

**BEFORE THE DEPARTMENT OF
NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA**

APPLICATION FOR BENEFICIAL WATER USE PERMIT NO. 76M 30151126 BY MISSOULA COUNTY AIRPORT	}	PRELIMINARY DETERMINATION TO GRANT PERMIT
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On January 25, 2021, Missoula County Airport (Applicant) submitted Application for Beneficial Water Use Permit No. 76M 30151126 to the Missoula Water Resources Office of the Department of Natural Resources and Conservation (Department or DNRC) for 1,000 gallons per minute (GPM) and 99 acre-feet (AF) for the beneficial use of geothermal. The Department published receipt of the Application on its website. The Department sent Applicant a deficiency letter under § 85-2-302, Montana Code Annotated (MCA), dated July 6, 2021. The Applicant responded with information dated October 22, 2021. The Application was determined to be correct and complete as of March 30, 2022. An Environmental Assessment for this Application was completed on July 26, 2022.

INFORMATION

The Department considered the following information submitted by the Applicant, which is contained in the administrative record.

Application as filed:

- Application for Beneficial Water Use Permit, Form 600-GW
- Maps:
 - Aerial imagery of site location and location of extraction and injection wells identified
 - Overall site layout plan
- Aquifer Testing Addendum
- Aquifer Testing Report – Form 633 (electronic)

- Variance request from applicant for the 72-hour duration test dated September 2, 2019 and letter of approval from DNRC dated May 19, 2020
- Well pump curves and flow meter information

Information Received after Application Filed

- Well logs for the extraction and injection wells
- Deficiency Letter Response, dated October 22, 2021 (received electronically), which includes additional Aquifer Testing Variance Request dated August 25, 2021
- Letter of approval from DNRC dated September 10, 2021, granting the additional Aquifer Testing Variance Request

Information within the Department’s Possession/Knowledge

- Aquifer Test Report and Depletion Report from Department Groundwater Hydrologist, Attila Fohnagy, dated September 13, 2021

The Department has fully reviewed and considered the evidence and argument submitted in this Application and preliminarily determines the following pursuant to the Montana Water Use Act (Title 85, chapter 2, part 3, MCA).

PROPOSED APPROPRIATION

FINDINGS OF FACT

1. Applicant proposes to divert groundwater at a maximum rate of 1,000 gallons per minute (GPM) up to a diverted volume of 99 acre-feet (AF) from January 1 to December 31 for geothermal cooling. The proposed diversions (extraction wells) are two wells (250 feet deep and 300 feet deep) fitted with submersible pumps, located in the NENENE of Section 2 Township (TWP) 13N Range (RGE) 20W, Missoula County. The injection well is a 340-foot-deep groundwater well located in the NWNENE of Section 2 TWP 13N RGE 20W, Missoula County. The place of use is the Missoula County Airport terminal in the NENE of Section 2 TWP 13N RGE 20W, Missoula County. The extraction and injection wells and the place of use are generally located at the Missoula County Airport, 5 miles west of Missoula, MT.

2. The geothermal cooling system will consist of two extraction wells (East Well and West Well), one injection well, a heat exchange system, and a Badger electromagnetic flow meter for measuring combined volume and flow rate prior to the heat exchange units. Water extracted from the two wells will comingle near the East Well and prior to the heat exchange units. All three wells were drilled prior to submission of this application and are completed in a leaky confined aquifer that is hydraulically connected to the Missoula Valley Aquifer.
3. Both extraction wells will be operated with variable frequency drives, with each well's operating point starting at 300 GPM and a maximum of 500 GPM, for a combined maximum of 1,000 GPM. If demand cannot be met by a single well, the system will call the second well into operation and increase the flow rate of the second well until system demand is met. This water right is intended to provide the entirety of cooling demand for the Missoula County Airport terminal, including year-round cooling of server rooms within the terminal, with existing geothermal systems remaining in place for backup.
4. The proposed points of diversion and place of use are located in the middle Clark Fork River basin (76M) which is an area that is not subject to any water right basin closures or controlled groundwater restrictions.
5. There is no consumptive use associated with the proposed appropriation. The proposed design of the geothermal cooling system is such that the extraction wells and injection well have been completed in the same source aquifer and the extraction rate and injection rate are equal. The injection of water back into the aquifer after cooling use results in depletions and accretions that cancel each other out, therefore, this will be a net non-consumptive use that results in no net effect to groundwater or surface water.
6. The Applicant provided a plan to measure water using an electromagnetic flow meter, which will measure and record the combined volume and flow rates of water diverted from the extraction wells, for water measurement reporting requirements. The Applicant will be required to measure the monthly flow rates and volumes of water diverted for geothermal heating and cooling as a condition of permit issuance and will report these figures to DNRC on a yearly basis. The following condition applies:

THE APPROPRIATOR SHALL INSTALL A DEPARTMENT APPROVED IN-LINE FLOW METER AT A POINT IN THE DELIVERY LINE APPROVED BY THE DEPARTMENT. WATER MUST NOT BE DIVERTED UNTIL THE REQUIRED MEASURING DEVICE IS IN PLACE AND OPERATING. ON A FORM PROVIDED BY THE DEPARTMENT, THE APPROPRIATOR SHALL KEEP A WRITTEN MONTHLY RECORD OF THE FLOW RATE AND VOLUME OF ALL WATER DIVERTED, INCLUDING THE PERIOD OF TIME. RECORDS SHALL BE SUBMITTED BY JANUARY 31 OF EACH YEAR AND UPON REQUEST AT OTHER TIMES DURING THE YEAR UNTIL THE BENEFICIAL WATER USE PERMIT IS PERFECTED AND THE DEPARTMENT RECEIVES A PROJECT COMPLETION NOTICE. IN THE EVENT THAT AUTHORIZED FLOW RATES AND/OR VOLUMES HAVE BEEN EXCEEDED DURING PERFECTION OF THE PERMIT OR THE APPROPRIATOR FAILS TO SUBMIT ANNUAL REPORTS, THE DEPARTMENT MAY CONTINUE TO REQUIRE ANNUAL SUBMISSIONS OF MONTHLY FLOW RATE AND VOLUME RECORDS. FAILURE TO SUBMIT REPORTS MAY BE CAUSE FOR REVOCATION OF A PERMIT OR CHANGE. RECORDS MUST BE SENT TO THE WATER RESOURCES REGIONAL OFFICE. THE APPROPRIATOR SHALL MAINTAIN THE MEASURING DEVICE SO IT ALWAYS OPERATES PROPERLY AND MEASURES FLOW RATE AND VOLUME ACCURATELY.

