

# Minutes: Submerged Closed Loop Heat Exchangers Advisory Committee

**Date** April 14, 2025, 9 – 11:30 a.m.

**Location** Hybrid Teams Meeting; Metropolitan Council, Room LLA, 390 Robert St. N., Saint Paul, MN 55101

**Attendees** **In Person:** Anneka Munsell (alternate – Professional Association), Danny Nubbe (Certified Representative), David Henrich (Advisory Council on Wells and Borings), Jeff Foss (alternate – Geothermal Professional), Jeff Luehrs (Delegated Well Program), Jeremy McConkey (Professional Association), Luke Hollenkamp (City Representative), Ryan SanCartier (Professional Association), Willy Miley (Geothermal Professional)

**Virtual:** Dave Traut (Certified Representative), Don VanKeulen (Delegated Well Program), Jay Egg (Geothermal Professional), Jim Lubratt (Geothermal Professional), Keith Larson (Geothermal Professional), Mike Steffl (Certified Representative), Todd Bloomstrom (City Representative)

**MDH:** Jon Olson (WMS Technical Unit Supervisor), Jennifer Weier (WMS Hydrologist Supervisor), Avery Guertin (WMS Regulatory Coordinator), Kara Dennis (WMS Hydrologist)

## Acronyms and Terms

IGSHPA – International Ground Source Heat Pump Association

SCLHE – Submerged Closed Loop Heat Exchangers

SONAR – Statement of Need and Reasonableness

Well Code – regulation governing work on wells and borings (Minnesota Rules, chapters 4725 and 4725, and Minnesota Statutes, chapter 103I)

WMS – Well Management Section

## Welcome and updates

Guertin expressed gratitude for the feedback and comments provided by members throughout the past three meetings. Members and MDH staff briefly introduced themselves and described their

constituencies. Anneka Munsell is present as an alternate for Aaron Meyer, representing a professional association. Jeff Foss is present as an alternate for Jim Lubratt, representing a geothermal professional.

To MDH's understanding, the Order on Adoption for the proposed SCLHE rule addressing the permitting and installation requirements remains with the Office of Administrative Hearings. Members will be informed of advancement of the current rulemaking.

## Committee member discussion

### Topic: Isolation Distances

Miley asked Guertin to share a document with the members summarizing his proposed changes to the isolation distance requirements in Minnesota Rules, chapter 4725. Miley stated that SCLHE wells pose less of a public health risk than other water-supply wells for two reasons: 1) the water-supply wells used for SCLHE are non-potable, and 2) these wells do not withdraw water. He added that wells used for SCLHE cannot be "pre-code" water-supply wells. He describes that SCLHE projects are significantly frustrated by overly restrictive isolation distance requirements.

Weier noted that the variance process for SCLHE wells is more restrictive than for other types of wells and borings because of the language in Minnesota Statutes Sec. 103I.210 MN Statutes. The statute language provides that MDH may not issue a variance for isolation distances to a water-supply well containing an SCLHE if there is a compliant location on the property. This statute will sunset at the end of the year the SCLHE rules are adopted. Then MDH will have greater flexibility in evaluating variance criteria for SCLHE wells, including potential adverse effects on public health and groundwater, alternative measures to be taken, and undue burden on an applicant.

Miley responded that wells used for SCLHE can be built to higher construction standards and suggests this could mitigate any potential risks and allow for reduced isolation distances. Miley proposed that the minimum isolation distances in Minnesota Rules, part 4725.4450 should be reduced by half for SCLHE wells that are constructed with the following heightened standards:

- **"Driven Casing Wells:** For driven casing wells, if there is at least 100 ft of unconsolidated material, a minimum of 100 ft of casing is required. If there is less than 100 ft of unconsolidated material, a minimum of 75 ft of casing is required in the unconsolidated material and the casing must be driven at least 5 ft into bedrock.
- **Grouted/annular Space Wells:** For grouted/annular space wells, if there is at least 100 ft of unconsolidated material, a minimum of 100 ft of grouting is required. If there is less than 100 ft of unconsolidated material for a bedrock well construction or an unconsolidated well will have less than 100 feet of casing, a minimum depth of 75 ft of grouting is required and cement grout must be used."

Steffl asked members if full-length grout can be considered as a requirement for all SCLHE wells. Henrich suggested bentonite grout to be used. Traut described the benefit to protecting groundwater by requiring full-length grout for all water-supply wells. Steffl clarified with the members that this

discussion is about the isolation distances for water-supply wells used for SCLHE and not all water-supply wells.

Henrich added that we should also be considering engineered solutions [other options for well protection besides requiring horizontal isolation distances]. Olson asked for clarification if this would be applicable for all isolation distances or just isolation distances for SCLHE wells. Henrich suggested this should be considered for the Well Code.

Miley asked for the basis or background for how the isolation distances were determined. Guertin responded that members were sent links to the 1993 and 2008 SONARs (Statements of Need and Reasonableness). SONARs are documents that justify the need and reasonableness for a particular rulemaking. Olson informed members that not all SONARs, especially those completed long ago, are detailed in their justifications for why specific rule changes were made.

