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DEQ Montana Department of Environmental Quality

BOARD OF ENVIRONMENTAL REVIEW
FRIDAY, MAY 31, 2019
METCALF BUILDING, ROOM 111
1520 EAST 6th AVENUE, HELENA, MONTANA

**NOTE:** Interested persons, members of the public, and the media are welcome to attend at the location stated above. The Board will make reasonable accommodations for persons with disabilities who wish to participate in this meeting. Please contact the Board Secretary by telephone or by e-mail at Lindsay.Ford@mt.gov no later than 24 hours prior to the meeting to advise her of the nature of the accommodation needed.

**9:00 AM**

## I. ADMINISTRATIVE ITEMS

A. REVIEW AND APPROVE MINUTES

1. The Board will vote on adopting the April 12, 2019 meeting minutes.

Public Comment.

## II. BRIEFING ITEMS

A. CONTESTED CASE UPDATE

1. Enforcement cases assigned to the Hearing Examiner

a. **In the matter of the Notice of Appeal and Request for Hearing by CMG Construction, Inc. Regarding Notice of Violations and Administrative Compliance and Penalty Order, Docket No. OC-17-12, BER 2017-08 OC**. On February 9, 2018, the Board assigned Ms. Clerget to be the hearing examiner. At the parties' request, this case was stayed from July 23, 2018 until April 2, 2019. Ms. Clerget held a scheduling conference in this case on April 2, 2019 and the parties agreed to a schedule for discovery. On May 13, 2019, Ms. Clerget issued a Scheduling Order adopting the schedule, and the parties are proceeding accordingly. An additional scheduling conference is scheduled for July 26, 2019.

b. **In the matter of violations of the Water Quality Act by Reflections at Copper Ridge, LLC, at Reflections at Copper Ridge Subdivision, Billings, Yellowstone County (MTR105376), BER 2015-01 WQ and In the matter of violations of the Water Quality Act by Copper Ridge Development Corporation at Copper Ridge Subdivision, Billings, Yellowstone County (MTR105377), BER 2015-02 WQ**. On July 16, 2018, Ms. Clerget issued her Proposed Findings of Fact Conclusions of Law. The parties submitted their exceptions briefs and the matter was fully briefed and before the Board for oral argument at the December 2018 meeting, however, the Board lacked a quorum. The Board requested additional briefing from the parties on the owner/operator issue, which the parties submitted. At the February 2019 meeting, the board vacated the Proposed Findings of Fact and Conclusions of Law and Order on Summary Judgment and remanded the matter for further proceedings, consistent with the Board's interpretation of the statute. Ms. Clerget determined that the facts in the record were insufficient with respect to the owner/operator

issue. The parties were given additional time for discovery, which they completed. CR/REF filed two Motions in Limine, to which DEQ responded and oral arguments were held on those on May 23, 2019, at the final prehearing conference. A one-day hearing is scheduled for June 5, 2019, on the owner-operator issue.

2. Non-enforcement cases assigned to the Hearings Examiner

   a. **In the Matter of the Application for an Amendment of a Major Facility Siting Act Certificate by Talen Montana LLC, BER 2019-04 MFSA** On May 22, 2019, the BER appointed Sarah Clerget as hearing examiner to preside over this contested case. On the same day, Ms. Clerget held a hearing on Westmoreland's "Emergency Motion for Expedited Relief from ARM 17.20.1803(d)." At the hearing, Ms. Clerget granted Talen Montana's oral Motion to Intervene as a party in the case and allowed Talen until midnight on May 23, 2019 to file a responsive brief, which Talen did. Ms. Clerget issued her decision on the Emergency Motion on May 24, 2019.

   b. **In the Matter of the Notice of Appeal and Request for Hearing by Spring Creek Coal, LLC regarding issuance of MPDES Permit No. MT0024619, BER 2019-02 WQ.** On February 12, 2019, the Board received a request for hearing. On April 12, 2019, the Board assigned Ms. Clerget as the hearing examiner. Ms. Clerget will issue a scheduling order in this matter as soon as possible.

   c. **In the matter of the Notice of Appeal and Request for Hearing by CHS, Inc. regarding issuance of MPDES Permit No. MT0000264, BER 2019-01 WQ.** On February 8, 2019, the BER appointed Sarah Clerget as hearing examiner to preside over this contested case. The Board directed Ms. Clerget to consolidate this case with BER 2015-07 WQ for scheduling purposes. Ms. Clerget issued a Scheduling Order on March 13, 2019. On April 22, 2019, the parties entered a stipulation regarding some of the appealed permit provisions and CHS accordingly filed an Amended Notice of Appeal. The parties are proceeding according to the Scheduling Order.

   d. **In the matter of Westmoreland Resources, Inc.'s, appeal of final MPDES permit No. MT0021229 issued by DEQ for the Absaloka Mine in Hardin, Big Horn County, MT, BER 2015-06 WQ.** This matter has been stayed since March 28, 2018, pending the Montana Supreme Court decision in *MEIC and Sierra Club v. DEQ and Western Energy*. The parties will file a status report within 30 days of the Supreme Court's decision, which has not yet occurred.

   e. **In the matter of the notice of appeal and request for hearing by Montanore Minerals Corporation Regarding Issuance of MPDES Permit No. MT0030279, Libby, Montana, BER2017-03 WQ.** Ms. Clerget held a two-day hearing on this matter on December 3-4, 2018. The parties submitted proposed FOFCOLs and responses, and Ms. Clerget held closing/oral arguments on those on May 7, 2019. The matter is therefore ripe before Ms. Clerget for a proposed decision. However, counsel for DEQ will not be available during the Board's August meeting, and the parties have agreed that this matter will therefore not come before the BER for final decision until

the October meeting. Ms. Clerget will therefore issue her proposed decision in time to have the matter before the Board at the October meeting.

f. **In the matter of the notice of appeal of final MPDES Permit No. MT0000264 issued by DEQ for the Laurel Refinery in Laurel, Yellowstone County, Montana, BER 2015-07 WQ.** On February 8, 2019, the BER appointed Sarah Clerget as hearing examiner to preside over this contested case. The Board directed Ms. Clerget to consolidate this case with BER 2019-01 WQ for scheduling purposes. Ms. Clerget issued a Scheduling Order on March 13, 2019 and the parties are proceeding accordingly.

g. **In the Matter of Notice of Appeal of Opencut Mining Permit #2351 Issued to Golden West Properties, LLC by Frank and Paulette Wagner Regarding Concerns and Unanswered Questions. BER 2018-04 OC, and In the Matter of Notice of Appeal of Opencut Mining Permit #2351 Issued to Golden West Properties, LLC by David Weyer on behalf of the Residents of Walden Meadows Subdivision. BER 2018-05 OC**. On August 10, 2018, the Board assigned this case to Sarah Clerget as hearing examiner. Based on the parties requests, Ms. Clerget as issued several modified Scheduling Orders and extensions. Pursuant to the most recent schedule, the parties have filed cross Motions for Summary Judgment, which will be fully briefed on June 7, 2019. Ms. Clerget will review those filings and issue a proposed Order on Summary Judgment to the Board as soon as possible.

3. Contested Cases not assigned to a Hearing Examiner

a. **In the matter of the notice of appeal and request for hearing by Western Energy Company (WECO) regarding its MPDES Permit No. MT0023965 issued for WECO's Rosebud Mine in Colstrip, BER 2012-12 WQ**. On April 30, 2019, the Montana Supreme Court ordered Plaintiff and Appellees Montana Environmental Information Center and Sierra Club, and the Defendants and Appellants DEQ and Western Energy Company to submit addition simultaneous briefing on three issues: 1 – the legal basis for DEQ's representative monitoring protocol for precipitation-driven events; 2- the basis (based on data in the administrative record) for DEQ's selection of the 20 representative outfalls out of all the active outfalls; and 3 – address the 2014 modifications to MPDES Permit No. MT0023965 including evidence in the administrative record and arguments made before the Board that support or contradict the District Court's decision to invalidate the Permit as modified in 2014, and address Western Energy Company's argument that the District Court should not have reviewed the administrative decision to renew MPDES Permit No. MT0023965 until the 2014 modifications to the Permit were complete.

## III. ACTION ITEMS

A. APPEAL, AMEND, OR ADOPT FINAL RULES

1. **The department requests that the board adopt proposed amendments to the Administrative Rules of Montana (ARM) pertaining to ground water standards incorporated by reference into Department Circular DEQ-7.**

Specifically, the department requests that the board adopt ground water standards for: diallate; dioxane, 1,4-; perfluorooctane sulfonate (PFOS); and perfluorooctanoic acid (PFOA). The board initiated rulemaking for the affected board rules at its December 7, 2018 regular meeting.

Public Comment.

2. **In the matter of final adoption of New Rule I (17.30.1702) and the proposed amendments to Administrative Rules of Montana (ARM) 17.30.1001, 17.30.1334, 17.36.103, 17.36.345, 17.38.101, 17.50.819 and Department Circulars DEQ-1, DEQ-2, and DEQ-3 as noticed in MAR 17-404 with modifications.** The amendments include adding or updating a citation to ARM 17.30.1702. The 2017 Legislature required the Department to initiate rulemaking to implement HB 368 - establishing the minimum setback distance between water wells and sewage lagoons. ARM 17.30.1702 implements HB 368 and establishes those minimum setbacks.

   Public Comment.

B. NEW CONTESTED CASE

1. **In the Matter of the Notice of Appeal and Request for Hearing by Western Energy Company regarding approval of surface mining permit no. C2011003F, BER 2019-03 OC.** On May 17, 2019, the Board received a request for hearing. The Board can decide to assign a hearings examiner for procedural issues in this case, hear the case itself, or assign a hearing examiner for the totality of the case.

2. **In the Matter of the Notice of Appeal and Request for Hearing by the Montana Environmental Information Center and Sierra Club regarding approval of surface mining permit no. C2011003F, BER 2019-05 OC.** On May 20, 2019, the Board received a request for hearing. The Board can decide to assign a hearings examiner for procedural issues in this case, hear the case itself, or assign a hearing examiner for the totality of the case.

C. ACTION ON CONTESTED CASES

1. **An appeal in the matter of amendment application AM3, Signal Peak Energy LLC's Bull Mountain Coal Mine #1 Permit No. C1993017, BER 2016-07 SM.** The parties have filed cross Motions for Summary Judgment, which were fully briefed on April 5, 2019. The prior Board assigned this case to the previous hearing examiner for procedural purposes only. Therefore, the Summary Judgment Motions will be before the BER for oral argument substantive decision, absent a decision otherwise from the current Board. On May 17, 2019, Ms. Clerget informed the parties that the Board would consider this procedural issue at the May 31, 2019 meeting and, at the Board's discretion, the parties might be heard on the issue. Additionally, on May 22, 2019, the Board received a Notice of Appeal from the Montana Supreme Court, indicating that Signal Peak is appealing the decisions of Montana Thirteenth Judicial District Court, Yellowstone County, in Cause No. DV-18-896 (Orders dated November 14, 2018 and March 25, 2019, Judgment entered on April 22, 2019). Those decisions

involve the request for a subpoena in the contested case before the hearing examiner, which the parties took to District Court for resolution. The Board is a party to this appeal, as it was a party to the underlying District Court case, although the Board filed a "Notice of Non-Participation" in the matter. Unless the Board requests otherwise, Ms. Clerget will represent the Board to the extent necessary before the Montana Supreme Court in the matter.

2. **In the matter of Appeal Amendment AM4, Western Energy Company Rosebud Strip Mine Area B, Permit No. C1984003B, BER 2016-03 SM.** Ms. Clerget conducted a four-day hearing in this matter that concluded on March 22, 2018. After several extensions, the parties submitted their post-hearing filings on September 27, 2018. On October 23, 2018, Western Energy filed a notice of bankruptcy. On November 16, 2018, the parties held a status conference and agreed that the bankruptcy filing does not stay this proceeding. Ms. Clerget issued her Proposed Findings of Fact and Conclusions of Law (FOFCOL) on April 11, 2019. All three parties have filed exceptions to the FOFCOL, which have been provided to the Board. The parties will present oral argument at the May 31, 2019 meeting and the matter is then ripe for decision by the BER.

## IV. BOARD COUNSEL UPDATE

Counsel for the Board will report on general Board business, procedural matters, and questions from Board Members.

## V. GENERAL PUBLIC COMMENT

Under this item, members of the public may comment on any public matter within the jurisdiction of the Board that is not otherwise on the agenda of the meeting. Individual contested case proceedings are not public matters on which the public may comment.

## VI. ADJOURNMENT

DEQ Montana Department of Environmental Quality

**BOARD OF ENVIRONMENTAL REVIEW**
**MINUTES**

**April 12, 2019**

Call to Order

The Board of Environmental Review's meeting was called to order by Chairperson Deveny at 10:30 a.m., on Friday, April 12, 2019 in Room 111 of the Metcalf Building, 1520 East 6th Avenue, Helena, Montana.