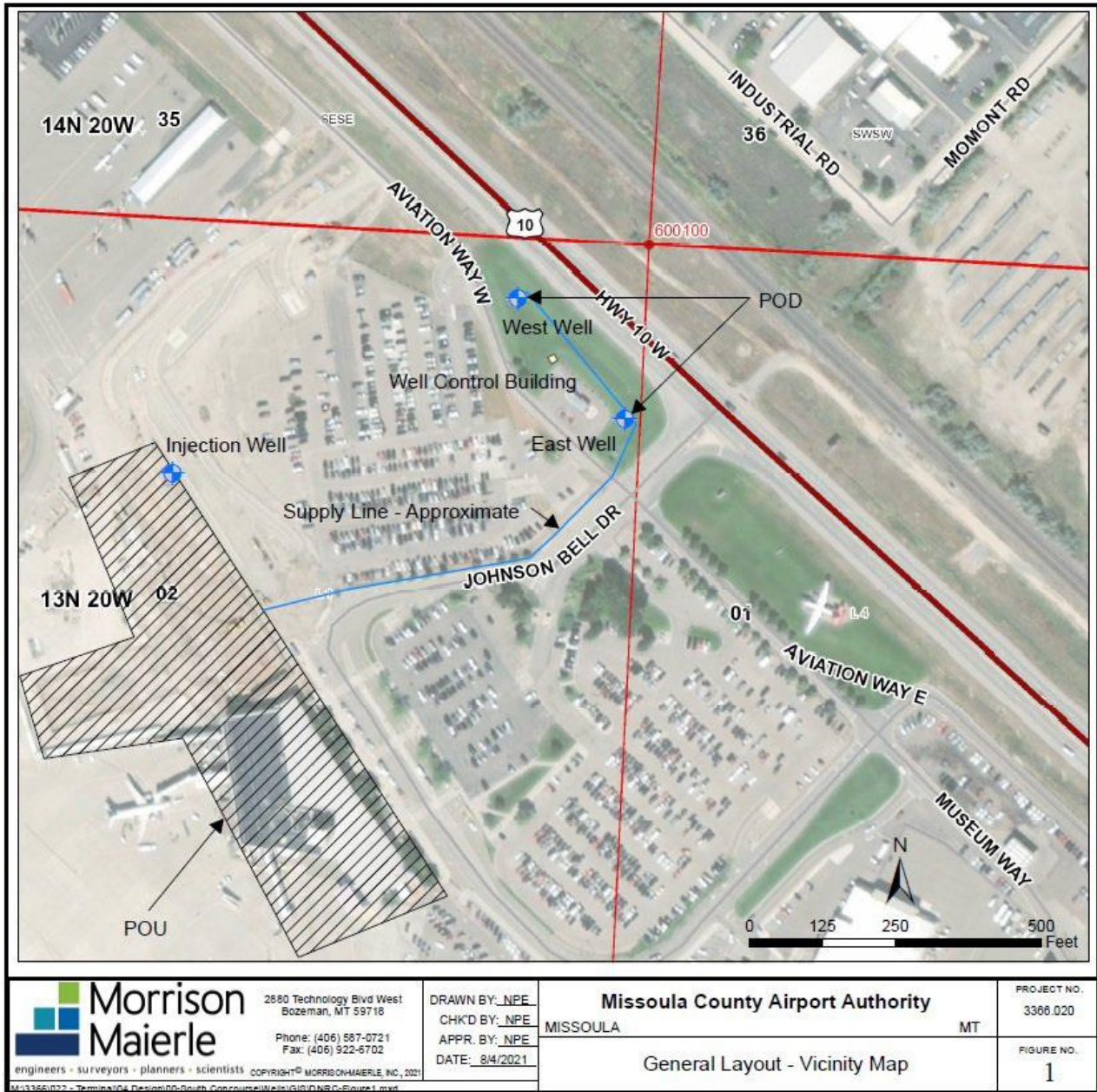


Figure 1. Proposed Geothermal Place of Use and Points of Diversion

§ 85-2-311, MCA, BENEFICIAL WATER USE PERMIT CRITERIA

GENERAL CONCLUSIONS OF LAW

7. The Montana Constitution expressly recognizes in relevant part that:
- (1) All existing rights to the use of any waters for any useful or beneficial purpose are hereby recognized and confirmed.
 - (2) The use of all water that is now or may hereafter be appropriated for sale, rent, distribution, or other beneficial use . . . shall be held to be a public use.
 - (3) All surface, underground, flood, and atmospheric waters within the boundaries of the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided by law.

Mont. Const. Art. IX, § 3. While the Montana Constitution recognizes the need to protect senior appropriators, it also recognizes a policy to promote the development and use of the waters of the state by the public. This policy is further expressly recognized in the water policy adopted by the Legislature codified at § 85-2-102, MCA, which states in relevant part:

- (1) Pursuant to Article IX of the Montana constitution, the legislature declares that any use of water is a public use and that the waters within the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided in this chapter. . . .
- (3) It is the policy of this state and a purpose of this chapter to encourage the wise use of the state's water resources by making them available for appropriation consistent with this chapter and to provide for the wise utilization, development, and conservation of the waters of the state for the maximum benefit of its people with the least possible degradation of the natural aquatic ecosystems. In pursuit of this policy, the state encourages the development of facilities that store and conserve waters for beneficial use, for the maximization of the use of those waters in Montana . . .

