NOTICE OF INTENT TO MODIFY A PERMIT AUTHORIZING THE USE OF WATER FOR GENERAL INDUSTRIAL PURPOSES (GEOTHERMAL HEATING AND COOLING)

Notice is hereby given that pursuant to Iowa Code Chapter 455B, there is now on file with the Iowa Department of Natural Resources, Water Supply Engineering Section, 6200 Park Ave. Suite 200, Des Moines, IA 50321, an application as described below.

The Bellevue Community School District, Iowa DNR Log No. 34,841, requests a permit authorizing withdrawal of water from two Galena aquifer wells, approximately 302 and 307 feet deep, located on land generally described as the SE¼ of the SW¼, the NW¼ of the SE¼, and the NE¼ of the SW¼ of Section 13, T86N, R4E, Jackson County, Iowa for water withdrawals in the maximum quantity of 125 million gallons per year at a maximum rate of 1,000 gallons per minute throughout each year for use in the geothermal heating and cooling system at the school on said land.

The Bellevue Community School District also requests to be incorporated into this permit, two Galena aquifer wells, approximately 302 and 295 feet deep, located on land generally described as the SE¼ of the SW¼, the NW¼ of the SE¼, and the NE¼ of the SW¼ of Section 13, T86N, R4E, Jackson County, Iowa for the purposes of injecting the above-referenced water at a rate of up to 1,000 gallons per minute back into the Galena aquifer.

This use represents the addition of one Galena aquifer well for water withdraw at a maximum quantity of 60 million gallons per year at a maximum rate of 500 gallons per minute, the addition of one Galena aquifer well for the purpose of injecting the water at a rate of up to 500 gallons per minute back into the aquifer, an increase of 100 gallons per minute withdraw rate from the existing supply well, and an increase of 100 gallons per minute for injection from the existing injection well.

This geothermal heat exchange system constitutes an "open-loop" "once-through" system with return flow to the aquifer, in the quantity described above.

The Department has determined that this use of water conforms to the relevant criteria (Iowa Code Chapter 455B and Iowa Administrative Code 567) and recommends the permit be granted. A copy of the summary report for the application is available upon request to the Department at the address listed above. Comments on the report and on this use of water must be received by December 9, 2026, and should be addressed “ATTN: Erik Day” and should specify the applicants log number (Log Number 34,841).

IOWA DEPARTMENT OF NATURAL RESOURCES
WATER USE PERMIT SUMMARY REPORT

Applicant: Bellevue Community School District
Brett Ernst
1601 State St
Bellevue, Iowa 52031

Application Log No.: 34,841

Permit Request

The Bellevue Community School District, Iowa DNR Log No. 34,841, requests a permit authorizing withdrawal of water from two Galena aquifer wells, approximately 302 and 307 feet deep, located on land generally described as the SE¼ of the SW¼, the NW¼ of the SE¼, and the NE¼ of the SW¼ of Section 13, T86N, R4E, Jackson County, Iowa for water withdrawals in the maximum quantity of 125 million gallons per year (MGY) at a maximum rate of 1,000 gallons per minute (GPM) throughout each year for use in the geothermal heating and cooling system at the school on said land.

The Bellevue Community School District also requests to be incorporated into this permit two Galena aquifer wells, approximately 302 and 295 feet deep, located on land generally described as the SE¼ of the SW¼, the NW¼ of the SE¼, and the NE¼ of the SW¼ of Section 13, T86N, R4E, Jackson County, Iowa for the purposes of re-injecting the above-referenced water at a rate of up to 1,000 gallons per minute back into the Galena aquifer.