Attendance

**Board Members Present in person:** Chairperson Christine Deveny, John DeArment, Melissa Hornbein

**Board Members Present by Phone:** David Lehnherr

**Board Members Absent:** Hillary Hanson, Dexter Busby, Chris Tweeten

**Board Attorney Present:** Sarah Clerget, Attorney General's Office (AGO)

**Board Liaison Present:** George Mathieus

**Board Secretary Present:** Lindsay Ford

**Court Reporter Present:** Laurie Crutcher, Crutcher Court Reporting

**Department Personnel Present**: Ed Hayes, Kirsten Bowers, Kurt Moser, Sandy Scherer, Sarah Christofferson, Nick Whitaker, Rainie Devaney, Chris Yde, Martin VanOort, Ed Coleman, Norm Mullen, Liz Ulrich, Damon Songer, Eric Urban, Haley Sir, Johanna McLaughlin, Jon Kenning, Eric Sivers, Ed Warner, Shawn Juers, Julie Merkel, Rebecca Harbage

**Interested & Other Persons Present:** Alan Olson – Montana Petroleum Association; David Smith – Montana Contractors Association

**Interested & Other Persons Present by Phone:** Andrew Emrich – Holland and Hart; Kari Boiter – Northern Plains Resource Council

Roll was called: three Board members were present in person and one Board member was present via teleconference, providing a quorum.

**I.A. Administrative Items – Review and Approve Minutes**

I.A.1. **December 7, 2018 Meeting Minutes**

Mr. DeArment moved to approve the meeting minutes. Chairperson Deveny seconded the motion, which passed unanimously.

**II.A.1. Briefing Items – Enforcement Cases assigned to the Hearing Examiner**

II.A.1.a. **In the matter of the Notice of Appeal and Request for Hearing by CMG Construction, Inc. Regarding Notice of Violations and Administrative Compliance and Penalty Order, Docket No. OC-17-12, BER 2017-08 OC.**

Ms. Clerget said she issued an amended scheduling order and the parties are proceeding accordingly.

II.A.1.b. **In the matter of violations of the Water Quality Act by Reflections at Copper Ridge, LLC, at Reflections at Copper Ridge Subdivision, Billings, Yellowstone County (MTR105376), BER 2015-01 WQ and In the matter of violations of the Water Quality Act by Copper Ridge Development Corporation at Copper Ridge Subdivision, Billings, Yellowstone County (MTR105377), BER 2015-02 WQ.**

Ms. Clerget stated she has set an additional factual hearing on the owner/operator issue for June 2019.

II.A.1.c. **In the Matter of Appeal Revocation of Cosa, Fischer Land Development Subdivision [ES# 42-78-S3-173] and Fischer Homes [ES# 42-80-T1-15], Roger Emery, Sidney, Richland County, Montana. [FID# 2214], BER 2018-03 SUB.**

Ms. Clerget stated this case has been dismissed.

II.A.1.d. **In the Matter of Violation of the Metal Mine Reclamation Act by Little Bear Construction, Inc. at Bob Weaver Pit, Granite County, Montana. (SMED NO. 46-117C; FID # 2567), BER 2018-02 MM.**

Ms. Clerget stated this case has been dismissed.

**II.A.2. Briefing Items – Non-Enforcement Cases Assigned to a Hearing Examiner**

II.A.2.a. **In the matter of the Notice of Appeal and Request for Hearing by CHS, Inc. regarding issuance of MPDES Permit No. MT0000264, BER 2019-01 WQ.**

Ms. Clerget said she issued a scheduling order and the parties are proceeding accordingly. CHS has filed a petition to stay portions of the permit in that case and an expedited schedule has been put in place. Oral arguments are set for April 23, 2019.

II.A.2.b. **In the matter of Westmoreland Resources, Inc.'s, appeal of final MPDES permit No. MT0021229 issued by DEQ for the Absaloka Mine in Hardin, Big Horn County, MT, BER 2015-06 WQ.**

Ms. Clerget said this case is stayed pending a decision from the Supreme Court in MEIC and Sierra Club v. DEQ/Western Energy.

II.A.2.c. **An appeal in the matter of amendment application AM3, Signal Peak Energy LLC's Bull Mountain Coal Mine #1 Permit No. C1993017, BER 2016-07 SM.**

Ms. Clerget stated summary judgement motions and briefings are complete and she will be presenting proposed findings of fact and conclusions of law soon.

II.A.2.d. **In the matter of Appeal Amendment AM4, Western Energy Company Rosebud Strip Mine Area B, Permit No. C1984003B, BER 2016-03 SM.**

Ms. Clerget said a four-day hearing was held last year and the parties submitted their proposed finding of fact and conclusions of law. She has issued a decision in the case and will be before the Board and the May 31, 2019 meeting.

II.A.2.e. **In the matter of the notice of appeal and request for hearing by Montanore Minerals Corporation Regarding Issuance of MPDES Permit No. MT0030279, Libby, Montana, BER2017-03 WQ.**

Ms. Clerget stated the proposed findings of fact and conclusions of law have been submitted and is ready for her decision.

II.A.2.f. **In the matter of the notice of appeal of final MPDES Permit No. MT0000264 issued by DEQ for the Laurel Refinery in Laurel, Yellowstone County, Montana, BER 2015-07 WQ.**

Ms. Clerget stated there is a scheduling order in place and the parties are proceeding accordingly.

II.A.2.g. **In the matter of Columbia Falls Aluminum Company's (CFAC) appeal of DEQ's modification of Montana Pollutant Discharge Elimination System Permit No. MT0030066, Columbia Falls, Flathead County, Montana, BER 2014-06 WQ.**

Mr. Moser stated the parties have engaged in discussions. No comments were received regarding the notice to terminate the permit. The termination becomes effective April 17, 2019 at which point it will be the parties' intent to file a motion to dismiss.

II.A.h. **In the Matter of Notice of Appeal of Opencut Mining Permit #2351 Issued to Golden West Properties, LLC by Frank and Paulette Wagner Regarding Concerns and Unanswered Questions. BER 2018-04 OC, and In the Matter of Notice of Appeal of Opencut Mining Permit #2351 Issued to Golden West Properties, LLC by David Weyer on behalf of the Residents of Walden Meadows Subdivision. BER 2018-05 OC.**

Ms. Clerget said there is a scheduling order in place that was slightly modified, and the parties are proceeding accordingly.

II.A.3.a. **In the matter of the notice of appeal and request for hearing by Western Energy Company (WECO) regarding its MPDES Permit No. MT0023965 issued for WECO's Rosebud Mine in Colstrip, BER 2012-12 WQ.**

Ms. Bowers stated the case has been fully briefed before the Montana Supreme Court. Parties held oral arguments on March 13, 2019 and are awaiting the Court's order.

**III.A. Action Items – APPEAL, AMEND, OR ADOPT FINAL RULES:**

III.A.1. **In the matter of final adoption of the proposed amendment to ARM 17.8.744 and adoption of New Rules I-IX to establish an air quality registration program for certain portable sources of emissions, as noticed in MAR Notice No. 17-402.**

Ms. Harbage briefed the Board.

Chairperson Deveny moved to adopt the New Rule I through IX as set forth in the draft notice amendment and adoption and adopt the stringency and takings analysis as included. Mr. DeArment seconded the motion which passed unanimously.

**III.B. New Contested Cases**

III.B.1. **In the Matter of the Notice of Appeal and Request for Hearing by Spring Creek Coal, LLC regarding issuance of MPDES Permit No. MT0024619, BER 2019-02 WQ.**

Ms. Clerget gave the Board members their options, including assigning it to the Hearings Examiner and answered questions.

Mr. DeArment moved to assign the matter to the Hearings Examiner for the totality of the case. Chairperson Deveny seconded the motion, which passed unanimously.

**IV. Board Counsel Update**

Ms. Clerget briefed the Board on a coal form that needs to be filled out by the Board members annually. It will be sent to them before the next meeting at which point they will need to fill it out and send it back.

**V. General Public Comment**

None were offered.

**VI. Adjournment**

Ms. Hornbein moved to adjourn the meeting. Chairperson Deveny seconded the motion, which passed unanimously. Chairperson Deveny adjourned the meeting at 11:00 am.

Board of Environmental Review April 12, 2019 minutes approved:

_____

CHRISTINE DEVENY
CHAIRPERSON
BOARD OF ENVIRONMENTAL REVIEW

_____
DATE

**BOARD OF ENVIRONMENTAL REVIEW**
**AGENDA ITEM**
**EXECUTIVE SUMMARY FOR PROPOSED AMENDMENT OF RULES**

**Agenda Item # III.A.1**

**Agenda Item Summary –** The Department requests that the Board amend Administrative Rules of Montana (ARM) 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, and 17.30.1001, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7, as proposed. The Department intends to adopt ARM 17.36.345, 17.55.109, 17.56.507, and 17.56.608 as proposed. In addition, the Department requests that the Board revise the ground water standards in Department Circular DEQ-7 for diallate, dioxane, 1,4-, perfluorooctane sulfonate (PFOS); and perfluorooctanoic acid (PFOA) as proposed. However, the Department requests the board not proceed with the proposed revisions to ground water standards in Department Circular DEQ-7 for iron and manganese at this time.

**List of Affected Board Rules –**The proposed amendments will affect Board rules adopted under authority of § 82-4-204, Montana Code Annotated (MCA), at ARM Title 17, chapter 24, subchapter 6, specifically ARM 17.24.645 and ARM 17.24.646; § 75-5-301, MCA, at ARM Title 17, chapter 30, subchapter 5, specifically ARM 17.30.502; §§ 75-5-201 and 75-5-301, MCA, at ARM Title 17, chapter 30, part 6, specifically ARM 17.30.619; §§ 75-5-301 & 75-5-303, at ARM Title 17, chapter 30, subchapter 7, specifically ARM 17.30.702; §§ 75-5-201 and 75-5-401, MCA, at ARM Title 17, chapter 30, subchapter 10, pertaining to the incorporation of ground water standards by reference into Department Circular DEQ-7.

**List of Affected Department Rules –** The proposed amendments will affect Department rules adopted under the authority of § 76-4-104, MCA, at ARM Title 17, chapter 36, subchapter 3, specifically ARM 17.36.345; §§ 75-10-702 and 75-10-704, MCA, at ARM Title 17, chapter 55, subchapter 1, specifically ARM 17.55.109; §§ 75-11-319 and 75-11-505, MCA, at ARM Title 17, chapter 56, subchapters 5 and 6, specifically ARM 17.56.507 and ARM 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7.

**Affected Parties Summary –** The amendments will add four human health ground water criteria into Department Circular DEQ-7, to wit: diallate; dioxane, 1,4-; PFOS; and PFOA. The proposed ground water standards for these four compounds will be primarily used by the Department's Waste Management and Remediation Division as cleanup endpoints. Remediation sites are assessed on a case-by-case basis and financially responsible or liable parties are required to remediate contaminated sites to a level that assures protection of human health, safety, and welfare and of the environment. No significant impacts are expected to parties applying for ground water discharge permits under the Montana ground water pollution control system permitting program as a result of the adoption of the proposed ground water standards for diallate, dioxane, 1,4-, PFOS, or PFOA.

**Background –**The board-initiated rulemaking for the affected board rules at its December 7, 2018 regular meeting. The proposed amendments were published on December 21, 2017, MAR Notice 17-403, at pages 2446-54 of the 2018 Montana Administrative Register, Issue Number 24. Because of the large number of public comments received on the proposed rulemaking, the Board extended the public comment period and provided an additional public hearing. The Amended Notice of Public Hearing and Extension of Comment Period was published on February 22, 2019, MAR Notice 17-403, at page 196 of

the 2019 Montana Administrative Register, Issue No. 4. A significant majority of the public comments concerned the proposed ground water standards for manganese and iron. At the second public hearing, held on March 19, 2019, the Department recommended that Department Circular DEQ-7 be revised without the proposed iron and manganese ground water standards. An important characteristic of diallate; dioxane, 1,4-; PFOS; and PFOA is that they are all manmade compounds and their natural background concentrations are zero. Iron and manganese, in contrast, are naturally occurring and in many locations natural background concentrations can equal or exceed the proposed standards. Multiple Department programs implement groundwater standards, and the Department is working to synchronize their methods, especially in relation to characterization of natural background. The Department believes this work should be completed before, instead of after, the adoption of the iron and manganese standards. The Department will continue working with the programs that implement Department Circular DEQ-7 to understand the details of how iron and manganese standards would apply in permitting and remediation decisions and will return to the board with this information.

The proposed Department Circular DEQ-7, with the additions of ground water standards for diallate; dioxane, 1,4-; PFOS; and PFOA can be viewed on the Department's website at http://deq.mt.gov/water/drinkingwater/standards.

**Hearing Information –** The Board conducted public hearings on the proposed rules on February 5, 2019 and March 19, 2019. Sarah Clerget served as the presiding officer for both hearings. The Board received oral testimony and written comments from the public and has responded to the same.

**Board Options –** The Board may:

1. Amend ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, and 17.30.1001, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7, as proposed, revise Department Circular DEQ-7 to include the ground water standards for diallate; dioxane, 1,4-; PFOS; and PFOA, and adopt the HB 521/311 analysis;
2. Amend the proposed rules with modifications the Board finds are appropriate and consistent with the scope of the Notice of Public Hearing and the record in this proceeding; or
3. Take no action to amend the proposed rules and to revise Department Circular DEQ-7 to include the ground water standards for diallate; dioxane, 1,4-; PFOS; and PFOA

**DEQ Recommendation –** The Department recommends that the Board amend ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, and 17.30.1001, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7, as proposed, revise Department Circular DEQ-7 to include the ground water standards for diallate; dioxane, 1,4-; PFOS; and PFOA, and adopt the HB 521/311 analysis.

