_\_\_  
Name of Driller Name of Heat Pump Installer (if different)

Information provided on this form is classified as public information under Minnesota Statutes, chapter 13.

To obtain this information in a different format call 651-201-4600.

Wells\BGHE Construction Record    03/24/2021R