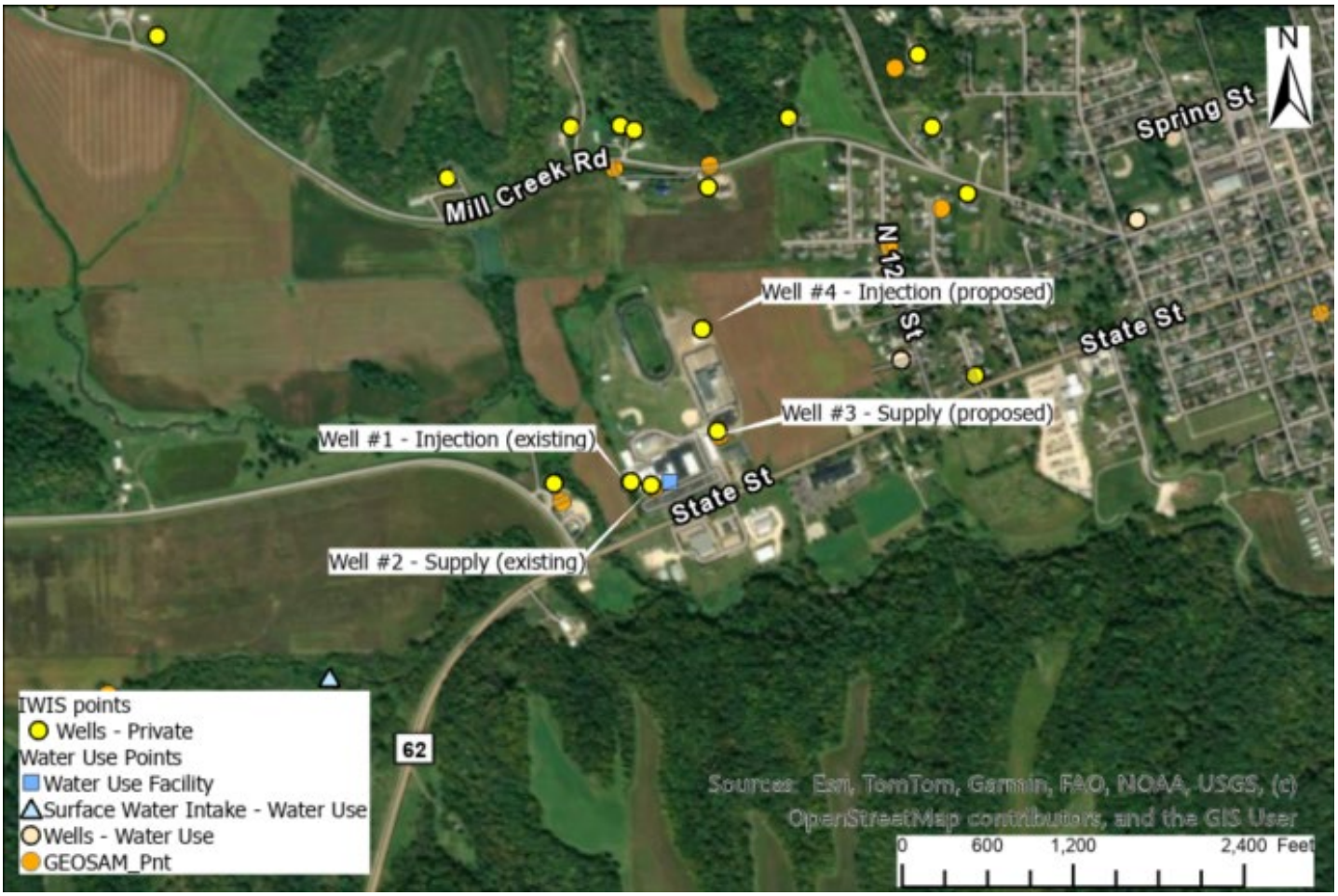
This geothermal heat exchange system constitutes an "open-loop" "once-through" system with return flow to the aquifer, in the quantity described above. The addition of chemicals or altering the chemical, biological, or microbiological characteristics to this or any water which will be returned by injection or other methods into the aquifer is strictly forbidden. This includes any additives designed to control heat exchanger scaling and corrosion, or for treatment of any other undesirable qualities exhibited by the groundwater.

The public land survey system (PLSS) location of the four Galena aquifer) wells is:

- The SE¼ of the SW¼ of Section 13, Tier 86 North, Range 04 East – Well #1 (existing)
- The SE¼ of the SW¼ of Section 13, Tier 86 North, Range 04 East – Well #2 (existing)
- The NW¼ of the SE¼ of Section 13, Tier 86 North, Range 04 East – Well #3 – Supply (proposed)
- The NE¼ of the SW¼ of Section 13, Tier 86 North, Range 04 East – Well #4 – Injection (proposed)

The two proposed wells are located directly south (Well #3) and directly north (Well #4) of the Bellevue Elementary School located at 1601 State Street, Bellevue, Iowa (Map 1).

This use represents the addition of one Galena aquifer well for water withdraw at a maximum quantity of 60 million gallons per year at a maximum rate of 500 gallons per minute, the addition of one Galena aquifer well for the purpose of re-injecting the water at a rate of up to 500 gallons per minute back into the aquifer, an increase of 100 gallons per minute withdraw rate from the existing supply well, and an increase of 100 gallons per minute for injection from the existing injection well.



Map 1. Map of applicant's wells and nearby wells. Well data is derived from the Department's Iowa Well Information System (IWIS) database and the Water Allocation Compliance and Online Permitting (WACOP) database, and the Iowa Geological Survey's GEOSAM database.