**Enclosures –**

1. Notice of Public Hearing on Proposed Amendment, MAR Notice 17-403
2. Amended Notice of Public Hearing and Extension of Comment Period on Proposed Amendment, MAR Notice 17-403.
3. Presiding Officer Reports
4. House Bill 521/311 analysis
5. Comments Received

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
AND THE DEPARTMENT OF ENVIRONMENTAL QUALITY
OF THE STATE OF MONTANA

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| In the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7 | ) | NOTICE OF PUBLIC HEARING ON PROPOSED AMENDMENT<br><br>(RECLAMATION)<br>(WATER QUALITY)<br>(SUBDIVISIONS)<br>(CECRA)<br>(UNDERGROUND STORAGE TANKS) |

TO: All Concerned Persons

1. On February 5, 2019, at 2:00 p.m., the Board of Environmental Review and the Department of Environmental Quality will hold a public hearing in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana, to consider the proposed amendment of the above-stated rules.

2. The board and department will make reasonable accommodations for persons with disabilities who wish to participate in this rulemaking process or need an alternative accessible format of this notice. If you require an accommodation, contact Sandy Scherer, Legal Secretary, no later than 5:00 p.m., January 29, 2019, to advise us of the nature of the accommodation that you need. Please contact Sandy Scherer at the Department of Environmental Quality, P.O. Box 200901, Helena, Montana 59620-0901; phone (406) 444-2630; fax (406) 444-4386; or e-mail sscherer@mt.gov.

3. The rules proposed to be amended provide as follows, stricken matter interlined, new matter underlined:

17.24.645 GROUND WATER MONITORING (1) through (5) remain the same.

(6) Methods of sample collection, preservation, and sample analysis must be conducted in accordance with 40 CFR Part 136 titled "Guidelines Establishing Test Procedures for the Analysis of Pollutants" (July 2015) and the department's document titled "Department Circular DEQ-7, Montana Numeric Water Quality Standards," ~~May 2017~~ [effective month and year of this rule amendment] edition. Copies of Department Circular DEQ-7 are available at the Department of Environmental Quality, 1520 E. Sixth Avenue, P.O. Box 200901, Helena, MT 59620-0901. Sampling and analyses must include a quality assurance program acceptable to the department.

(7) and (8) remain the same.

AUTH: 82-4-204, MCA

IMP: 82-4-231, 82-4-232, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.24.646 SURFACE WATER MONITORING (1) through (5) remain the same.

(6) Methods of sample collection, preservation, and sample analysis must be conducted in accordance with 40 CFR Part 136 titled "Guidelines Establishing Test Procedures for the Analysis of Pollutants" (July 2015) and Part 434 titled "Coal Mining Point Source Category BPT, BAT, BCT Limitations and New Source Performance Standards" (January 2002), and the ~~May 2017~~ [effective month and year of this rule amendment] edition of the department's document titled "Department Circular DEQ-7, Montana Numeric Water Quality Standards." Copies of 40 CFR Part 136, 40 CFR 434, and Department Circular DEQ-7 are available at the Department of Environmental Quality, 1520 E. 6th Ave., P.O. Box 200901, Helena, MT 59620-0901. Sampling and analyses must include a quality assurance program acceptable to the department.

(7) remains the same.

AUTH: 82-4-204, MCA
IMP: 82-4-231, 82-4-232, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.502 DEFINITIONS The following definitions, in addition to those in 75-5-103, MCA, and ARM Title 17, chapter 30, subchapters 6 and 7, apply throughout this subchapter:

(1) through (13) remain the same.

(14) The board adopts and incorporates by reference Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, bioconcentrating, nutrient, radioactive, and harmful parameters. Copies of Department Circular DEQ-7 are available from the Department of Environmental Quality, P.O. Box 200901, Helena, MT 59620-0901.

AUTH: 75-5-301, MCA
IMP: 75-5-301, MCA

REASON: The board and the department are proposing to revise Circular

DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.619 INCORPORATIONS BY REFERENCE (1) The board adopts and incorporates by reference the following state and federal requirements and procedures as part of Montana's surface water quality standards:

(a) Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality criteria for toxic, carcinogenic, bioconcentrating, radioactive, and harmful parameters and also establishes human health-based water quality criteria for the following specific nutrients with toxic effects:

(i) through (3) remain the same.

AUTH: 75-5-201, 75-5-301, MCA
IMP: 75-5-301, 75-5-313, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.702 DEFINITIONS The following definitions, in addition to those in 75-5-103, MCA, apply throughout this subchapter (Note: 75-5-103, MCA, includes definitions for "base numeric nutrient standards," "degradation," "existing uses," "high quality waters," "mixing zone," and "parameter"):

(1) through (26) remain the same.

(27) The board adopts and incorporates by reference:

(a) Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, bioconcentrating, radioactive, and harmful parameters and also establishes human health-based water quality standards for the following specific nutrients with toxic effects:

(i) through (e) remain the same.

AUTH: 75-5-301, 75-5-303, MCA
IMP: 75-5-303, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.30.1001 DEFINITIONS The following definitions, in addition to those in 75-5-103, MCA, apply throughout this subchapter:

(1) remains the same.

(2) "DEQ-7" means Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, radioactive, bioconcentrating, nutrient, and harmful parameters.

(a) The board adopts and incorporates by reference Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition), which establishes numeric water quality standards for toxic, carcinogenic, bioconcentrating, nutrient, radioactive, and harmful parameters.

(3) through (17) remain the same.

AUTH: 75-5-201, 75-5-401, MCA
IMP: 75-5-301, 75-5-401, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.36.345 ADOPTION BY REFERENCE (1) For purposes of this chapter, the department adopts and incorporates by reference the following documents. All references to these documents in this chapter refer to the edition set out below:

(a) through (d) remain the same.

(e) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);

(f) through (2) remain the same.

AUTH: 76-4-104, MCA
IMP: 76-4-104, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.55.109 INCORPORATION BY REFERENCE (1) For the purposes of this subchapter, the department adopts and incorporates by reference:

(a) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);

(b) through (5) remain the same.

AUTH: 75-10-702, 75-10-704, MCA
IMP: 75-10-702, 75-10-704, 75-10-711, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.56.507 ADOPTION BY REFERENCE (1) For purposes of this subchapter, the department adopts and incorporates by reference:

(a) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);

(b) through (3) remain the same.

AUTH: 75-11-319, 75-11-505, MCA
IMP: 75-11-309, 75-11-505, MCA

REASON: The board and the department are proposing to revise Circular DEQ-7 to provide additional human health criteria as discussed in the statement of reason for the proposed amendment to ARM 17.56.608 set forth below. In the event that the revised circular is adopted, it is necessary to update the edition of Circular DEQ-7 being cited elsewhere in the rules.

17.56.608 ADOPTION BY REFERENCE (1) For purposes of this subchapter, the department adopts and incorporates by reference:

(a) Department Circular DEQ-7, "Montana Numeric Water Quality Standards" (~~May 2017~~ [effective month and year of this rule amendment] edition);

(b) through (3) remain the same.

AUTH: 75-11-319, 75-11-505, MCA
IMP: 75-11-309, 75-11-505, MCA

REASON: The proposed revised Department Circular DEQ-7 can be viewed on the department's website at http://deq.mt.gov/water/drinkingwater/standards. A copy of the proposed revised circular also may be obtained by contacting Mike Suplee at (406) 444-0831. Modifications to the circular and the reasons for the modifications are as follows:

Addition of new human health criteria: The board and the department are proposing to revise Department Circular DEQ-7 to provide human health groundwater criteria for the following: diallate; dioxane, 1,4-; iron; manganese; perfluorooctane sulfonate (PFOS); and perfluorooctanoic acid (PFOA). The proposed criteria concentrations are as follows: diallate, 5.5 µg/L; dioxane, 1,4-, 3 µg/L; iron, 4,000 µg/L; manganese, 100 µg/L; PFOS, 0.07 µg/L, PFOA, 0.07 µg/L.

The diallate criterion will provide the department's Hazardous Materials Program of

the Waste Management and Remediation Division a clean-up standard for hazardous waste permitted facilities. Standards for dioxane, 1,4-, PFOS, PFOA, and iron are also considered important criteria to the Waste Management and Remediation Division as cleanup endpoints for remedial activities carried out by that division. Further, standards for Dioxane, 1,4-, PFOS, and PFOA are included in EPA Office of Water Health Advisories.

Scientific research has demonstrated that excessive manganese levels can have neurobehavioral and neurocognitive impacts on infants (0-6 months). The new proposed criterion was derived for this most-sensitive population. Manganese is considered an important criterion to the Waste Management and Remediation Division as a cleanup endpoint.

The human health groundwater criteria were derived using U.S. Environmental Protection Agency (EPA) equations for human health criteria (EPA, 2000) and there are different equations for toxins and carcinogens. The criteria were derived assuming that exposure is through drinking water only (no accounting for exposure through consumption of fish is made). For example:

Toxic Criterion (µg/L) = {[RfD (mg/kg-day) x RSC x average body weight (kg)]/drinking water intake (L/day)} x 1000 µg/mg

where the RfD is a value derived from the no effects or lowest observable effects concentration (NOAEL or LOAEL, respectively), and RSC is the relative source contribution to account for potential exposure from other environmental media. EPA generally recommends an RSC of 0.2 (i.e., 20 percent of a person's exposure is from drinking water). The default drinking water intake rate for adults is 2.4 L/day and the default body weight is 80 kg, both of which are in DEQ-7 (see page 5). For some criteria, sensitive sub-populations required different body weight and drinking assumptions than the defaults, and these are detailed below where appropriate.

Citations to several technical documents are made below; the list of these documents may be found at the end of this section.

The department derived the diallate criterion using a cancer slope factor of 0.061 mg/kg-day from the EPA Health Effects Assessment Summary Table (HEAST) database (https://epa-heast.ornl.gov/heast.php), default adult weight and drinking water intake rates, and Montana's cancer risk factor of $1x\ 10^{-5}$ (per 75-5-301, MCA). Dioxane, 1,4- was derived using the IRIS 2013 cancer slope factor (0.1 mg/kg-day), default adult weight and drinking water intake rates, and Montana's cancer risk factor of $1x\ 10^{-5}$. PFOS and PFOA criteria are from EPA (2016a; 2016b; 2018) and were derived for the most sensitive population, lactating women. For them, the 90th percentile for drinking water intake was 3.6 L/day and they have a lower assumed body weight (67 kg) than the overall population. The iron criterion was calculated using a RfD (0.592 mg/kg-day) derived from EPA (2006) and the default adult weight and drinking water intake rates.

For manganese (a toxin), the department used a RfD of 0.025 mg/kg-day. The RfD was derived using literature toxicology studies (Kern *et al*., 2010; Kern *et al*., 2011; Beaudin *et al*., 2013) and a 1000-fold uncertainty factor ($UF_A$ = 10, $UF_H$ = 10, $UF_L$ = 10), where $UF_A$ is uncertainty due to interspecies variability to account for extrapolating from laboratory animals to humans, $UF_H$ is for intraspecies variability to account for variability in the responses within the human population because of intrinsic and extrinsic factors, and $UF_L$ is applied because a LOAEL and not a NOAEL was used in the derivation (EPA, 1993). The average body weight of infants zero to <6 months old was used (6.47 kg; Table 8-1, EPA, 2011) and the 90th percentile drinking water ingestion for infants zero to <6 months was 0.966 L/day (Table 3-15, EPA, 2011). The RSC was calculated by subtracting the manganese infants receive from formula (21 CFR 107.100) from the LOAEL to give a RSC of 0.833 (rounded to 0.8 per EPA guidance). Accounting for significant figures (1 in this case), the department derived a water quality standard of 100 µg/L.

Criteria Stringency Compared to Federal Guidelines: Five of the proposed criteria (diallate; dioxane, 1,4-; iron; PFOS; and PFOA) are equivalent to comparable federally recommended guidelines (EPA, 2006; HEAST; EPA, 2018). The proposed manganese criterion is more stringent than comparable federal guidelines. EPA recommends a criterion of 300 µg/L (EPA, 2004; EPA, 2018) based on studies of dietary intake of manganese. But more recent peer-reviewed scientific studies (Kern *et al*., 2010; Kern *et al*., 2011; Beaudin *et al*., 2013), based on dose-response effects on new-born and adult rats, indicate that the criterion should be 100 µg/L (the value proposed by the board). Rat studies were reviewed in EPA (2004) but the quality of those studies was not considered adequate to derive a criterion. The more recent scientific works are considered high quality according to EPA Region VIII's drinking water toxicologist (Bob Benson, personal communication, 11/8/2018). As addressed above, the proposed manganese criterion is necessary to mitigate harm to the public health, specifically zero to <6 months old infants. Further, it is achievable under current technology. At the municipal scale, dissolved manganese can be removed by several technologies (e.g., oxidation/physical separation) which can achieve concentrations of 40 µg/L.

Footnote (40): The board proposes the addition of footnote (40) to DEQ-7, which references the Montana Administrative Register (MAR) for instances where the derivation of a DEQ-7 human-health criterion is documented in MAR Notice No. 17-403. Human health standards are normally flagged in DEQ-7 to indicate which information source they were derived from; for example, many are flagged "HA," meaning they were derived from nationally-recommended EPA Health Advisory documents. However, the iron and manganese criteria discussed above were derived by the department. If the proposed iron and manganese criteria are adopted as human health standards in DEQ-7, then footnote (40) would reference this MAR notice.