8. Pursuant to § 85-2-302(1), MCA, except as provided in §§ 85-2-306 and 85-2-369, MCA, a person may not appropriate water or commence construction of diversion, impoundment, withdrawal, or related distribution works except by applying for and receiving a permit from the Department. See § 85-2-102(1), MCA. An applicant in a beneficial water use permit proceeding must affirmatively prove all of the applicable criteria in § 85-2-311, MCA. Section § 85-2-311(1) states in relevant part:

... the department shall issue a permit if the applicant proves by a preponderance of evidence that the following criteria are met:

(a) (i) there is water physically available at the proposed point of diversion in the amount that the applicant seeks to appropriate; and

(ii) water can reasonably be considered legally available during the period in which the applicant seeks to appropriate, in the amount requested, based on the records of the department and other evidence provided to the department. Legal availability is determined using an analysis involving the following factors:

(A) identification of physical water availability;

(B) identification of existing legal demands on the source of supply throughout the area of potential impact by the proposed use; and

(C) analysis of the evidence on physical water availability and the existing legal demands, including but not limited to a comparison of the physical water supply at the proposed point of diversion with the existing legal demands on the supply of water.

(b) the water rights of a prior appropriator under an existing water right, a certificate, a permit, or a state water reservation will not be adversely affected. In this subsection (1)(b), adverse effect must be determined based on a consideration of an applicant's plan for the exercise of the permit that demonstrates that the applicant's use of the water will be controlled so the water right of a prior appropriator will be satisfied;

(c) the proposed means of diversion, construction, and operation of the appropriation works are adequate;

(d) the proposed use of water is a beneficial use;

(e) the applicant has a possessory interest or the written consent of the person with the possessory interest in the property where the water is to be put to beneficial use, or if the proposed use has a point of diversion, conveyance, or place of use on national forest system lands, the applicant has any written special use authorization required by federal law to occupy, use, or traverse national forest system lands for the purpose of diversion, impoundment, storage, transportation, withdrawal, use, or distribution of water under the permit;

(f) the water quality of a prior appropriator will not be adversely affected;

(g) the proposed use will be substantially in accordance with the classification of water set for the source of supply pursuant to 75-5-301(1); and

(h) the ability of a discharge permit holder to satisfy effluent limitations of a permit issued in accordance with Title 75, chapter 5, part 4, will not be adversely affected.

(2) The applicant is required to prove that the criteria in subsections (1)(f) through (1)(h) have been met only if a valid objection is filed. A valid objection must contain substantial credible information establishing to the satisfaction of the department that the criteria in subsection (1)(f), (1)(g), or (1)(h), as applicable, may not be met. For the criteria set forth in subsection (1)(g), only the department of environmental quality or a local water quality district established under Title 7, chapter 13, part 45, may file a valid objection.

To meet the preponderance of evidence standard, “the applicant, in addition to other evidence demonstrating that the criteria of subsection (1) have been met, shall submit hydrologic or other evidence, including but not limited to water supply data, field reports, and other information developed by the applicant, the department, the U.S. geological survey, or the U.S. natural resources conservation service and other specific field studies.” § 85-2-311(5), MCA (emphasis added). The determination of whether an application has satisfied the § 85-2-311, MCA criteria is committed to the discretion of the Department. Bostwick Properties, Inc. v. Montana Dept. of Natural Resources and Conservation, 2009 MT 181, ¶ 21. The Department is required grant a permit only if the § 85-2-311, MCA, criteria are proven by the applicant by a preponderance of the evidence. Id. A preponderance of evidence is “more probably than not.” Hohenlohe v. DNRC, 2010 MT 203, ¶¶33, 35.

9. Pursuant to § 85-2-312, MCA, the Department may condition permits as it deems necessary to meet the statutory criteria:

(1) (a) The department may issue a permit for less than the amount of water requested, but may not issue a permit for more water than is requested or than can be beneficially used without waste for the purpose stated in the application. The department may require modification of plans and specifications for the appropriation or related diversion or construction. The department may issue a permit subject to terms, conditions, restrictions, and limitations it considers necessary to satisfy the criteria listed in 85-2-311 and subject to subsection (1)(b), and it may issue temporary or seasonal permits. A permit must be issued subject to existing rights and any final determination of those rights made under this chapter.

E.g., Montana Power Co. v. Carey (1984), 211 Mont. 91, 96, 685 P.2d 336, 339 (requirement to grant applications as applied for, would result in, “uncontrolled development of a valuable natural resource” which “contradicts the spirit and purpose underlying the Water Use Act.”); see also, *In the Matter of Application for Beneficial Water Use Permit No. 65779-76M by Barbara L. Sowers* (DNRC Final Order 1988)(conditions in stipulations may be included if it further compliance with statutory criteria); *In the Matter of Application for Beneficial Water Use Permit No. 42M-80600 and Application for Change of Appropriation Water Right No. 42M-036242 by Donald H. Wyrick* (DNRC Final Order 1994); Admin. R. Mont. (ARM) 36.12.207.

10. The Montana Supreme Court further recognized in Matter of Beneficial Water Use Permit Numbers 66459-76L, Ciotti: 64988-G76L, Starnier (1996), 278 Mont. 50, 60-61, 923 P.2d 1073, 1079, 1080, *superseded by legislation on another issue*:

Nothing in that section [85-2-313], however, relieves an applicant of his burden to meet the statutory requirements of § 85-2-311, MCA, before DNRC may issue that provisional permit. Instead of resolving doubts in favor of appropriation, the Montana Water Use Act requires an applicant to make explicit statutory showings that there are unappropriated waters in the source of supply, that the water rights of a prior appropriator will not be adversely affected, and that the proposed use will not unreasonably interfere with a planned use for which water has been reserved.

See also, Wesmont Developers v. DNRC, CDV-2009-823, First Judicial District Court, *Memorandum and Order* (2011). The Supreme Court likewise explained that:

.... unambiguous language of the legislature promotes the understanding that the Water Use Act was designed to protect senior water rights holders from encroachment by junior appropriators adversely affecting those senior rights.

Montana Power Co., 211 Mont. at 97-98, 685 P.2d at 340; see also Mont. Const. art. IX § 3(1).

11. An appropriation, diversion, impoundment, use, restraint, or attempted appropriation, diversion, impoundment, use, or restraint contrary to the provisions of § 85-2-311, MCA is invalid. An officer, agent, agency, or employee of the state may not knowingly permit, aid, or assist in any manner an unauthorized appropriation, diversion, impoundment, use, or other restraint. A person or corporation may not, directly or indirectly, personally or through an agent, officer, or employee, attempt to appropriate, divert, impound, use, or otherwise restrain or control waters within the boundaries of this state except in accordance with this § 85-2-311, MCA. § 85-2-311(6), MCA.