Beneficial Use

Water use for the permit is for geothermal heating and cooling purposes for staff and students of the building. Iowa Code 455B.266 identifies industrial processes as a priority beneficial use. The water is being used in a manner that is beneficial to the students and staff affiliated with the community school district.

Source Details

The Galena aquifer will be reviewed in this report because it is the only source of water being utilized for this permit request.

The applicant's wells range from 295- 302 feet below ground surface (ft BGS) and are all withdrawing and injecting, from the Galena aquifer. The Galena aquifer in this area is approximately 170 feet thick. The aquifer yields moderate to large amounts of water for private, commercial, and public water users in northeast Iowa. Despite its widespread use, pumping test data is not readily available or accessible.

The applicant's two wells drilled in 2010 showed a static water level (SWL) was 18 feet BGS and dropped to 118 and 138 feet BGS when pumping at 500 gallons per minute for 8 hours. The productivity of the applicant's original pump and reinjection wells dropped after several years, and they were acidized and redeveloped to increase production in 2023.

The Galena Aquifer is recharged mainly by horizontal groundwater flow. The Applicant's proposed use of water should not have a significant impact the availability of water from said aquifer because the use is cyclical, with water being returned back into the aquifer.

Water levels in the Galena aquifer are not well documented at this location, or elsewhere in the state.

Historic Water Use

The Bellevue Community School District began utilizing their geothermal system in September 2010. From 2010 to 2024, their reported water use ranged from 4.4 MGY (2010) to 142.9 MGY (2025) (Figure 1). Their current allocation allows for a maximum withdrawal of 65 MGY from one supply well.

Their use was well below their anticipated use from 2010-2024 because their wells were not producing the amount of water needed for the system to run at full capacity. The 2010 wells were rehabilitated in 2023 when the new wells were drilled, which allowed for increased capacity. Their large water use increase in 2025 is due to several factors. The applicant was actively using the new wells but did not have their water use permit modified for these wells due to an error in processing the application by the DNR. In addition, they reported a calculation error was found, but they did not have a correction to reflect the true use in 2025. The applicant stated they will need a maximum of 125 MGY.

In 2023, the applicant began to expand their geothermal heating and cooling system to add heating and cooling to their newly built Elementary School on the adjacent property. They planned for one additional geothermal water supply well and one additional geothermal injection well. The request for additional water use on this permit is to supply their Elementary School with geothermal heating and cooling.

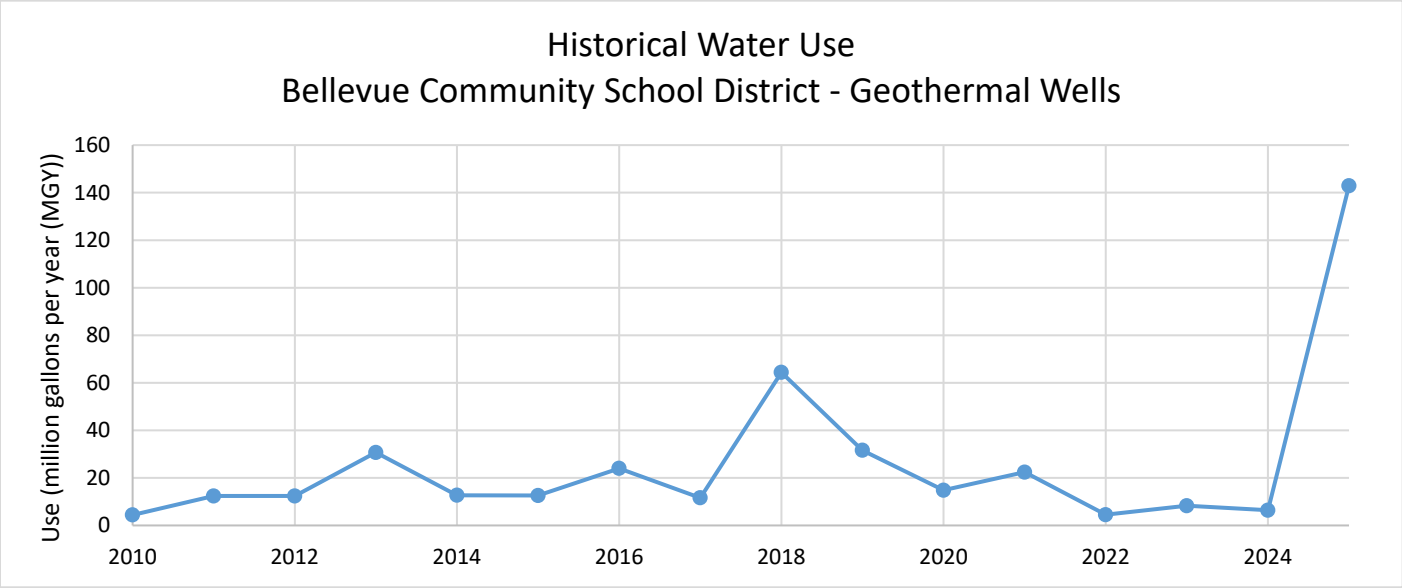


Figure 1. Annual water withdrawals in million gallons per year for Bellevue Community School District's geothermal wells from the Galena aquifer from 2010-2025.