Footnote (41): The board proposes new footnote (41), which clarifies that the sum of PFOA and PFOS shall not exceed the individual standards for each.

References Cited: Technical documents cited above are provided here:

EPA. 1993. Reference Dose (RfD): Description and Use in Health Risk Assessments.
Background Document 1A. https://www.epa.gov/iris/reference-dose-rfd-description-and-use-health-risk-assessments.

EPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. Technical Support Document. Volume 1: Risk Assessment. Office of Water, Office of Science and Technology. EPA-822-B-00-005.

EPA. 2006. Provisional Peer Reviewed Toxicity Values and Iron and Compounds (CASRN 7439-89-6), Derivation of Subchronic and Chronic Oral RfDs. Superfund Health Risk Technical Support Center, National Center for Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH 45268.

EPA. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. EPA/600/R-090/052F.

EPA. 2016a. Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS). Office of Water. EPA 822-R-16-004.

EPA. 2016b. Health Effects Support Document for Perfluorooctanoic Acid (PFOA). Office of Water. EPA 822-R-16-003.

EPA. 2018. 2018 Edition of the Drinking Water Standards and Health Advisories Tables. Office of Water. EPA 822-F-18-001.

Kern, C., G. Stanwood and D.R. Smith. 2010. Pre-weaning Manganese Exposure Causes Hyperactivity, Disinhibition, and Spatial Learning and Memory Deficits Associated with Altered Dopamine Receptor and Transporter Levels. *Synapse* 64: 363-378.

Kern, C. and D.R. Smith. 2011. Pre-weaning Mn Exposure Leads to Prolonged Astrocyte Activation and Lasting Effects on the Dopaminergic System in Adult Male Rats. *Synapse* 65: 532-544.

Beaudin, S. A., S. Nisam and D.R. Smith. 2013. Early Life Versus Lifelong Oral Manganese Exposure Differently Impairs Skilled Forelimb Performance in Adult Rats. *Neurotoxicology and Teratology* 38: 36-45.

4. Concerned persons may submit their data, views, or arguments, either orally or in writing, at the hearing. Written data, views, or arguments may also be submitted to Sandy Scherer, Legal Secretary, Department of Environmental Quality, 1520 E. Sixth Avenue, P.O. Box 200901, Helena, Montana 59620-0901; faxed to

(406) 444-4386; or e-mailed to sscherer@mt.gov, no later than 5:00 p.m. February 8, 2019. To be guaranteed consideration, mailed comments must be postmarked on or before that date.

5. The board and department maintain a list of interested persons who wish to receive notices of rulemaking actions proposed by this agency. Persons who wish to have their name added to the list shall make a written request that includes the name, e-mail, and mailing address of the person to receive notices and specifies that the person wishes to receive notices regarding: air quality; hazardous waste/waste oil; asbestos control; water/wastewater treatment plant operator certification; solid waste; junk vehicles; infectious waste; public water supply; public sewage systems regulation; hard rock (metal) mine reclamation; major facility siting; opencut mine reclamation; strip mine reclamation; subdivisions; renewable energy grants/loans; wind energy, wastewater treatment or safe drinking water revolving grants and loans; water quality; CECRA; underground/above ground storage tanks; MEPA; or general procedural rules other than MEPA. Notices will be sent by e-mail unless a mailing preference is noted in the request. Such written request may be mailed or delivered to Sandy Scherer, Legal Secretary, Department of Environmental Quality, 1520 E. Sixth Ave., P.O. Box 200901, Helena, Montana 59620-0901, faxed to the office at (406) 444-4386, e-mailed to Sandy Scherer at sscherer@mt.gov, or may be made by completing a request form at any rules hearing held by the department.

6. Sarah Clerget, attorney for the board, or another attorney for the Agency Legal Services Bureau, has been designated to preside over and conduct the hearing.

7. The bill sponsor contact requirements of 2-4-302, MCA, do not apply.

8. With regard to the requirements of 2-4-111, MCA, the board and the department have determined that the amendment of the above-referenced rules will not significantly and directly impact small businesses.

Reviewed by:

*/s/ Edward Hayes*
EDWARD HAYES
Rule Reviewer

BOARD OF ENVIRONMENTAL REVIEW

BY: */s/ Christine Deveny*
CHRISTINE DEVENY
Chairman

DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: */s/ Shaun McGrath*
SHAUN McGRATH
Director

Certified to the Secretary of State, December 11, 2018.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
AND THE DEPARTMENT OF ENVIRONMENTAL QUALITY
OF THE STATE OF MONTANA

| | | |
|---|---|---|
| In the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7 | ) | AMENDED NOTICE OF PUBLIC HEARING AND EXTENSION OF COMMENT PERIOD ON PROPOSED AMENDMENT<br><br>(RECLAMATION)<br>(WATER QUALITY)<br>(SUBDIVISIONS)<br>(CECRA)<br>(UNDERGROUND STORAGE TANKS) |

TO: All Concerned Persons

1. On December 21, 2018, the Board of Environmental Review and the Department of Environmental Quality published MAR Notice No. 17-403 pertaining to the public hearing on the proposed amendment of the above-referenced rules at page 2446 of the 2018 Montana Administrative Register, Issue Number 24.

2. The proposed rulemaking has generated more comments than anticipated. For that reason, on March 19, 2019, at 2:00 p.m., the Board of Environmental Review and the Department of Environmental Quality will hold an additional public hearing in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana, and extend the public comment period for an additional 45 days.

3. Concerned persons may submit their data, views, or arguments, either orally or in writing, at the hearing. Written data, views, or arguments may also be submitted to Sandy Scherer, Legal Secretary, Department of Environmental Quality, 1520 E. Sixth Avenue, P.O. Box 200901, Helena, Montana 59620-0901; faxed to (406) 444-4386; or e-mailed to sscherer@mt.gov, no later than 5:00 p.m. March 25, 2019. To be guaranteed consideration, mailed comments must be postmarked on or before that date.

4. The board and department will make reasonable accommodations for persons with disabilities who wish to participate in this rulemaking process or need an alternative accessible format of this notice. If you require an accommodation, contact Myla Kelly no later than 5:00 p.m., March 12, 2019, to advise us of the nature of the accommodation that you need. Please contact Myla Kelly at the Department of Environmental Quality, P.O. Box 200901, Helena, Montana 59620-0901; phone (406) 444-3639; fax (406) 444-4386; or e-mail MKelly2@mt.gov.

Reviewed by:

*/s/ Edward Hayes*
EDWARD HAYES
Rule Reviewer

BOARD OF ENVIRONMENTAL REVIEW

BY: */s/ Christine Deveny*
CHRISTINE DEVENY
Chairman

DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: */s/ Shaun McGrath*
SHAUN McGRATH
Director

Certified to the Secretary of State February 12, 2019.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

| | | |
|---|---|---|
| In the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7 | ) | Hearing Script |

1. This hearing is called to order. Let the record show that it is February 5, 2019 at 2:00 p.m. This hearing is taking place in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana. This is the time and place set for the public hearing in the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7. This public hearing is being recorded by Laurie Crutcher.

2. My name is Sarah Clerget. I am an assistant Attorney General for the State of Montana, assigned to the Agency Legal Services Bureau. The Board of Environmental Review has designated an attorney from Agency Legal Services Bureau to preside over and conduct this public hearing, and I am therefore acting as the presiding officer for this hearing.

3. Copies of the notice of public hearing on the proposed rulemaking are available on the table near the door for anyone who has not received a copy. Anyone who wishes to make a statement or submit written materials at this hearing should fill out a Testimony form that looks like *this* and give it to me as soon as possible, if you have not done so already. [I have already collected the Testimony forms left near the door.]

4. Mont. Code Ann. § 2-4-302(7)(a) requires presiding officers at rule hearings to read the Notice of Function of Administrative Rule Review Committee. The notice that I am required to read is as follows:

Notice of functions of Administrative Rule Review Committee

Administrative rule review is a function of interim committees and the Environmental Quality Council (EQC). These interim committees and the EQC have administrative rule review, program evaluation, and monitoring functions for executive branch agencies and the entities attached to agencies for administrative purposes. In this case, the EQC has those functions for the Department of Environmental Quality and for the Board of Environmental Review.

These interim committees and the EQC have the authority to make recommendations to an agency regarding the adoption, amendment, or repeal of a rule or to request that the agency prepare a statement of the estimated economic impact of a proposal. They also may poll the members of the Legislature to determine if a proposed rule is consistent with the intent of the Legislature or, during a legislative session, introduce a bill repealing a rule, or directing an agency to adopt or amend a rule, or a Joint Resolution recommending that an agency adopt, amend, or repeal a rule.

The interim committees and the EQC welcome comments and invite members of the public to appear before them or to send written statements in order to bring to their attention any difficulties with the existing or proposed rules. The mailing address is P.O. Box 201706, Helena MT 59620-1706.

**That completes the reading of the Notice of Function of Administrative Rule Review Committee.**

5. Mont. Code Ann. § 2-4-302(2)(a) requires each agency, which includes boards, to create and maintain a list of interested persons and the rulemaking subject or subjects in which each person on the list is interested. A person who submits a written comment or attends a hearing regarding proposed agency rulemaking must be informed of the list by the agency. The Department of Environmental Quality maintains lists of persons interested in various areas of rulemaking conducted by the Department and by the Board of Environmental Review so that the Department can provide these persons with notice of proposed rulemaking actions.

On the table near the door are forms for interested persons to designate their areas of interest in rulemaking so the Department can notify them of proposed rulemaking actions in their areas of interest. If you would like to be placed on a rulemaking interested persons list, please complete one of the forms and leave it on the table.

Notice of this hearing was contained in the Montana Administrative Register, Notice Number 17-403, published on December 21, 2018, in Issue No. 24, at pages 2446 through 2454. Under Model Rule of the Attorney General's Model Rules for the Montana Administrative Procedure Act, which have been adopted by the Department of Environmental Quality, I'm required to summarize the major provisions of the notice of public hearing.

Paragraph 1 of the notice gives notice of this hearing.

Paragraph 2 states the Board will make reasonable accommodations for persons with disabilities who wish to participate in this public hearing and gives details and contact information for requesting an accommodation.

Paragraph 3 of the notice provides the text of the proposed amendment of Rules 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345,

17.55.109, 17.56.507, and 17.56.608 and the reason given by the Department of Environmental Quality for the amendment.

Paragraph 4 outlines the procedure for concerned persons to submit their comments regarding the proposed rule.

Paragraph 5 gives notice that the Department maintains a rulemaking interested persons list and indicates how a person may have his or her name placed on the list to receive notification from the Department or from the Board of rulemaking matters.

Paragraph 6 states that I, Sarah Clerget, or another attorney for the Agency Legal Services Bureau have been designated to preside over this hearing.

Paragraph 7 states the requirements of Mont. Code Ann. § 2-4-302 regarding bill sponsor notification do not apply.

Paragraph 8 of the notice states that the requirements of Mont. Code Ann. ¶ 2-4-111 regarding significant impacts to small businesses has been applied and the Board has determined that the adoption of the above-referenced rule will not significantly and directly impact small businesses.

6. As stated in paragraph 4 of the Notice, written comments submitted after this hearing should be addressed to the Board and delivered to Sandy Scherer, Legal Secretary at the Metcalf Building, 1520 East Sixth Avenue, in Helena, Montana, or mailed to the Board at P.O. Box 200901, Helena, Montana 59620-0901, of faxed to (406) 444-4386, or emailed to sscherer@mt.gov. To guarantee consideration by the Board, comments must have been received in person or postmarked no later than 5 p.m. on February 8, 2019.

A complete copy of the notice of public hearing will be included in the official record of this hearing.

The authority of the Board of Environmental Review to undertake this rulemaking is contained in Montana Code Annotated Section 75-5-201, 75-5-301, 75-5-303, 75-5-401, 75-10-702, 75-10-704, 75-11-319, 75-11-505, 76-4-104, and 82-4-204,

A presiding officer may ask questions of persons making statements at a hearing and may allow others to ask questions upon request. Persons making statements do not have an automatic right to provide rebuttal or other additional information after they have completed their statements. However, a presiding officer may request further information and may allow further statements for good cause, if requested.

The order of presentation by persons making statements will be as follows:

First, the Department will have the opportunity to summarize or otherwise explain the proposed rulemaking and its reasons for proposing the rules, and to offer any supporting information;

Second, the statements of proponents—that is, persons in favor of the rulemaking.

Third, the statements of opponents—that is, persons opposed to the rulemaking.

Fourth, the statements of anyone else wishing to be heard.

I shall call on persons to come forward to make their statements based on the Notice to Presiding Officer forms that are on the table near the door and that have been filled out and provided to me. If anyone wishing to speak has not filled out a form, please do so at this time and bring it to me.

Because we are recording this hearing, all persons making statements will be asked to come forward to the microphone. Prior to making your statement, please identify yourself by name, address, and affiliation, and whether you are a proponent, opponent, or otherwise. If you intend to offer a document for consideration, please make sure that the document can be identified by reference to your name.

Given the time we have available, and based on the number of people who have filled out Testimony forms indicating that they wish to speak, I will allow each person ____[ten] minutes to make oral statements. If you have more to say than your given time allows, you should submit written comments to the Board by the February 8th deadline.