12. The Department may take notice of judicially cognizable facts and generally recognized technical or scientific facts within the Department's specialized knowledge, as specifically identified in this document. ARM 36.12.221(4).

Physical Availability

FINDINGS OF FACT

13. A variance from ARM 36.12.121 (3)(e) was requested by the Applicant and granted by the Missoula Regional Office to allow the Applicant to reduce aquifer testing duration from a 72-hour to a 24-hour constant rate test for one extraction well. An additional variance was requested and granted as the drawdown and yield test on the second extraction well was tested for 7 hours and 55 minutes and not the required 8 hours (ARM 36.12.121 3(b) and (3)(f)). The Applicant requested and was also granted a variance to waive the 2-day monitoring of background water levels (ARM 36.12.121 (3)(j)); and during the aquifer test, the discharge, drawdown, and recovery data were not recorded according to the Form 633 schedule as specified in ARM 36.12.121 2(f) and (3)(c).

14. Physical groundwater availability was calculated by Department Groundwater Hydrologist Attila Foltagy in a September 13, 2021 Aquifer Test Report. One extraction well (East Well, GWIC # 311811) was evaluated with a 24-hour aquifer test at an average rate of 690 GPM with the maximum drawdown of 9.1 feet below the static water level of 82.3 feet below top of casing (btc), leaving 103.6 feet above its perforations. The second extraction well (West Well, GWIC # 311812) was evaluated with an 8-hour drawdown and yield test at an average rate of 499 GPM with a maximum drawdown of 89.6 feet from a static water level of 80.4 feet btc, leaving 105 feet above its perforations.

15. Use of the Neuman-Witherspoon (1969) solution, $T = 36,700 \text{ ft}^2/\text{day}$, $S = 1.6 \times 10^{-4}$, and a constant pumping rate (equivalent to the proposed volume) for the extraction wells and injection well (negative rates for injection well) generated a 0.01-foot drawdown contour (the zone of influence). The volume of total groundwater flux each year within the zone of influence as defined by 0.01 foot of drawdown is $363,330 \text{ ft}^3/\text{day}$, or 3,044 AF/year. The modeled physical groundwater availability exceeds the requested annual volume (99 AF).

16. During aquifer testing, the average discharge rates for the two extraction wells were 690 GPM and 449 GPM. The 24-hour aquifer test and 8-hour drawdown and yield test demonstrated that the wells are capable of producing the requested combined flow rate of 1,000 GPM.

CONCLUSIONS OF LAW

17. Pursuant to § 85-2-311(1)(a)(i), MCA, an applicant must prove by a preponderance of the evidence that “there is water physically available at the proposed point of diversion in the amount that the applicant seeks to appropriate.”

18. An applicant must prove that at least in some years there is water physically available at the point of diversion in the amount the applicant seeks to appropriate. *In the Matter of Application for Beneficial Water Use Permit No. 72662s76G by John Fee and Don Carlson* (DNRC Final Order 1990); *In the Matter of Application for Beneficial Water Use Permit No. 85184s76F by Wills Cattle Co. and Ed McLean* (DNRC Final Order 1994).

19. The Applicant has proven that water is physically available at the proposed point of diversion in the amount Applicant seeks to appropriate. § 85-2-311(1)(a)(i), MCA. (FOF Nos. 13-16)

Legal Availability:

FINDINGS OF FACT

Groundwater

20. Within the zone of influence (1-foot drawdown contour) there are two groundwater rights (shown in Table 1). Modeled aquifer flux was calculated to be 3,044 AF/year; and legal demands within the zone of influence total 274.5 AF, leaving 2,769.5 AF per year. The Department finds the Applicant’s requested volume of 99 AF per year is legally available within the source aquifer.

Table 1. Legal Demands within Zone of Influence:

Water Right #	Volume Diverted (AF)	Water Right Type	Priority Date
76M 87132 00	272	PROVISIONAL PERMIT	9/8/1993
76M 30107096	2.5	GROUND WATER CERTIFICATE	6/1/2016
Total Volume	274.5 AF		

Surface Water

21. The three proposed wells are approximately 1 mile, 1.3 miles, 1.5 miles, and 3.3 miles from Butler Creek, La Valle Creek, Grant Creek, and Clark Fork River, respectively. Due to the significant down cut and thicker Quaternary alluvium depth associated with the Clark Fork River, drawdown is more likely to propagate through the source aquifer to the Clark Fork River than through the confining layers to the nearby streams. Therefore, the Clark Fork River, starting at the southern boundary of Section 17, Range 13 North, Township 19 West is the potentially affected surface water.
22. This application is for a non-consumptive water right for geothermal based cooling. In this case, the extraction and injection wells were modeled separately in the Aquifer Test Report due to the two extraction wells being located 275 feet apart, and the injection well located 780 feet and 660 feet from the two extraction wells. The extraction wells and injection well are completed in the same source aquifer and the extraction rate and injection rate are equal making the use a net non-consumptive use, therefore depletions and accretions will cancel out resulting in no net effect to surface water flows. Due to the lack of surface water depletions in the Clark Fork River, a legal availability analysis for surface water is not required.

CONCLUSIONS OF LAW

23. Pursuant to § 85-2-311(1)(a), MCA, an applicant must prove by a preponderance of the evidence that:
- (ii) water can reasonably be considered legally available during the period in which the applicant seeks to appropriate, in the amount requested, based on the records of the department and other evidence provided to the department. Legal availability is determined using an analysis involving the following factors:
 - (A) identification of physical water availability;
 - (B) identification of existing legal demands on the source of supply throughout the area of potential impact by the proposed use; and
 - (C) analysis of the evidence on physical water availability and the existing legal demands, including but not limited to a comparison of the physical water supply at the proposed point of diversion with the existing legal demands on the supply of water.