Nearby Wells and Potential Interference

According to department's water use records, the nearest water use wells are two municipal water supply wells for the City of Bellevue located approximately 1,300 feet and 3,200 feet east of the applicant's proposed wells. These wells utilize the Cambrian-Ordovician (Jordan) aquifer, therefore, no impact is anticipated. In 2023, Gingerich Well and Pump performed a pump test on the proposed geothermal wells while monitoring the nearest Bellevue municipal well. No drawdown occurred in the municipal well during the pumping test. The next nearest permitted water use well is located nearly 9 miles west of the applicant's proposed wells. No impact is anticipated at this distance.

There are at least 15 documented private wells within ½ mile of the applicants well according to the IWIS database. The only two wells with well logs show depths of 174 - 266 feet deep. Most of the wells do not have well logs to confirm depths, but it is likely that the wells utilize the Galena aquifer because it is a widely used bedrock aquifer in this area. The IWIS database only includes a small portion of wells drilled in Iowa. The mapped wells could be plugged or inactive. No impact is anticipated because the new wells are simultaneously pumping from and reinjecting into the aquifer.

Impact on the Galena aquifer from pumping the Applicant's well should be limited to the immediate vicinity of the pumping well and should not impact these neighboring water users. Other, more distant, permitted water users should not experience any impacts resulting from the use of the Applicant's well at the volume and rate proposed.

Drawdown from geothermal pump and reinjection systems are minimal since water is simultaneously pumped and returned to the same aquifer. Given the pumping rate of this well and no history of well interreference complaints despite numerous private wells within a one-mile radius, significant drawdown and well interference is not expected. A pumping test will not be required as part of this permit modification, due to the limited stress that this well will have on the Galena aquifer.

Aquifer Sustainability

The Galena aquifer will be minimally impacted by the applicant's proposed use because the system is simultaneously withdrawing and injecting water into the aquifer.

Findings

The applicant has demonstrated the ability and intent to use a reasonable quantity of water for beneficial purposes from the proposed well. No evidence suggests the proposed use would:

- Waste water resources.
- Conflict with Iowa's comprehensive water resource plan.
- Interfere with pollution control laws.
- Directly harm public interests or property owners with prior or superior water use rights.

THEREFORE:

The requested water use conforms to Division III, Part 4, Chapter 455B of the Iowa Code and Chapter 50 of Part 567 of the Iowa Administrative Code. No adverse impacts on other water users are anticipated at this time. Subject to public notice and potential revisions based on comments received, a permit should be issued for a term of ten years.

Water Supply Engineering
Date: November 18, 2026

IOWA DEPARTMENT OF NATURAL RESOURCES

DRAFT WATER USE PERMIT

Permit issued to:

BELLEVUE COMMUNITY SCHOOL DISTRICT
BRETT ERNST
1601 STATE ST
BELLEVUE IA 52031

Permit Number: 9498-M2

Effective: xx/xx/2026

Expires: xx/xx/2036

The Permittee is authorized to:

withdrawal water from two Galena aquifer wells, approximately 302 and 307 feet deep, located on land generally described as the SE¼ of the SW¼, the NW¼ of the SE¼, and the NE¼ of the SW¼ of Section 13, T86N, R4E, Jackson County, Iowa for water withdrawals in the maximum quantity of 125 million gallons per year at a maximum rate of 1,000 gallons per minute throughout each year for use in the geothermal heating and cooling system at the school on said land.

inject water which has only been thermally altered using two Galena aquifer wells, approximately 302 and 295 feet deep, located on land generally described as the SE¼ of the SW¼, the NW¼ of the SE¼, and the NE¼ of the SW¼ of Section 13, T86N, R4E, Jackson County, Iowa for the purposes of injecting the above-referenced water at a rate of up to 1,000 gallons per minute back into the Galena aquifer. These two wells will constitute heat pump return wells (injection wells) for non-contact geothermal water at the same site. The addition of chemicals or altering the chemical, biological, or microbiological characteristics to this or any water which will be returned by injection or other methods into the aquifer is strictly forbidden. This includes any additives designed to control heat exchanger scaling and corrosion, or for treatment of any other undesirable qualities exhibited by the groundwater. This geothermal heat exchange system constitutes an "open-loop" "once-through" system with return flow to the aquifer, in the quantity described above.