ORAL STATEMENTS

DEQ statement re: proposed rulemaking

Proponents

Opponents

Others

CONCLUDE HEARING

Thank you for your attendance and statements. The public comment portion of this hearing is hereby concluded.

The Department and I will report to the Board of Environmental Review about this hearing and give the Board a summary of comments that are received within the time allowed. The Board will consider the matter at a public meeting. A schedule of Board meetings, agendas, and Board materials can be found on the Board's website at:

deq.mt.gov/DEQAdmin/ber. You should check the website to determine when this matter will be considered by the Board.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

| | | |
|---|---|---|
| In the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502 17.30.619, 17.30.702, 17.30.1001, 17.36.345 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7 | ) | Hearing Script |

1. This hearing is called to order. Let the record show that it is March 19, 2019 at 2:00 p.m. This hearing is taking place in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana. This is the time and place set for the public hearing in the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7. This public hearing is being recorded by Laurie Crutcher.

2. My name is Sarah Clerget. I am an assistant Attorney General for the State of Montana, assigned to the Agency Legal Services Bureau. The Board of Environmental Review and the DEQ have designated me as the presiding officer for this hearing.

3. Copies of the notice of public hearing on the proposed rulemaking are available on the table near the door for anyone who has not received a copy. Anyone who wishes to make a statement or submit written materials at this hearing should fill out a Testimony form that looks like *this* and give it to me as soon as possible, if you have not done so already. [I have already collected the Testimony forms left near the door.]

4. Mont. Code Ann. § 2-4-302(7)(a) requires presiding officers at rule hearings to read the Notice of Function of Administrative Rule Review Committee. The notice that I am required to read is as follows:

Notice of functions of Administrative Rule Review Committee

Administrative rule review is a function of interim committees and the Environmental Quality Council (EQC). These interim committees and the EQC have administrative rule review, program evaluation, and monitoring functions for executive branch agencies and the entities attached to agencies for administrative purposes. In this case, the EQC has those functions for the Department of Environmental Quality and for the Board of Environmental Review.

These interim committees and the EQC have the authority to make recommendations to an agency regarding the adoption, amendment, or repeal of a rule or to request that the agency prepare a statement of the estimated economic impact of a proposal. They also may poll the members of the Legislature to determine if a proposed rule is consistent with the intent of the Legislature or, during a legislative session, introduce a bill repealing a rule, or directing an agency to adopt or amend a rule, or a Joint Resolution recommending that an agency adopt, amend, or repeal a rule.

The interim committees and the EQC welcome comments and invite members of the public to appear before them or to send written statements in order to bring to their attention any difficulties with the existing or proposed rules. The mailing address is P.O. Box 201706, Helena MT 59620-1706.

**That completes the reading of the Notice of Function of Administrative Rule Review Committee.**

5. Mont. Code Ann. § 2-4-302(2)(a) requires each agency, which includes boards, to create and maintain a list of interested persons and the rulemaking subject or subjects in which each person on the list is interested. A person who submits a written comment or attends a hearing regarding proposed agency rulemaking must be informed of the list by the agency. The DEQ maintains lists of persons interested in various areas of rulemaking conducted by the Department and by the Board of Environmental Review so that the Department can provide these persons with notice of proposed rulemaking actions.

On the table near the door are forms for interested persons to designate their areas of interest in rulemaking so the Department can notify them of proposed rulemaking actions in their areas of interest. If you would like to be placed on a rulemaking interested persons list, please complete one of the forms and leave it on the table.

Notice of this hearing was contained in the Montana Administrative Register, Notice Number 17-403, published on February 22, 2019, in Issue No. 4, at pages 196 through 197. Under Model Rule of the Attorney General's Model Rules for the Montana Administrative Procedure Act, which have been adopted by the Department of Environmental Quality, I'm required to summarize the major provisions of the notice of public hearing.

Paragraph 1 of the notice indicated that on December 21, 2018, the BER and the DEQ published MAR Notice No. 17-403 pertaining to the public hearing on the proposed amendment of the above-referenced rule at page 2446 of the 2018 Montana Administrative Register, Issue Number 24.

Paragraph 2 states the proposed rulemaking generated more comments than anticipated and therefore this additional hearing is being held.

Paragraph 3 outlines the procedure for concerned persons to submit their comments regarding the proposed rule.

Paragraph 4 states that the Board and the Department will make reasonable accommodations for persons with disabilities and outlines the procedure for requesting an accommodation.

6. As stated in paragraph 3 of the Notice, written comments submitted after this hearing should be addressed to the Board and delivered to Sandy Scherer, Legal Secretary at the Metcalf Building, 1520 East Sixth Avenue, in Helena, Montana, or mailed to the Board at P.O. Box 200901, Helena, Montana 59620-0901, of faxed to (406) 444-4386, or emailed to sscherer@mt.gov. To guarantee consideration by the Board, comments must have been received in person or postmarked no later than 5 p.m. on March 25, 2019.

A complete copy of the notice of public hearing will be included in the official record of this hearing.

The authority of the Board of Environmental Review and the DEQ to undertake this rulemaking is contained in Montana Code Annotated Section 82-4-204, 75-5-201, 75-5-301, 75-5-303, 75-5-401, 75-10-702, 75-10-704, 75-11-319, 75-11-505, 76-4-104, .

A presiding officer may ask questions of persons making statements at a hearing and may allow others to ask questions upon request. Persons making statements do not have an automatic right to provide rebuttal or other additional information after they have completed their statements. However, a presiding officer may request further information and may allow further statements for good cause, if requested.

The order of presentation by persons making statements will be as follows:

Mike Suplee

First, the Department will have the opportunity to summarize or otherwise explain the proposed rulemaking and its reasons for proposing the rules, and to offer any supporting information;

Second, the statements of proponents—that is, persons in favor of the rulemaking.

Third, the statements of opponents—that is, persons opposed to the rulemaking.

Fourth, the statements of anyone else wishing to be heard.

I shall call on persons to come forward to make their statements based on the Notice to Presiding Officer forms that are on the table near the door and that have been filled out and provided to me. If anyone wishing to speak has not filled out a form, please do so at this time and bring it to me.

Because we are recording this hearing, all persons making statements will be asked to come forward to the microphone. Prior to making your statement, please identify yourself by name, address, and affiliation, and whether you are a proponent, opponent, or otherwise. If you intend to offer a document for consideration, please make sure that the document can be identified by reference to your name.

Given the time we have available, and based on the number of people who have filled out Testimony forms indicating that they wish to speak, I will allow each person ____[ten] minutes to make oral statements. If you have more to say than your given time allows, you should submit written comments to the Board by the March 25th deadline.

ORAL STATEMENTS

DEQ statement re: proposed rulemaking

Proponents (none)

Opponents: Peggy Trenk, Brian Thompson

Others (none)

CONCLUDE HEARING

Thank you for your attendance and statements. The public comment portion of this hearing is hereby concluded.

The Department and I will report to the Board of Environmental Review about this hearing and give the Board a summary of comments that are received within the time allowed. The Board will consider the matter at a public meeting. A schedule of Board meetings, agendas, and Board materials can be found on the Board's website at: deq.mt.gov/DEQAdmin/ber. You should check the website to determine when this matter will be considered by the Board.

Missoula City-County Health Department
WATER QUALITY DISTRICT
301 W Alder | Missoula MT 59802-4123
www.missoulacounty.us/wqd
Phone | 406.258.4890
Fax | 406.258.4781

January 30, 2019

Tim Davis
Administrator, Water Quality Bureau
Montana Dept of Environmental Quality
PO Box 200901
Helena, MT 59620-0901

Re: Proposed Revisions to DEQ-7

Dear Mr. Davis,

The Missoula Valley Water Quality District is a division of local government who's purpose it to protect and improve the quality of surface and groundwater within the Missoula Valley. We are a program within the Missoula City-County Health Department and are firmly rooted in the protection of public health. We rely on state water quality standards to evaluate threats to our water resources and to address local clean-up efforts. Updated human and ecological risk models are essential to developing meaningful standards that are protective of human health and the environment.

We have reviewed the proposed revisions to circular DEQ-7, numeric water quality standards and are supportive of the changes. We are encouraged to see standards developed for manganese, diallate, dioxane, iron, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) and added to this circular.

Our Department and Board of County Commissioners are very concerned with buried waste, sludge and the associated contaminated groundwater that is found at the former Smurfit Stone Mill in Frenchtown, MT. Manganese levels within this area can be found exceeding 50,000 ppb. While manganese is an essential element at certain levels, higher levels can cause neurological damage, particularly to infants. Having a standard for manganese is important for protection of public health. We concur with DEQ's proposed 100 microgram/L groundwater and surface water standard.

We appreciate the proactive efforts DEQ is taking to update water quality standards. If you have any questions, please let us know.

Sincerely,

Travis Ross
Environmental Health Supervisor

BOZEMAN MT
Engineering Division

January 31, 2019

Ms. Sandy Scherer
Montana DEQ Legal Secretary
PO Box 200901
Helena, MT 59620-0901

**DELIVERED VIA EMAIL**
sscherer@mt.gov

**RE: City of Bozeman views concerning proposed rulemaking contained in MAR Notice No. 17-403**

Dear Ms. Scherer,

This letter contains input from the City of Bozeman (City) concerning proposed rulemaking contained in MAR Notice 17-403. The City supports proposed criteria that are derived from nationally recommended EPA Health Advisory documents as these criteria have significant weight and credibility stemming from careful consideration of peer-reviewed scientific studies, which establish causal links to adverse human health effects. For this reason, the City expresses its support in DEQ promulgating rules for diallate; dioxane, 1,4; PFOS; and PFOA equivalent to federal recommendations.

However, and for the same aforementioned reason, the City does not support establishing human health groundwater quality criteria for manganese (Mn) and iron (Fe) as proposed by DEQ that are more stringent than established federal guidelines. Both Mn and Fe are essential dietary needs that promote human health when consumed in reasonable quantities, but this fact does not appear to be given due consideration in DEQ's rationale when weighed against the potential harmfulness of these constituents. Furthermore, the rationale for the proposed changes fails to explain why both Mn and Fe are being considered to be classified as toxins. This absence of substantiated rationale is significant, and without it, we consider the rulemaking proposal incomplete and unfounded.

Sec. 75-5-203 MCA limits State regulations to be no more stringent than federal regulations or guidelines. It further compels DEQ in instances where it proposes standards more stringent than federal regulations or guidelines to provide written findings including information on the hearing record regarding costs to the regulated community that are directly attributable to the proposed more-stringent State standard. Proposed rulemaking for Fe and Mn State standards are more stringent than EPA regulations and guidelines; thus, cost impacts to the regulated community for compliance with the proposed State standards must be provided. In the absence of this analysis and corresponding information, the rulemaking proposal is incomplete without a cost-benefit analysis.

EPA recommends a human health criterion of 0.3 mg/L based on its review of studies of dietary intake of Mn. Despite the presence of more recent peer-reviewed scientific studies surrounding Mn, these studies have apparently not met the rigor necessary for EPA to modify its drinking water health advisory guidelines for Mn. The City believes that personal communication from EPA Region VIII's toxicologist offering a professional opinion as to the general scientific quality of these more recent studies is insufficiently rigorous to cause DEQ to act to modify its drinking water criterion for Mn to be more stringent than federal regulations or guidelines. Should EPA formally revise its Drinking Water Standards

and Health Advisory Tables, thus ostensibly recognizing said studies, the City will be supportive of DEQ amending its water quality standards to reflect the federal guidelines at that time.

The City requests that DEQ and/or the Board of Environmental Review delay this proposed rulemaking until the comments above are addressed such that the public can evaluate the validity and complete rationale, including compliance cost considerations, for these proposed changes.

Respectfully submitted,

Shawn Kohtz, PE
City Engineer

**DEPARTMENT OF DEFENSE**
REGIONAL ENVIRONMENATAL COORDINATOR, REGION VIII
REGIONAL ENVIRONMENTAL AND ENERGY OFFICE- WESTERN
US CUSTOM HOUSE
721 19TH STREET, ROOM 427
DENVER, CO 80202

February 8, 2019

Sandy Scherer
Department of Environmental
Quality 1520 E. Sixth Avenue
P.O. Box 200901
Helena, Montana 59620-0901

Subject: Comment Letter MAR Notice 17-403 Additional Groundwater Criteria

As the Department of Defense (DOD) Regional Environmental Coordinator (REC) in U.S. Environmental Protection Agency (EPA) Region 8, I am responsible for coordinating Armed Services responses to environmental policies and regulatory matters and ensuring our State partners are informed of any impacts that may result on military installations under proposed legislation or regulation. I sincerely appreciate the opportunity to share our feedback on the Montana Department of Environmental Quality's (Department) proposed additional groundwater criteria. Specifically, I am writing in response to the proposed amendment to Montana Administrative Rule 17.56.608 referenced in the Montana Administrative Register Notice 17-403 on December 21, 2018.

The proposed amendment would incorporate the revised Circular DEQ-7, the Montana Numeric Water Quality Standards. In the revised Circular DEQ-7 the Department proposes to add perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) criteria concentrations of 0.07 µg/L for each compound. The DOD is concerned by the inclusion of PFOS and PFOA at the proposed levels for the purpose of establishing clean-up standards for hazardous waste permitted facilities and cleanup endpoints[1] for the following reasons: (1) the rulemaking exceeds the Department's statutory authority to regulate groundwater under the cited underground storage tank (UST) statutes; (2) the Department is using the U.S. Environmental Protection Agency's lifetime health advisory (U.S. EPA LHA) despite the U.S. EPA recommendation against states using LHAs as a cleanup standard; and (3) it is inappropriate to apply the new regulation to site cleanups already governed by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) or the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (hereinafter RCRA) where clean-up is based on a site specific human health risk assessment processes.