E.g., ARM 36.12.101 and 36.12.120; Montana Power Co., 211 Mont. 91, 685 P.2d 336 (Permit granted to include only early irrigation season because no water legally available in late irrigation season); *In the Matter of Application for Beneficial Water Use Permit No. 81705-g76F by Hanson* (DNRC Final Order 1992).

24. It is the applicant's burden to present evidence to prove water can be reasonably considered legally available. Sitz Ranch v. DNRC, DV-10-13390, Fifth Judicial District Court, *Order Affirming DNRC Decision*, (2011) Pg. 7 (the legislature set out the criteria (§ 85-2-311, MCA) and placed the burden of proof squarely on the applicant. The Supreme Court has instructed that those burdens are exacting.); see also Matter of Application for Change of Appropriation Water Rights Nos. 101960-41S and 101967-41S by Royston (1991), 249 Mont. 425, 816 P.2d 1054 (burden of proof on applicant in a change proceeding to prove required criteria); *In the Matter of Application to Change Water Right No. 41H 1223599 by MGRR #1, LLC.*, (DNRC Final Order 2005) (it is the applicant's burden to produce the required evidence.); *In the Matter of Application for Beneficial Water Use Permit No. 41H 30023457 by Utility Solutions, LLC* (DNRC Final Order 2007)(permit denied for failure to prove legal availability); see also ARM 36.12.1705.

25. Pursuant to Montana Trout Unlimited v. DNRC, 2006 MT 72, 331 Mont. 483, 133 P.3d 224, the Department recognizes the connectivity between surface water and ground water and the effect of pre-stream capture on surface water. E.g., Wesmont Developers v. DNRC, CDV-2009-823, Montana First Judicial District Court, *Memorandum and Order*, (2011) Pgs. 7-8; *In the Matter of Beneficial Water Use Permit Nos. 41H 30012025 and 41H 30013629 by Utility Solutions LLC* (DNRC Final Order 2006)(mitigation of depletion required), *affirmed*, Faust v. DNRC et al., Cause No. CDV-2006-886, Montana First Judicial District (2008); see also Robert and Marlene Takle v. DNRC et al., Cause No. DV-92-323, Montana Fourth Judicial District for Ravalli County, *Opinion and Order* (June 23, 1994) (affirming DNRC denial of Applications for Beneficial Water Use Permit Nos. 76691-76H, 72842-76H, 76692-76H and 76070-76H; underground tributary flow cannot be taken to the detriment of other appropriators including surface appropriators and ground water appropriators must prove unappropriated surface water,

citing Smith v. Duff, 39 Mont. 382, 102 P. 984 (1909), and Perkins v. Kramer, 148 Mont. 355, 423 P.2d 587 (1966)); *In the Matter of Beneficial Water Use Permit No. 80175-s76H by Tintzman* (DNRC Final Order 1993)(prior appropriators on a stream gain right to natural flows of all tributaries in so far as may be necessary to afford the amount of water to which they are entitled, *citing* Loyning v. Rankin (1946), 118 Mont. 235, 165 P.2d 1006; Granite Ditch Co. v. Anderson (1983), 204 Mont. 10, 662 P.2d 1312; Beaverhead Canal Co. v. Dillon Electric Light & Power Co. (1906), 34 Mont. 135, 85 P. 880); *In the Matter of Beneficial Water Use Permit No. 63997-42M by Joseph F. Crisafulli* (DNRC Final Order 1990)(since there is a relationship between surface flows and the ground water source proposed for appropriation, and since diversion by applicant's well appears to influence surface flows, the ranking of the proposed appropriation in priority must be as against all rights to surface water as well as against all groundwater rights in the drainage.) Because the applicant bears the burden of proof as to legal availability, the applicant must prove that the proposed appropriation will not result in prestream capture or induced infiltration and cannot limit its analysis to ground water. § 85-2-311(a)(ii), MCA. Absent such proof, the applicant must analyze the legal availability of surface water in light of the proposed ground water appropriation. *In the Matter of Application for Beneficial Water Use Permit No. 41H 30023457 By Utility Solutions LLC* (DNRC Final Order 2007) (permit denied); *In the Matter of Application for Beneficial Water Use Permit No. 76H-30028713 by Patricia Skergan and Jim Helmer* (DNRC Final Order 2009); Sitz Ranch v. DNRC, DV-10-13390, Fifth Judicial District Court, *Order Affirming DNRC Decision*, (2011) Pg. 5 ; Wesmont Developers v. DNRC, CDV-2009-823, First Judicial District Court, *Memorandum and Order*, (2011) Pgs. 11-12.

26. Where a proposed ground water appropriation depletes surface water, applicant must prove legal availability of amount of depletion of surface water throughout the period of diversion either through a mitigation /aquifer recharge plan to offset depletions or by analysis of the legal demands on, and availability of, water in the surface water source. Robert and Marlene Takle v. DNRC et al., Cause No. DV-92-323, Montana Fourth Judicial District for Ravalli County, *Opinion and Order* (June 23, 1994); *In the Matter of Beneficial Water Use Permit Nos. 41H*

30012025 and 41H 30013629 by Utility Solutions LLC (DNRC Final Order 2006)(permits granted), *affirmed*, Faust v. DNRC et al., Cause No. CDV-2006-886, Montana First Judicial District (2008); *In the Matter of Application for Beneficial Water Use Permit 41H 30019215 by Utility Solutions LLC* (DNRC Final Order 2007)(permit granted), *affirmed*, Montana River Action Network et al. v. DNRC et al., Cause No. CDV-2007-602, Montana First Judicial District (2008); *In the Matter of Application for Beneficial Water Use Permit No. 41H 30023457 by Utility Solutions LLC* (DNRC Final Order 2007) (permit denied for failure to analyze legal availability outside of irrigation season (where mitigation applied)); *In the Matter of Application for Beneficial Water Use Permit No. 41H 30026244 by Utility Solutions LLC* (DNRC Final Order 2008); *In the Matter of Application for Beneficial Water Use Permit No. 76H-30028713 by Patricia Skergan and Jim Helmer* (DNRC Final Order 2009)(permit denied in part for failure to analyze legal availability for surface water depletion); Sitz Ranch v. DNRC, DV-10-13390, Fifth Judicial District Court, *Order Affirming DNRC Decision*, (2011) Pg. 5 (Court affirmed denial of permit in part for failure to prove legal availability of stream depletion to slough and Beaverhead River); Wesmont Developers v. DNRC, CDV-2009-823, First Judicial District Court, *Memorandum and Order*, (2011) Pgs. 11-12 (“DNRC properly determined that Wesmont cannot be authorized to divert, either directly or indirectly, 205.09 acre-feet from the Bitterroot River without establishing that the water does not belong to a senior appropriator”; applicant failed to analyze legal availability of surface water where projected surface water depletion from groundwater pumping); *In the Matter of Application for Beneficial Water Use Permit No. 76D-30045578 by GBCI Other Real Estate, LLC* (DNRC Final Order 2011) (in an open basin, applicant for a new water right can show legal availability by using a mitigation/aquifer recharge plan or by showing that any depletion to surface water by groundwater pumping will not take water already appropriated; development next to Lake Koocanusa will not take previously appropriated water). Applicant may use water right claims of potentially affected appropriators as a substitute for “historic beneficial use” in analyzing legal availability of surface water under § 85-2-360(5), MCA. Royston, *supra*.