Foss asked members if there should be a consideration for thermal interference with neighboring properties. Olson clarified that isolation distances are required setback distances from a potential source of contamination. Weier said that so far, MDH has not considered differences in temperature as a source of contamination. Miley shared that there is less than a 10-degree Fahrenheit change in groundwater temperature over a period of years as water passes over the heat exchanger. He added that this is a relatively minor change in groundwater temperature. Miley added that the concern over groundwater temperature should be more of a water rights issue and thus, would under the purview of the Minnesota Department of Natural Resources and not MDH. Foss responded that thermal change is defined as a contaminant in Minnesota Statutes, chapter 115, and that the change in groundwater temperature from one system could impact surrounding systems. McConkey added that a change in groundwater temperature by 10 degrees Fahrenheit would change the ability of a geothermal system or HVAC system to function.

#### Topic: Screen Configuration

Henrich proposed using bentonite chips or pellets for grouting a blank section used in a SCLHE screen configuration. He described a situation where a water-supply well used for a SCLHE was constructed in limestone and shale bedrock. The blank section was grouted with cement grout, as required by Minnesota Rules, chapter 4725. Upon disassembly of the screen, it was discovered that the cement grout migrated into the upper screen. He expressed difficulty in controlling cement grout and suggested authorization to use other materials such as bentonite chips or pellets. Traut added that liquid bentonite grout would likely not work well, and agreed that something with high solids, such as chips or pellets, would help to control the placement of grout.

Luehrs asked how one would make sure the bentonite chips or pellets are placed appropriately as to avoid bridging. Henrich responded use a tremie line would prevent bridging of bentonite pellets before being placed around the blank section. Nubbe asked members how deep a blank is typically installed. Henrich responded that a blank section is usually installed 100 feet below ground surface.

### Topic: Notification of Unique Well Numbers

Miley asked Guertin to present a document for the members to view the proposed rule language for SCLHE with Darcy Solution's comments. He recommended removal of Minnesota Rules, Part 4725.1834, Subpart 1(B), *"A system owner must provide the commissioner with Minnesota unique well numbers for proposed wells on a SCLHE system permit before construction of the wells."* Henrich added that there may be some confusion if the license well contractor changes before the water-supply well was constructed. Weier said that there are two different cases in question; there is the case where the water-supply wells are already constructed when MDH receives the SCLHE permit application and the case where the water-supply wells have yet to be constructed when MDH receives the SCLHE permit application. This rule language is for the case when MDH receives a permit application and issues a permit prior to the SCLHE wells being constructed. MDH needs to later add the unique numbers to the permit, because a permit is issued for specific wells. Traut suggested a plan review number instead of a unique well number to better track these SCLHE permits. Miley added that removal of this language would prevent construction delays. Weier said that the purpose is not to hold up construction and is just for the system owner to provide a notification to MDH before the wells are constructed. Purrington asked if there has been a delay in construction because of the need to submit unique well numbers. Henrich said there has not been any delay but that this requirement has caused confusion.

### Topic: Conducting a Pressure Test

Miley proposed expanding the proposed rule language to include a licensed professional engineer and a professional registered with IGSHPA (International Ground Source Heat Pump Association) as individuals who may conduct a pressure test. Munsell responded that a licensed professional engineer may not have the experience or knowledge to pressure test a SCLHE system. She added that she is a licensed professional engineer and argued that despite her credential, she would feel uncomfortable conducting a pressure test. SanCartier asked Miley if Darcy Solutions is unable to find a well contractor or bonded mechanical contractor (authorized individuals to conduct a pressure test in the proposed rules) to conduct a pressure test. Miley said that they have licensed professional engineers on staff that could conduct this pressure test. SanCartier said that other companies may have staff with these credentials but without the experience. Larson suggested that Darcy Solutions and other companies could seek individuals with these credentials for their company. Munsell asked if the intent behind these professional requirements is that the contractor can verify the work and fix any leak. Larson added that the person who installs the system should be conducting the pressure test. Weier said that the proposed rule language was written with the consultation of the Minnesota Department of Labor and Industry. Miley clarified that this proposed rule is only applicable to the pressure test requirements from MDH. McConkey suggested that there could be a better professional certification instead of IGSHPA certification.

### Topic: Witnessing a Pressure Test

Miley suggested expanding the proposed rule language on who can witness a pressure test for a SCLHE system. Miley added that there should not be requirement to have a third party to witness the

pressure test. Nubbe said that expanding the list of who can conduct and inspect a pressure test will only make this process more confusing.

## Open Forum

Guertin opened the forum for members of the public to comment. No member of the public had comments or suggestions to share with the committee.

## Adjournment

Next meeting: May 12, 2025, from 1:00 p.m. – 4:00 p.m.

Meeting will be held at:

[Orville L. Freeman Building](#), Room B145

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