[1] See MAR Notice No. 17-403, 2451 (12/21/18).

**Statutory Authority.** The Montana Administrative Procedure Act (MAPA) requires that in order for a rule to be valid, it must include a citation to the specific grant of authority wherein the statute specifically references the relevant subject matter of the rule[2] and "must be reasonably necessary to effectuate the purpose of the statute."[3] In this case, the statutes cited as the Department's authority to implement (MCA 75-11-319 [rulemaking authority for petroleum storage tank cleanup]; MCA 75-11-505 [rulemaking authority for underground storage tank]; and 75-11-309 [petroleum storage tank reimbursement provisions]) have no readily apparent nexus to the establishment of new clean-up standards for hazardous waste permitted facilities based on groundwater criteria. In MAR Notice No. 17-403, the Department indicates, "The diallate criterion will provide the department's Hazardous Materials Program of the Waste Management and Remediation Division a clean-up standard for hazardous waste permitted facilities. Standards for dioxane, 1,4-, PFOS, PFOA, and iron are also considered important criteria to the Waste Management and Remediation Division as cleanup endpoints for remedial activities carried out by that division."[4] Establishing such a cleanup standard and endpoint under the limited tanks authority the Department cited would be inappropriate.

**Statement of Reasons.** The statement of reasons should be clear that the U.S. EPA's LHA was not intended to be applied to groundwater. It is a drinking water health advisory. The LHA for PFOA and PFOS are non-enforceable and non-regulatory per the U.S. EPA Office of Ground Water and Drinking Water's memorandum *Clarification about the Appropriate Application of the PFOA and PFOS Drinking Water Advisories*, dated November 15, 2016. EPA states, "These HAs were developed by EPA to assist federal, state, and local officials in evaluating risks from unregulated contaminants in drinking water. The HAs can also serve as non-enforceable and non-regulatory technical guidance to assist federal, state, and local officials, and managers of public or community water systems in protecting public health from contaminated drinking water." The proposed cumulative standard cleanup level for PFOA and PFOS is not consistent with acceptable toxicological practice per U.S. EPA *Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures*, dated August 2000.

**Site Specific Clean up.** The Montana revised Circular DEQ-7 should not apply where other federal and DOD environmental requirements govern. DOD already conducts statutorily required site specific risk assessment and clean up on our property consistent with the requirements of the CERCLA or the RCRA. Although the Numeric Water Quality Standards in Circular DEQ-7 may be considered by DOD, it is the site-specific risk based analysis that will determine the appropriate clean-up/corrective action levels.

When DOD conducts its CERCLA environmental restoration program, it is done in accordance with CERCLA's implementing regulation, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). DOD's actions must be "consistent with the national contingency plan, to remove or arrange for the removal of, and provide for remedial action relating to such hazardous substance, pollutant or contaminant … necessary to protect the public health or welfare or the environment." EPA links the concept of "necessary action" to the risk that hazardous substances pose at a particular site – remedial action is taken when the site presents unacceptable risk to human health or the environment under the NCP.

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[2] See MCA 2-4-305(3).

[3] MCA 2-4-305(6)(b).

[4] See MAR Notice No. 17-403 at 2450-51.

Under CERCLA, once the need for remedial action is established to be warranted and necessary, state (and federal) cleanup standards are evaluated as Applicable or Relevant and Appropriate Requirements (ARARs). While ARARs are evaluated on a site-specific basis, state standards must be: (1) properly promulgated, (2) more stringent than federal standards, (3) legally applicable or relevant and appropriate as detailed in CERCLA regulations, and (4) timely identified in order to meet the definition of an ARAR. Promulgated refers to state laws that are of general applicability and are legally enforceable.

U.S. EPA specifically in its national policy establishes a hierarchy of toxicity values for use in making remedial action determinations. OSWER Dir. 9285.7-6, *Use of IRIS Values in Superfund Risk Assessment* (Dec. 21, 1993) and OSWER Dir. 9285.7-53, *Human Health Toxicity Values in Superfund Risk Assessments*, (Dec. 5, 2003). In these policies, U.S. EPA identifies toxicity values as a hierarchy, consisting of its Integrated Risk Information System (IRIS) database as preferred Tier 1 values, EPA Provisional Peer Reviewed Toxicity Values as Tier 2 values, and other peer-reviewed credible values (such as State toxicity values) as Tier 3 values.

DOD performs analysis on a case-by-case nature utilizing toxicological reference values meeting Tier 1-3 criteria when conducting human health risk assessments under CERCLA and to establish risk-based remedial goals. Currently, toxicological information exists at the federal level for PFOS and PFOA, providing the basis for the U.S. EPA LHA Reference Dose (RfD) for those compounds. This information qualifies as Tier 3 values under U.S. EPA Office of Land and Emergency Management directives (OSWER Directives 9285.7-53 and 9285.7-86). In order for the DOD to utilize toxicological information in a CERCLA risk assessment, the information must be based on the best available science utilizing scientifically accepted procedures that follow a transparent process with publicly available sources, and have undergone a scientific peer review (as also set out in the OSWER Directives 9285.7.53 and 9285.7-86 as well as the 2007 Environmental Council of the States' White Paper "Identification and Selection of Toxicity Values/Criteria for CERCLA and Hazardous Waste Site Risk Assessments in the Absence of IRIS Values").

RCRA is narrower in jurisdictional focus than CERCLA and the RCRA corrective action process concerns itself only with the identification and corrective action of solid or hazardous waste that has been abandoned or discarded. Like CERCLA, RCRA employs CERCLA IRIS values to assist in determining whether a waste abandoned or discarded (as defined in RCRA) requires action to prevent imminent and substantial endangerment to the environment for risk-based purpose. Absent identification of a risk-based concentration, RCRA regulations provide concentration-based standards for specific identified wastes (e.g., 40 CFR 261, appendix VIII [toxic constituents] & 40 CFR Part 268 [Land Disposal restrictions]. The PFOS and PFOA compounds referenced in MAR Notice 17-403 and offered for the purpose of amending Department Circular DEQ-7 are not identified as either characteristic hazardous wastes, listed hazardous wastes or toxic constituents, respectively in 40 CFR Part 261. And, again, no CERCLA/IRIS [risk-based] standard for the PFOA/PFOS compounds have been promulgated. Therefore, the DOD position is that accomplishing the amendments contemplated in MAR Notice No. 17-403 *amending* DEQ-7 cannot expand the state's jurisdiction under RCRA as applied against DOD.

The DOD has and will expeditiously respond to reduce or eliminate PFOS and PFOA exposure in drinking water and remains committed to working with the Department on this and all environmental cleanup issues. DOD remains committed to partnering with the Department to ensure the health and safety of the people of Montana. We appreciate the opportunity to provide our concerns in writing and participate in securing the best possible environmental response to the PFOS and PFOA emerging contaminant challenge. If you have questions or need additional information, please contact Kevin Ward at kevin.m.ward@usace.army.mil or at 303.844.0955.

Sincerely,

Mark Mahoney
Department of Defense
Regional Environmental Coordinator,
Region 8

Montana sm
Association of REALTORS®

Sandy Scherer
Montana Department of Environmental Quality
1520 E. 6th Avenue
Helena, MT 59620

Via Email

RE: Montana Administrative Register Notice 17-403

Dear Ms. Scherer,

On behalf of the Montana Association of REALTORS® (MAR), thank you for this opportunity to provide public comment on the proposed amendments to DEQ Circular 7 with respect to human health groundwater standards for iron and manganese. MAR represents more than 4,600 real estate professionals across the State of Montana and is an advocate for the interests of owners of real property.

MAR shares the department's goal of protecting the public from groundwater toxins. However, we have serious concerns with how the human health groundwater standards for iron and manganese proposed in Montana Administrative Register Notice 17-403 may impact subdivision development and our growing communities' housing needs. We understand that questions are being raised as to the validity of the science underpinning the proposed standards for iron and manganese, especially considering that the standards are significantly more rigorous than those adopted by the Environmental Protection Agency.

MAR requests that the board remove the iron and manganese standards from the current rule package. At a minimum the board should wait until after the economic impact statement is completed and reviewed by the public before considering human health groundwater standards for iron and manganese.

MAR appreciates your consideration of our comments. Please feel free to contact me with any questions.

Sincerely,

Sam Sill
Government Affairs Director, Montana Association of REALTORS®
One South Montana Ave, Suite M-1
Helena, MT 59601

Cc:
Mark Simonich, MAR CEO
Jim Anderson, MAR President

REALTOR®

March 19, 2019

Ms. Sandy Scherer, Legal Secretary
Department of Environmental Quality
1520 E. Sixth Avenue
P.O. Box 200901
Helena, Montana 59620-0901
sscherer@mt.gov

**Subject:** **Comment on the proposed iron and manganese human health groundwater criteria for the Department Circular DEQ-7 *Montana Numeric Water Quality Standards***

Dear Ms. Scherer:

KC Harvey Environmental, LLC (KC Harvey) appreciates the opportunity to provide public comment on the proposed addition of new human health groundwater criteria into the Department Circular DEQ-7 *Montana Numeric Water Quality Standards* (DEQ-7) for iron and manganese. KC Harvey is a Bozeman-based environmental consulting business with scientific expertise in water quality. KC Harvey does not oppose environmental regulations on behalf of industry or any other party, rather we are an applied science organization that relies on peer reviewed scientific data and research to support our work.

In an effort to understand the proposed criteria, KC Harvey has reviewed the occurrence of dissolved iron and manganese in publically available groundwater data across the State and attempted to replicate the proposed standards by reviewing the cited references for inputs to calculate the proposed numerical standards. A summary of our analyses is followed by supporting scientific data.

A review of the publically available groundwater quality data throughout the State indicates dissolved iron exceeds the proposed criteria of 4.0 mg/L in about 5% of the data from domestic wells. In our attempt to review the calculation for the proposed standard, we found the oral reference dose (RfD) used for iron did not match the data from the cited source. KC Harvey also noted that the USEPA does not have a recommended primary maximum contaminant level (MCL) for iron in drinking water nor does it provide an oral reference dose for iron in the majority of the available guidance documents for human health standards citing inadequate data available for a quantitative risk assessment. The USEPA does provide a secondary MCL for cosmetic or aesthetic purposes and a provisional RfD (p-RfD) based on gastrointestinal health effects in a study of a sensitive human population.

In comparison, natural occurring manganese is more prevalent in the State's groundwater, with about 43% of the domestic wells exceeding the proposed criteria of 0.1 mg/L based on our initial review of the publically available water quality data. This may be significant information as the proposed criteria could impact residential well users and landowners throughout the State. In addition, our review of the calculations and the cited sources for the data used to prepare the proposed criteria uncovered some discrepancies in the values used. Further explanation is recommended to scientifically support the inputs

used and to sufficiently validate the calculation to the public and businesses potentially influenced by the proposed criteria.

Details regarding our review are presented below.

**Iron (Fe)**

Iron is one of the most abundant elements in the Earth's continental crust, at 5.8% (wt/wt) along with oxygen, silicon, aluminum, calcium, magnesium, sodium, potassium, and titanium, accounting for 99% of the total percent by weight (Skinner 1979). As such, one can assume that these are the same elements just as naturally prevalent in soil, through geological weathering of parent material (essentially the Earth's crust; Sparks 2003). Normal iron concentrations in soil can range between 100 to greater than 100,000 mg iron per kilogram soil (mg/kg; Sparks 2003). Iron is considered important in the behavior of certain macronutrients and many trace elements (Kabata-Pendias and Pendias 1992). For relevance, neither United States Environmental Protection Agency's (USEPA) recommended drinking water standards nor Montana's Circular DEQ-7 contain human health water quality standards specific to any of these elements; however, aluminum and iron have designated USEPA secondary drinking water standards for cosmetic or aesthetic effects (USEPA 2018 and DEQ 2017).

KC Harvey completed a preliminary review of the publically available groundwater data for Montana sourced from the Montana Bureau of Mines and Geology (MBMG) Ground Water Information Center (GWIC) (MBMG 2018). Our review included obtaining well 'Water Quality-Inorganic' data for specific counties selected at random, with a focus on population centers throughout the State. Each county dataset was filtered for groundwater specific data (i.e. all data sources from surface waters such as springs, stream, reservoirs, lakes, ditch or irrigation, etc. were removed). The data were also filtered for dissolved metals (i.e. all total recoverable data were removed) and any sources indicating a mine or oil/ gas development and duplicate entries were removed.

General data statistics for dissolved iron were calculated for the remaining data for each county dataset. Table 1 presents the preliminary statistical analyses for each county specific to dissolved iron from the GWIC database (Table 1). We found that the average of the county dissolved iron mean concentrations was 1.5 milligram dissolved iron/liter water (mg/L) with an average standard deviation of 7.28 mg/L (mean range of 0.19 to 18.0 mg/L with a standard deviation range of 0.41 to 108.4 mg/L among the county datasets obtained). In addition to the standard statistical analyses, the number of results greater than the proposed groundwater quality standard of 4.0 mg/L dissolved iron were counted then the percent of the total count was calculated. Of the well data obtained, 396 results were above the proposed standard, roughly 5.3% of the overall available data count (396 of 7,463 results were greater than the 4.0 mg/L proposed standard).