27. Applicant has proven by a preponderance of the evidence that water can reasonably be considered legally available during the period in which the applicant seeks to appropriate, in the amount requested, based on the records of the Department and other evidence provided to the Department. § 85-2-311(1)(a)(ii), MCA. (FOF Nos. 20-22)

Adverse Effect

FINDINGS OF FACT

28. The Applicant factually demonstrated that water is both physically and legally available during the proposed appropriation in the amount of the requested appropriation of 1,000 GPM and 99 AF, ensuring no adverse effect to upstream or downstream senior groundwater and surface water appropriators. The Applicant will operate the geothermal system during times of water shortage the same as in times of normal supply as the proposed appropriation results in no depletion to either surface or groundwater sources; however, they have indicated that that cessation of diversion could occur if required. The use of groundwater for geothermal cooling will not worsen aquifer conditions in times of shortage because groundwater will be returned to the source aquifer at the same rate it is diverted with the injection of water offsetting the effects of pumping.

29. The drawdown in existing wells was evaluated using the Neuman-Witherspoon (1969) solution with the following inputs: $T = 36,700 \text{ ft}^2/\text{day}$, $S = 1.6 \times 10^{-4}$, and a monthly pumping schedule (Table 2) for the extraction wells and injection well. After five years of pumping at the monthly pumping schedule, the maximum drawdown is 0.4 feet in the aquifer adjacent to the extraction wells and there are 0 water rights that are predicted to experience drawdown greater than 1 foot.

Table 2: Monthly pumping schedule for the proposed wells according to Table 1 in the Application Materials:

Month	Diverted Volume (AF)	Diverted Flow Rate (GPM)
January	1.5	11.0
February	2.1	17.1
March	3.6	26.1
April	6.8	51.2
May	10.7	78.3
June	15.4	116.5
July	19.1	139.6
August	18.2	132.6
September	12.0	90.4
October	5.5	40.2
November	2.7	20.1
December	1.4	10.0
Total	99.0	

30. Surface water users will not be adversely affected as the extraction and injection wells are in close proximity (780 feet and 660 feet), groundwater will be returned to the same aquifer from which it is extracted, the proposed use is non-consumptive, and there is sufficient distance to the surface water to allow for extraction and injection effects to cancel out (3.3 miles).

31. The manifold system is equipped with a flow meter that will record monthly diversions. The Applicant will report monthly water usage to DNRC annually.

32. The Department finds there will be no adverse effect resulting from the proposed groundwater appropriation of 99 AF at a flow rate of 1,000 GPM under the terms and conditions of this Preliminary Determination.

CONCLUSIONS OF LAW

33. Pursuant to § 85-2-311(1)(b), MCA, the Applicant bears the affirmative burden of proving by a preponderance of the evidence that the water rights of a prior appropriator under an existing water right, a certificate, a permit, or a state water reservation will not be adversely affected.

Analysis of adverse effect must be determined based on a consideration of an applicant's plan for the exercise of the permit that demonstrates that the applicant's use of the water will be controlled so the water right of a prior appropriator will be satisfied. See Montana Power Co. (1984), 211 Mont. 91, 685 P.2d 336 (purpose of the Water Use Act is to protect senior appropriators from encroachment by junior users); Bostwick Properties, Inc. ¶ 21.

34. An applicant must analyze the full area of potential impact under the § 85-2-311, MCA criteria. *In the Matter of Beneficial Water Use Permit No. 76N-30010429 by Thompson River Lumber Company* (DNRC Final Order 2006). While § 85-2-361, MCA, limits the boundaries expressly required for compliance with the hydrogeologic assessment requirement, an applicant is required to analyze the full area of potential impact for adverse effect in addition to the requirement of a hydrogeologic assessment. Id. ARM 36.12.120(5).

35. Applicant must prove that no prior appropriator will be adversely affected, not just the objectors. Sitz Ranch v. DNRC, DV-10-13390, Fifth Judicial District Court, *Order Affirming DNRC Decision*, (2011) Pg. 4.

36. In analyzing adverse effect to other appropriators, an applicant may use the water rights claims of potentially affected appropriators as evidence of their “historic beneficial use.” See Matter of Application for Change of Appropriation Water Rights Nos. 101960-41S and 101967-41S by Royston (1991), 249 Mont. 425, 816 P.2d 1054.

37. It is the applicant’s burden to produce the required evidence. E.g., Sitz Ranch v. DNRC, DV-10-13390, Fifth Judicial District Court, *Order Affirming DNRC Decision*, (2011) Pg. 7 (legislature has placed the burden of proof squarely on the applicant); *In the Matter of Application to Change Water Right No. 41H 1223599 by MGRR #1, LLC.*, (DNRC Final Order 2005). (DNRC Final Order 2005). The Department is required to grant a permit only if the § 85-2-311, MCA, criteria are proven by the applicant by a preponderance of the evidence. Bostwick Properties, Inc. ¶ 21.

38. Section 85-2-311 (1)(b) of the Water Use Act does not contemplate a de minimis level of adverse effect on prior appropriators. Wesmont Developers v. DNRC, CDV-2009-823, First Judicial District Court, *Memorandum and Order*, (2011) Pg. 8.