This authorization to withdraw water has been granted pursuant to the provisions of Part 4 of Division III of Chapter 455B, Code of Iowa, and Chapter 50, Part 567, Iowa Administrative Code, and is further subject to the general permit conditions within this permit.

Conditions of this permit may be appealed as provided in rule 567--50.8(3), Iowa Administrative Code. Appeal must be in writing and must be received at the Iowa Department of Natural Resources, Water Supply Engineering Section, 6200 Park Ave. Suite 200, Des Moines, Iowa 50321-1371 within thirty days of the date of the certification of the mailing of the permit.

FOR THE DIRECTOR:

By: _____ Date Executed: xxxxxxx, 2026

cc: Permit File

CERTIFICATE OF MAILING

On the date shown below, a copy of the foregoing permit was mailed to the Permittee and to each person entitled to receive a copy as provided by rule 567--50.8(2), Iowa Administrative Code.

Certified by (initials): _____ Date: _____

GENERAL PERMIT CONDITIONS

1. Permittee shall maintain accurate and up-to-date records of monthly water use from each authorized source and submit them annually to the Department.

2. Permittee may be required to submit other information related to the regulation of this use of water as directed by the Department.

3. This Permit is issued pursuant to Iowa Code chapter 455B.265(1) to authorize the withdrawal and use of water by the permittee, subject to the terms contained herein and to the laws and rules of the Department that regulate the withdrawal and use of water. Issuance of this permit does not relieve the permittee of the responsibility to comply with applicable local, state and federal laws, ordinances, regulations or other legal requirements.

4. Permittee shall be responsible for notifying the Department when there are changes to any conditions and authorizations given in this permit, including additional water source(s), well(s), intake(s), an expansion of the facility, or any other listed condition.

5. Permittee shall construct, maintain, and monitor observation wells as directed by the Department to define the effects of Permittee's water withdrawals on groundwater resources or on other water users who might be affected by the withdrawals authorized herein.

6. Each well authorized as a source of water in this permit must be constructed to allow for accurate measurement of water levels.

7. Withdrawals from permitted wells may be made only after the Permittee has made the following information available to the Department: well location(s), well log(s), and results of yield tests. Required chip samples shall be submitted to the Iowa Geological Survey.

8. Permittee shall be responsible for accurately measuring depth to water under non-pumping (static) conditions, and pumping rate(s) for all active wells listed in this permit, at a minimum of one measurement per year. These records shall be submitted annually to the Department.

9. Water withdrawn pursuant to this permit shall be discharged to the Galena aquifer in accordance with all applicable rules and regulations, shall be of suitable quality, and shall be so discharged as to preclude flooding, erosion, or other adverse effects.

10. Permittee shall not introduce any treatment chemicals or any other pollutants, other than heat, into any water to be injected into the ground without a written authorization from the Department.

11. Permittee must apply to renew this water use permit using the appropriate DNR form prior to the expiration date of the current permit version.

12. If water withdrawals or uses authorized under this permit are determined by the Department, based on available monitoring data, field observations, or other credible evidence, to be the cause of adverse effects on surface water streams, springs, or ponds, or the ecosystems attached or adjacent thereto, then the Department shall notify the Permittee in writing and may require the Permittee to reduce withdrawal rates, conduct additional hydrogeologic investigations, or take other corrective measures deemed necessary to protect the ecological integrity of those surface waters. The Permittee shall respond to any such notice within 30 days with a proposed corrective action plan, subject to Department approval. For purposes of this condition, "adverse effects" include but are not limited to reductions in baseflow, degradation of cold-water or other designated uses, or harm to species or their habitat.

13. Permittee shall submit to the Department within 90 days of being notified by the Department or no later than the expiration date of this permit, whichever first occurs, a plan for implementing routine day-to-day water conservation measures and for implementing emergency water conservation measures during periods of water shortage. Until such a plan has been submitted to and approved by the Department, Permittee shall implement those emergency water conservation measures determined to be necessary by the Department pursuant to Iowa Code Sections 455B.265 and 455B.266.

14. This permit supersedes Water Use Permit No. 9498-R1.

CAVEAT

Permittee is advised that pursuant to Section 455B.271, Code of Iowa, the authority to withdraw water provided by this permit may be modified, canceled or suspended in case of any breach of the terms or conditions herein, in case of any violation of state law pertaining to the permit, or if found necessary to prevent substantial injury to private or public interests.