**Table 1. Dissolved iron (mg/L) in domestic wells across the State of Montana; statistics summary for groundwater quality data for each county dataset obtained[1].**

| County | Non-detect Count | Count[2] | Min | Max | Mean | 95th %ile[3] | Standard Deviation | Count > Proposed Standard of 4.0 mg/L | % of Total |
|---|---|---|---|---|---|---|---|---|---|
| Beaverhead | 88 | 174 | 0.002 | 29.9 | 0.76 | 1.75 | 3.55 | 5 | 2.9% |
| Big Horn | 194 | 793 | ND | 91.5 | 1.33 | 6.80 | 5.05 | 81 | 10.2% |
| Blaine | 96 | 187 | ND | 21.6 | 0.66 | 2.78 | 1.99 | 7 | 3.7% |
| Broadwater | 32 | 38 | 0.002 | 3.1 | 0.22 | 1.34 | 0.59 | 0 | 0.0% |
| Cascade | 157 | 367 | ND | 293.6 | 4.36 | 4.44 | 28.30 | 20 | 5.4% |
| Custer | 3 | 88 | 0.010 | 17.4 | 0.83 | 3.72 | 2.30 | 4 | 4.5% |
| Deer Lodge[4] | | | | | | | | | |
| Fergus | 22 | 204 | ND | 984.0 | 18.00 | 13.49 | 108.44 | 20 | 9.8% |
| Flathead | 84 | 328 | 0.001 | 16.4 | 0.55 | 2.25 | 1.79 | 12 | 3.7% |
| Gallatin | 362 | 375 | ND | 11.0 | 0.26 | 1.03 | 0.93 | 6 | 1.6% |
| Glacier | 43 | 115 | ND | 40.4 | 1.27 | 5.42 | 4.71 | 7 | 6.1% |
| Granite | 40 | 50 | 0.004 | 20.0 | 0.64 | 2.17 | 2.85 | 1 | 2.0% |
| Hill | 17 | 144 | 0.002 | 18.7 | 0.69 | 2.47 | 2.17 | 3 | 2.1% |
| Jefferson | 43 | 91 | 0.003 | 34.9 | 0.91 | 2.66 | 3.76 | 2 | 2.2% |
| Lewis and Clark | 220 | 322 | ND | 23.8 | 0.40 | 1.84 | 1.64 | 7 | 2.2% |
| Missoula | 133 | 99 | 0.003 | 44.6 | 1.11 | 4.25 | 4.70 | 6 | 6.1% |
| Musselshell | 16 | 105 | 0.004 | 13.6 | 0.60 | 2.68 | 1.74 | 3 | 2.9% |
| Park | 166 | 161 | 0.003 | 14.3 | 0.32 | 0.85 | 1.39 | 2 | 1.2% |
| Powder River | 108 | 332 | ND | 22.6 | 1.04 | 5.32 | 2.53 | 25 | 7.5% |
| Powell | 50 | 92 | 0.004 | 9.1 | 0.40 | 1.52 | 1.12 | 2 | 2.2% |
| Ravalli | 207 | 167 | 0.001 | 2.7 | 0.19 | 1.00 | 0.41 | 0 | 0.0% |
| Richland | 59 | 285 | 0.000 | 53.6 | 1.71 | 5.41 | 4.79 | 27 | 9.5% |
| Roosevelt | 24 | 218 | ND | 18.7 | 1.46 | 5.95 | 2.39 | 24 | 11.0% |
| Rosebud | 449 | 1443 | ND | 19.9 | 0.64 | 2.65 | 1.42 | 45 | 3.1% |
| Sheridan | 146 | 544 | ND | 51.3 | 1.90 | 6.08 | 3.69 | 70 | 12.9% |
| Silver Bow[4] | | | | | | | | | |
| Stillwater | 214 | 362 | ND | 107.0 | 0.87 | 2.16 | 6.78 | 9 | 2.5% |
| Treasure | 27 | 64 | 0.004 | 9.3 | 0.55 | 2.03 | 1.26 | 1 | 1.6% |
| Wibaux | 10 | 50 | 0.008 | 11.6 | 0.90 | 3.52 | 2.01 | 2 | 4.0% |
| Yellowstone | 106 | 265 | 0.003 | 18.0 | 0.44 | 1.69 | 1.53 | 5 | 1.9% |
| **Summary** | **3116** | **7463** | **ND** | **984.0** | **1.54** | **13.49** | **7.28** | **396** | **5.31%** |

[1] Data was filtered for: data source 'type' (i.e. well, borehole, petwell, etc. for groundwater data; and 'procedure type' (i.e. bioavailable or dissolved). Duplicate data entries and data sourced from mine sites or oil and gas industry were also removed.
[2] Count of the filtered results available for dissolved iron within the dataset.
[3] The 95th percentile of the available results. The data summary for all of the county data presented is the maximum 95th percentile for all counties.
[4] Eliminated from analyses as available data in the county dataset was over populated with mine monitoring wells.

The current USEPA's National Recommended Water Quality Criteria for Human Health lists iron under the National Secondary Drinking Water Regulations as having a secondary maximum contaminant level (Secondary MCL of 0.3 mg/L). The National Secondary Drinking Water Regulations "are non-enforceable guidelines regarding contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water" recommended by the USEPA but not required by water systems to comply (USEPA 2009). Of course, as for any of the USEPA recommendations, States do have the option to adopt them as enforceable standards.

Iron is not listed in the USEPA's Integrated Risk Information System (IRIS) database; however, iron does have a USEPA's Provisional Peer Reviewed Toxicity Value (PPRTV). PPRTVs are toxicity values for use in the "Superfund Program when such a value is not available in IRIS" (USEPA 2006). No RfD is provided in several of the available guidance documents for human health standards (i.e. IRIS, Drinking Water Standards and Health Advisories, Health Effects Assessment Summary Tables [HEAST], Chemical Assessment and Related Activities [CARA], Agency for Toxic Substances Disease Registry [ATSDR], or the World Health Organization [WHO]) citing inadequate data available for a quantitative risk assessment. The PPRTV calculates a provisional RfD (p-RfD) of 0.7 mg/kg-day using a lowest-observed-adverse-effect (LOAEL) of 1.0 mg/kg-day and an uncertainty factor of 1.5. It is important to note that the uncertainty factor applied to the LOAEL to develop the p-RfD accounted for the use of a minimal LOAEL rather than a no observed adverse effect level (NOAEL) devised from studies which considered sensitive individuals with less than lifetime exposure and had an adequate database for human study results.

In relation, the MAR Notice No. 17-403 cites an RfD of 0.592 mg/kg-day to develop the proposed DEQ-7 iron toxic criteria as referenced on page 2451. It is unclear where this RfD value originated from since the PPRTV cited and also referenced in the above discussion calculated a p-RfD of 0.7 mg/kg-day based on gastrointestinal toxicity in a sensitive human population. The PPRTV guidance further states that the p-RfD given "is estimated to be an intake for the general population that is adequately protective from adverse health effects" (USEPA 2006). Applying the p-RfD of 0.7 mg/kg-day in the provided toxic criterion calculation on page 2451 of MAR Notice No. 17-403 would result in a proposed criterion of 4,667 µg/L:

$$\text{Toxic Criterion (µg/L)} = 1000\ \text{µg/mg} \times \frac{[\text{RfD (mg/kg-day)} \times \text{RSC} \times \text{avg body weight (kg)}]}{\text{drinking water intake (L/day)}}$$

where,
RfD = oral reference dose = 0.7 mg/kg-day
RSC = relative source contribution = 0.2 (default)
BW = average body weight = 80 kilograms (kg)
DW = drinking water intake = 2.4 liters (L/day)

A review of the publically available groundwater quality data throughout the State indicates dissolved iron exceeds the proposed criteria of 4.0 mg/L approximately 5.3% of the time. It should also be noted that due to the prevalence of iron occurring naturally in soil, any water introduced in the vadose zone of an aquifer could liberate iron in the soil into groundwater, in turn biogeochemically elevating concentrations increasing bioavailability in the aquifer, despite the quality of the water being introduced. In our review of the calculation for the proposed standard, we found the oral reference dose (RfD) did

not match the data from the cited source. Lastly, the USEPA recommends a secondary MCL for cosmetic or aesthetic purposes and not a primary drinking water standard.

**Manganese (Mn)**

Manganese is another element that is relatively abundant in the Earth's crust as one of the most prevalent trace elements in the lithosphere, ranging between 350 to 2,000 mg/kg, and therefore also just as widespread in soil (Kabata-Pendias and Pendias 1992). According to Kabata-Pendias and Pendias, manganese compounds are "very important soil constituents because this element is essential in plant nutrition and controls the behavior of several other micronutrients" (1992). Concentrations typically range between less than 2 to 7,000 mg/kg, with a mean of 950 mg/kg in the Earth's crust.

We completed the same preliminary data review of the publically available groundwater data for manganese in Montana sourced from the MBMG GWIC (MBMG 2018). Each county dataset was filtered in the same way as the iron data. General data statistics for dissolved manganese were calculated for the remaining data for each county dataset (Table 2). We found that the average of the county dissolved manganese mean concentrations was 0.42 mg/L with an average standard deviation of 2.05 mg/L (mean range of 0.03 to 2.50 mg/L with a standard deviation range of 0.11 to 14.78 mg/L among the county datasets obtained). The number of results greater than the proposed dissolved manganese groundwater quality standard of 0.1 mg/L were counted then the percent of the total count was calculated. Of the well data obtained, 2,933 results were above the proposed standard, roughly 43.2% of the overall available data (2,933 of 6,785 results were greater than the 0.1 mg/L proposed standard).

KC Harvey reviewed the referenced studies in the section 'Criteria Stringency Compared to Federal Guidelines' on page 2452 of the MAR Notice No. 17-403, which included studies by Kern, Stanwood and Smith (2010), Kern and Smith (2011), and Beaudin, Nisam, and Smith (2013) on the effects of early life exposures to manganese. These studies were reported by DEQ as accredited by a USEPA representative. These studies are typical of similar studies used by the USEPA to develop oral reference doses and derive recommended drinking water standards; however, in our review we were unable to locate where in the referenced studies that the criterion of 100 µg/L is indicated as stated in the above mentioned section of the MAR Notice No. 17-403. The MAR specifically states, "But more recent peer-reviewed scientific studies…, based on dose-response effects on new-born and adult rats, indicate that the criterion should be 100 µg/L (the value proposed by the board)." The abovementioned studies administered doses of 0, 25, and 50 mg/kg/day of manganese to baby rats in order to "better understand the relationship between early Mn exposure and neurobehavioural deficits" (Kern, Stanwood, and Smith 2010). Each study observed various levels of neurological deficits in the 25 and 50 mg/kg/day study groups comparted to the control dose of 0 mg/kg/day; however none of the studies specifically recommended or indicated a criterion for human health.

In further review of the specific inputs used to determine the target criterion in the proposed rulemaking for manganese, it is unclear where the values used for the "average body weight of infants zero to <6 months old (6.47 kg; Table 8-1, EPA, 2011)" and the "90$^{th}$ percentile drinking water ingestion for infants zero to < 6 months" of 0.966 L/day (cited from Table 3-15, EPA, 2011) were obtained. When referencing the cited tables, three different values (although similar in range) are found for the age groups of 0 to 1 month, 1 to 3 month, and 3 to 6 months. In addition, there are several different tables

that indicate a range of tap water consumption rates within the USEPA's Exposure Factors Handbook (EFH), none equaling the 0.966 L/day used. Tables 3 and 4 indicate the data in the referenced tables from the cited EFH (USEPA 2011).