39. The Applicant has proven by a preponderance of the evidence that the water rights of a prior appropriator under an existing water right, a certificate, a permit, or a state water reservation will not be adversely affected. § 85-2-311(1)(b) , MCA. (FOF Nos. 28-32)

Adequate Diversion

FINDINGS OF FACT

40. Coldwater Drilling and Pumps, a licensed well driller, completed all three wells on July 31, 2020. The Applicant provided copies of the well driller's logs for all three wells: two extraction wells (East Well and West Well) and one injection well. The two extraction wells are 275 feet apart; the injection well (GWIC ID 311813) is 780 feet from the East Well (GWIC ID 311811) and 660 feet from the West Well (GWIC ID 311812).

41. The heat exchange system is designed as an open-loop system. All water that is extracted and piped through the heat/cooling exchange system is returned to the aquifer via the injection well.

42. Groundwater will be pumped from two wells, the East Well (255 ft deep) and the West Well (300 ft deep). Water from each well will be piped in 6-inch CPVC piping, which manifolds near the East Well into a 10-inch CPC mainline. The 10-inch mainline will pass along the parking lot of the Missoula County Airport and into the basement in the airport terminal, where it is distributed into two 6-inch CPVC water mains and two heat exchange units for cooling purposes, then exits the building in a 10-inch pipeline to the injection well (340 ft deep). Prior to the heat exchange units, a 10-inch Badger electromagnetic flow meter will be installed to measure and record combined volume and flow rates of the extraction wells.

43. The Applicant provided a site utility plan showing the major components and specifications of the geothermal system. The system was designed by Morrison-Maierle. Both extraction wells will be equipped with a submersible pump. The well pumps that will be utilized are a Grundfos model 475S300-3 with a 30 HP motor (East Well) and a Grundfos model 475S400-4 with a 40 HP motor (West Well). Both extraction wells will be operated with variable frequency drives, with each well's operating point starting at a flow rate of 300 GPM and a maximum of 500

GPM, for a combined maximum of 1,000 GPM. If demand cannot be met by a single well, the system will call the second well into operation and increase the flow rate of the second well until system demand is met.

44. Drawdown for the two extraction wells was modeled by Department Groundwater Hydrologist Attila Fohnagy in the Aquifer Test Report dated September 13, 2021. The two extraction wells were each assigned half the monthly pumping schedule (see Table 2 above) while the injection well rates were equal to the negative rates shown in Table 2. The well efficiency is calculated from modeling the aquifer test and drawdown and yield test and dividing the predicted drawdowns by the observed drawdowns. Calculated well efficiency is equal to 53% and 3% for the East Well and West Well, respectively. The actual drawdown with well loss is calculated by applying the well efficiency to the theoretical drawdown. The last row in Table 3 below gives the remaining available water column for the two extraction wells which is equal to the available drawdown above perforations minus predicted drawdown with well loss.

Table 3: Remaining available water column for the proposed well:

Well	GWIC # 311811 (East Well)	GWIC # 311812 (West Well)
Well Total Depth (feet)	255	300
Pre-Test Static Water Level (feet btc)	82.3	80.4
Available Drawdown above well perforations (feet)	117.7	194.6
Well Efficiency (%)	53%	3%
Predicted Drawdown theoretical (feet)	0.5	0.5
Predicted Drawdown including well loss (feet)	0.9	16.7
Remaining Available Water Column above well perforations (feet)	116.8	177.9

45. Based on the system specifications and additional information provided in the application materials, the Department finds that the Applicant’s proposed geothermal cooling system and infrastructure are adequate to accommodate the proposed appropriation.

CONCLUSIONS OF LAW

46. Pursuant to § 85-2-311(1)(c), MCA, an Applicant must demonstrate that the proposed means of diversion, construction, and operation of the appropriation works are adequate.

47. The adequate means of diversion statutory test merely codifies and encapsulates the case law notion of appropriation to the effect that the means of diversion must be reasonably effective, i.e., must not result in a waste of the resource. *In the Matter of Application for Beneficial Water Use Permit No. 33983s41Q by Hoyt* (DNRC Final Order 1981); § 85-2-312(1)(a), MCA.

48. Applicant has proven by a preponderance of the evidence that the proposed means of diversion, construction, and operation of the appropriation works are adequate for the proposed beneficial use. § 85-2-311(1)(c), MCA (FOF Nos. 40-45).

Beneficial Use

FINDINGS OF FACT

49. The Applicant proposes to use groundwater for the year-round purpose of geothermal cooling.

50. The Applicant proposes to divert groundwater from two extraction wells at a variable rate, not to exceed a combined maximum flow rate of 1,000 GPM. Total annual diverted volume will not exceed 99 AF. This amount of water was determined to be necessary to run the heat exchange operations year-round for cooling of the Missoula County airport terminal building, based on square footage of the facility (216,000 sq ft), peak cooling demand of the facility, and temperature differential needed in the heat exchange coils. Peak flow rate and volume usage are expected in July and August, with cooling needs occurring year-round in server rooms within the airport terminal.

51. This water right is intended to provide the entirety of cooling demand for the Missoula County Airport terminal, including year-round cooling of server rooms within the terminal, with existing geothermal systems remaining in place for backup.

52. The Department finds the Applicant's proposed appropriation of 1,000 GPM up to 99 AF per year for the purpose of geothermal cooling to be a beneficial use of water.

CONCLUSIONS OF LAW

53. Under § 85-2-311(1)(d), MCA, an Applicant must prove by a preponderance of the evidence the proposed use is a beneficial use.

54. An appropriator may appropriate water only for a beneficial use. See also, § 85-2-301 MCA. It is a fundamental premise of Montana water law that beneficial use is the basis, measure, and limit of the use. E.g., McDonald, supra; Toohey v. Campbell (1900), 24 Mont. 13, 60 P. 396. The amount of water under a water right is limited to the amount of water necessary to sustain the beneficial use. E.g., Bitterroot River Protective Association v. Siebel, Order on Petition for Judicial Review, Cause No. BDV-2002-519, Montana First Judicial District Court, Lewis and Clark County (2003), *affirmed on other grounds*, 2005 MT 60, 326 Mont. 241, 108 P.3d 518; *In The Matter Of Application For Beneficial Water Use Permit No. 43C 30007297 by Dee Deaterly* (DNRC Final Order), *affirmed other grounds*, Dee Deaterly v. DNRC et al, Cause No. 2007-186, Montana First Judicial District, *Order Nunc Pro Tunc on Petition for Judicial Review* (2009); Worden v. Alexander (1939), 108 Mont. 208, 90 P.2d 160; Allen v. Petrick (1924), 69 Mont. 373, 222 P. 451; *In the Matter of Application for Beneficial Water Use Permit No. 41S-105823 by French* (DNRC Final Order 2000).

Amount of water to be diverted must be shown precisely. Sitz Ranch v. DNRC, DV-10-13390, Fifth Judicial District Court, *Order Affirming DNRC Decision*, (2011) Pg. 3 (citing BRPA v. Siebel, 2005 MT 60, and rejecting applicant's argument that it be allowed to appropriate 800 acre-feet when a typical year would require 200-300 acre-feet).

55. Applicant proposes to use water for geothermal cooling which is a recognized beneficial use. § 85-2-102(5), MCA. Applicant has proven by a preponderance of the evidence geothermal heating and cooling is a beneficial use and that 99 AF of diverted volume and 1,000 GPM flow rate of water requested is the amount needed to sustain the beneficial use. § 85-2-311(1)(d), MCA, (FOF Nos. 49-52)

Possessory Interest

FINDINGS OF FACT

56. The Applicant signed and had the affidavit on the application form affirming the applicant has possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use.

CONCLUSIONS OF LAW

57. Pursuant to § 85-2-311(1)(e), MCA, an Applicant must prove by a preponderance of the evidence that it has a possessory interest or the written consent of the person with the possessory interest in the property where the water is to be put to beneficial use, or if the proposed use has a point of diversion, conveyance, or place of use on national forest system lands, the applicant has any written special use authorization required by federal law to occupy, use, or traverse national forest system lands for the purpose of diversion, impoundment, storage, transportation, withdrawal, use, or distribution of water under the permit.

58. Pursuant to ARM 36.12.1802:

(1) An applicant or a representative shall sign the application affidavit to affirm the following:

(a) the statements on the application and all information submitted with the application are true and correct and

(b) except in cases of an instream flow application, or where the application is for sale, rental, distribution, or is a municipal use, or in any other context in which water is being supplied to another and it is clear that the ultimate user will not accept the supply without consenting to the use of water on the user's place of use, the applicant has possessory interest in the property where the water is to be put to beneficial use or has the written consent of the person having the possessory interest.

(2) If a representative of the applicant signs the application form affidavit, the representative shall state the relationship of the representative to the applicant on the form, such as president of the corporation, and provide documentation that establishes the authority of the representative to sign the application, such as a copy of a power of attorney.

(3) The department may require a copy of the written consent of the person having the possessory interest.

59. The Applicant has proven by a preponderance of the evidence that it has a possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use. § 85-2-311(1)(e), MCA. (FOF No. 56)

PRELIMINARY DETERMINATION

Subject to the terms, analysis, and conditions in this Order, the Department preliminarily determines that this Application for Beneficial Water Use Permit No. 76M 30151126 should be GRANTED.

The Department determines the Applicant may divert groundwater for geothermal cooling by means of two extraction wells in the NENENE of Section 2 TWP 13N RGE 20W, Missoula County. The two extraction wells may divert at a maximum combined rate of 1,000 GPM, up to a maximum annual diverted volume of 99 AF, which will be returned to the aquifer via a 340 feet-deep injection well. The injection well is located in the NWNENE of Section 2 TWP 13N RGE 20W, Missoula County. The place of use is in the NENE of Section 2 TWP 13N RGE 20W, Missoula County. The period of use will be from January 1 through December 31.

The application will be subject to the following conditions, limitations or restrictions.

1) **WATER MEASUREMENT RECORDS REQUIRED:**

The appropriator shall install a department approved in-line flow meter at a point in the delivery line approved by the department. Water must not be diverted until the required measuring device is in place and operating. On a form provided by the department, the appropriator shall keep a written monthly record of the flow rate and volume of all water diverted, including the period of time. Records shall be submitted by January 31 of each year and upon request at other times during the year until the beneficial water use permit is perfected and the department receives a project completion notice. In the event that authorized flow rates and/or volumes have been exceeded during perfection of the permit or the appropriator fails to submit annual reports, the department may continue to require annual submissions of monthly flow rate and volume records. Failure to submit reports may be cause for revocation of a permit or change. Records must be sent to the Water Resources Regional Office. The appropriator shall maintain the measuring device so it always operates properly and measures flow rate and volume accurately.

NOTICE

This Department will provide public notice of this Application and the Department's Preliminary Determination to Grant pursuant to §§ 85-2-307, MCA. The Department will set a deadline for objections to this Application pursuant to §§ 85-2-307, and -308, MCA. If this Application receives no valid objection or all valid objections are unconditionally withdrawn, the Department will grant this Application as herein approved. If this Application receives a valid objection, the application and objection will proceed to a contested case proceeding pursuant to Title 2 Chapter 4 Part 6, MCA, and § 85-2-309, MCA. If valid objections to an application are received and withdrawn with stipulated conditions and the department preliminarily determined to grant the permit or change in appropriation right, the department will grant the permit or change subject to conditions necessary to satisfy applicable criteria.

DATED this 26th day of July, 2022

/Original signed by Jim Nave/
Jim Nave, Regional Manager
Missoula Regional Office
Water Resources Division
Department of Natural Resources
and Conservation

CERTIFICATE OF SERVICE

This certifies that a true and correct copy of the PRELIMINARY DETERMINATION TO GRANT was served upon all parties listed below on this 26th day of July 2022, by first class United States mail.

MISSOULA COUNTY AIRPORT
5225 US HWY 10 W
MISSOULA, MT 59808

MORRISON-MAIERLE INC.
C/O PAT ELLER
2880 TECHNOLOGY BLVD WEST
BOZEMAN, MT 59718

NAME

DATE