**Table 2. Dissolved manganese (mg/L) in domestic wells across the State of Montana; summary statistics for groundwater quality data for each county dataset obtained[1].**

| County | Non-detect Count | Count[2] | Min | Max | Mean | 95th %ile[3] | Standard Deviation | Count > Proposed Standard of 0.1 mg/L | % of Total |
|---|---|---|---|---|---|---|---|---|---|
| Beaverhead | 117 | 138 | ND | 3.9 | 0.16 | 0.69 | 0.46 | 26 | 18.8% |
| Big Horn | 145 | 766 | ND | 20.0 | 0.37 | 1.95 | 0.94 | 313 | 40.9% |
| Blaine | 104 | 174 | 0.001 | 11.2 | 0.35 | 1.35 | 1.22 | 52 | 29.9% |
| Broadwater | 40 | 23 | 0.001 | 1.3 | 0.14 | 0.76 | 0.30 | 6 | 26.1% |
| Cascade | 147 | 356 | ND | 31.2 | 0.51 | 1.15 | 2.24 | 127 | 35.7% |
| Custer | 19 | 66 | ND | 3.1 | 0.21 | 0.69 | 0.43 | 25 | 37.9% |
| Deer Lodge[4] | | | | | | | | | |
| Fergus | 39 | 177 | ND | 134.0 | 2.50 | 5.58 | 14.78 | 54 | 30.5% |
| Flathead | 191 | 213 | ND | 2.2 | 0.15 | 0.60 | 0.26 | 85 | 39.9% |
| Gallatin | 430 | 281 | ND | 3.6 | 0.18 | 0.95 | 0.51 | 57 | 20.3% |
| Glacier | 33 | 84 | 0.001 | 2.4 | 0.14 | 0.59 | 0.31 | 28 | 33.3% |
| Granite | 51 | 38 | 0.001 | 3.0 | 0.24 | 0.97 | 0.57 | 13 | 34.2% |
| Hill | 25 | 136 | 0.001 | 7.7 | 0.26 | 0.77 | 0.83 | 46 | 33.8% |
| Jefferson | 47 | 74 | 0.001 | 16.6 | 0.45 | 0.71 | 2.00 | 28 | 37.8% |
| Lewis and Clark | 237 | 301 | 0.001 | 9.0 | 0.27 | 0.87 | 0.93 | 87 | 28.9% |
| Missoula | 139 | 93 | ND | 2.0 | 0.18 | 0.96 | 0.39 | 28 | 30.1% |
| Musselshell | 30 | 93 | ND | 1.5 | 0.13 | 0.48 | 0.26 | 25 | 26.9% |
| Park | 188 | 117 | ND | 3.9 | 0.15 | 0.48 | 0.49 | 31 | 26.5% |
| Powder River | 90 | 332 | ND | 8.0 | 0.39 | 1.44 | 0.92 | 134 | 40.4% |
| Powell | 57 | 86 | 0.001 | 5.0 | 0.34 | 2.20 | 0.86 | 26 | 30.2% |
| Ravalli | 230 | 140 | 0.001 | 1.2 | 0.03 | 0.15 | 0.11 | 11 | 7.9% |
| Richland | 48 | 253 | 0.001 | 219.8 | 1.12 | 1.08 | 13.81 | 119 | 47.0% |
| Roosevelt | 16 | 171 | 0.001 | 5.7 | 0.29 | 1.11 | 0.68 | 69 | 40.4% |
| Rosebud | 354 | 1460 | ND | 217.0 | 0.64 | 1.72 | 5.72 | 914 | 62.6% |
| Sheridan | 72 | 559 | 0.001 | 53.8 | 0.64 | 2.74 | 2.52 | 361 | 64.6% |
| Silver Bow[4] | | | | | | | | | |
| Stillwater | 183 | 369 | ND | 13.7 | 1.01 | 5.11 | 2.25 | 177 | 48.0% |
| Treasure | 17 | 53 | ND | 1.8 | 0.19 | 1.05 | 0.36 | 16 | 30.2% |
| Wibaux | 17 | 43 | 0.002 | 0.4 | 0.11 | 0.33 | 0.12 | 17 | 39.5% |
| Yellowstone | 114 | 189 | 0.001 | 36.0 | 0.54 | 1.44 | 3.16 | 58 | 30.7% |
| **Summary** | **3180** | **6785** | **ND** | **220** | **0.42** | **5.58** | **2.05** | **2933** | **43.2%** |

[1] Data was filtered for: data source 'type' (i.e. well, borehole, petwell, etc. for groundwater data; and 'procedure type' (i.e. bioavailable or dissolved). Duplicate data entries and data sourced from mine sites or oil and gas industry were also removed.
[2] Count of the filtered results available for dissolved manganese within the dataset.
[3] The 95th percentile of the available results. The data summary for all of the county data presented is the maximum 95th percentile for all counties.
[4] Eliminated from analyses as available data in the county dataset was over populated with mine monitoring wells.

**Table 3. Body weights presented in Table 8-1 of the USEPA's Exposure Factors Handbook (2011).**

| Age group | Mean Body Weight (kg) |
|---|---|
| Birth to < 1 month | 4.8 |
| 1 to < 3 month | 5.6 |
| 3 to < 6 month | 7.4 |
| **Calculated Mean** | **5.9** |
| Calculated 90th percentile | 7.0 |

Source: NHANES, 1999-2006 data

**Table 4. Different sources and tap water intake (in mL/day; 90th percentile unless noted otherwise) presented in various tables in the USEPA's Exposure Factors Handbook (2011).**

| Study Source | CSFII 1994-1996, 1998 | | | | | | | NHANES 2003-2006 | | | | | | | Hilbig et al 2002 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Population Type | Per Capita | | | Consumer Only | | | | Per Capita | | | Consumer Only | | | | Formula fed | |
| Count/ Drinking Water Source | n | Community Water | All Sources | n | Community Water | n | All Sources | n | Community Water | All Sources | n | Community Water | n | All Sources | n | 95th %ile |
| Table in the EFH | | 3-7 | 3-10 | 3-15 | | 3-18 | | | 3-23 | 3-26 | 3-33 | | 3-36 | | 3-71 | |
| Birth to < 1 month | 91 | 687 | 846 | 40 | 849 | 58 | 858 | 88 | 693 | 852 | 51 | 851 | 54 | 921 | | |
| 1 to < 3 month | 253 | 804 | 889 | 114 | 943 | 178 | 946 | 143 | 784 | 1049 | 85 | 957 | 92 | 1076 | 78 | 874 |
| 3 to < 6 month | 428 | 928 | 1025 | 281 | 1021 | 363 | 1064 | 244 | 794 | 1045 | 192 | 880 | 209 | 1101 | 14 | 757 |
| Sum (study n) | 772 | | | 435 | | 599 | | 475 | | | 328 | | 355 | | 92 | |
| Calculated 90th percentile | | 903 | 998 | | **1005** | | 1040 | | 792 | 1048 | | 942 | | 1096 | | **862** |
| Calculated Mean | | 806 | 920 | | **938** | | 956 | | 757 | 982 | | 896 | | 1033 | | **816** |

The exposure scenario described as being the basis to develop the criterion is that of an infant, 0 to 6 months old, assumed to drink only formula made from tap water (assumed based on description on page 2452 of the MAR Notice No. 17-403). Of the available studies presented in the EFH, it is unclear why the water consumption input variable from Table 3-15 in the EFH was chosen (data was sourced from the CSFII 1994-1996, 1998 consumer only population) rather than that of a newer study (NHANES 2003-2006), a per capital population study, or from data specific to formula fed infants. It could be assumed that the average of the 95$^{th}$ percentile consumed formula intake (816 mL/day) in Table 3-71 of the EFH or Table 3-30 in the Child-Specific Exposure Factors Handbook for 0 to 6 months olds would be better representative of the general daily formula consumption of infants for the exposure scenario (USEPA 2011 and USEPA 2008). The 95$^{th}$ percentile of tap water intake of formula fed 0 to 6 month olds as listed in these tables are presented in Table 4.

In general, our interpretation of the explanation for the development of the proposed criteria for manganese in the section 'Addition of new human health criteria' on page 2452 of the MAR Notice No. 17-403, is that the 25 mg/kg-day dose studied in the cited publications was used as the LOAEL. Further, an uncertainty factor (UF) of 1000 was applied to account for the use of a LOAEL rather than a NOAEL (no observed adverse effects level; $UF_L$ of 10), uncertainty due to interspecies variability as the studies used for the LOAEL were animal ($UF_A$ of 10), and uncertainty for intraspecies (human species) variability ($UF_H$ of 10). Because the studies were specifically designed to determine effects of Mn exposure in the early stages of life using baby rats, one could argue that the last $UF_H$ of 10 is over conservative as the LOAEL is derived from studies already targeting the most sensitive population (i.e. infants). If this was considered, the calculated criterion would be closer to 1,000 µg/L (1,340 µg/L) using the inputs in the abovementioned section of the MAR Notice No. 17-403. In comparison, using the USEPA NOAEL and RfD (derived for adults and dietary consumption only) of 0.14 mg/kg-day and the same inputs for infants, the criteria results in a more conservative calculated criterion of ~750 µg/L (USEPA 1988).

The 2018 Edition of the Drinking Water Standards and Health Advisories Tables (USEPA) designates a lifetime health advisory (HA) of 0.3 mg/L, the more restrictive HA provided with a recommended Drinking Water Equivalent Level (DWEL) of 1.6 mg/L. The lifetime HA is a "concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime exposure…" (USEPA 2018). This standard is based on a dietary RfD for food (details can be found in the IRIS database). For relevance, when a Maximum Contaminant Level (MCL) is assigned, it is typically the same as the life-time heath HA for other parameters in the same table (page 8, USEPA 2018).

Natural occurring manganese is fairly prevalent throughout the State's groundwater, with 43% of the domestic wells exceeding the proposed criteria of 0.1 mg/L. This may be significant information as the proposed criteria could be relative to residential well users and industries throughout the State. In addition, the same biogeochemical interaction mobilizing iron in soil with an introduction of water to an aquifer's vadose zone could also liberate manganese in groundwater, similarly elevating concentrations and increasing bioavailability in the aquifer, despite the quality of the water being introduced. Our review of the calculations and input data used to prepare the proposed criteria found some discrepancies

in the values used. Lastly, the USEPA provides an HA of 0.3 mg/L and a DWEL of 1.6 mg/L, either potentially representing a drinking water standard.

**References Cited**

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* * * * *

KC Harvey appreciates the opportunity to comment on the proposed human heath groundwater quality standards for iron and manganese in the MAR Notice No. 17-403. Based on our review, we recommend a more thorough explanation of the input variables used in the development of the proposed numeric criteria in order to scientifically justify calculated criteria to the public and potentially impacted stakeholders. We appreciate your time in reviewing and considering the data and information provided.

Sincerely,

KC Harvey Environmental, LLC

Loren Barber Franklin
Senior Scientist

cc: Kevin Harvey, Chief Scientist, KC Harvey

Missoula Public Health
City-County Health Department

**Missoula City-County Board of Health**
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https://www.missoulacounty.us/government/health/health-department/boards-councils

**ADMINISTRATION**
Phone | 406.258.3376
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March 21, 2019

Sandy Scherer
Department of Environmental Quality
1520 E. Sixth Ave
P. O. Box 200901
Helena, MT 59620-0901

RE: MAR Notice 17-403, Revision of Circular DEQ-7

Dear Department of Environmental Quality and Board of Environmental Review:

The Missoula City-County Board of Heath has reviewed the proposed revisions to circular DEQ-7, Montana Numeric Water Quality Standards and are supportive of the changes. We are encouraged to see standards developed for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), diallate, dioxane, iron, and manganese added to this circular. Many of these chemicals are carcinogenic and/or toxic, have been adopted as drinking water standards in other states, and the absence of standards for these substances presents an unnecessary risk to all of Montana's residents.

The proposed criteria are equivalent to current federally recommended guidelines, except for manganese which is more stringent. Montana currently has no human health standard for manganese. Manganese is known to be an essential nutrient that typically only shows adverse effects in humans that at very low or high levels. However, recent research indicates that the current EPA and WHO recommendations (300ug/L and 400 ug/L respectively) may not be protective of human health, especially in infants and children. Infants absorb, excrete, and regulate this nutrient differently than adults and Montana needs a standard that adequately takes this into account. There is evidence now that low levels of Mn in drinking water is associated with neurocognitive and neurobehavioral deficits in infants and children including lowered IQ, hyperactivity, memory deficits, and Parkinsonian-like symptoms.

We rely on state water quality standards to evaluate threats to our water resources and to address local clean-up efforts. The MAR notice indicates that these criteria chemicals will be useful for establishing cleanup endpoints for many of the states' contaminated sites. A local example is the Smurfit-Stone Mill in Frenchtown, MT. The Remedial Investigation is currently underway at Smurfit and these standards would help direct further sampling and remediation efforts. This is especially relevant for groundwater concentrations of Mn on the site which have been detected at levels exceeding 50,000 ug/L.

DEQ-7 standards serve to protect our groundwater, surface water, and the health of all Montanans. We encourage the Board and Department to adopt these changes.

Sincerely,

Debbie Johnston, Vice Chair

cc: Shaun McGrath, Dept of Env Quality
Chris Deveny, Board of Env Review

Montana sm
Association of REALTORS®

Sandy Scherer
Montana Department of Environmental Quality
1520 E. 6th Avenue
Helena, MT 59620

Via Email

RE: Montana Administrative Register Notice 17-403

Dear Ms. Scherer,

On behalf of the Montana Association of REALTORS® (MAR), thank you for this opportunity to provide public comment on the proposed amendments to DEQ Circular 7 with respect to human health groundwater standards for iron and manganese. MAR represents more than 4,600 real estate professionals across the State of Montana and is an advocate for the interests of owners of real property.

MAR shares the department's goal of protecting the public from groundwater toxins. However, we have serious concerns with how the human health groundwater standards for iron and manganese proposed in Montana Administrative Register Notice 17-403 may impact subdivision development and our growing communities' housing needs. We understand that questions are being raised as to the validity of the science underpinning the proposed standards for iron and manganese, especially considering that the standards are significantly more rigorous than those adopted by the Environmental Protection Agency.

MAR requests that the board remove the iron and manganese standards from the current rule package. At a minimum the board should wait until after the economic impact statement is completed and reviewed by the public before considering human health groundwater standards for iron and manganese.

MAR appreciates your consideration of our comments. Please feel free to contact me with any questions.

Sincerely,

Sam Sill
Government Affairs Director, Montana Association of REALTORS®
One South Montana Ave, Suite M-1
Helena, MT 59601

Cc:
Mark Simonich, MAR CEO
Jim Anderson, MAR President

REALTOR®

MONTANA BUILDING INDUSTRY ASSOCIATION

1717 ELEVENTH AVENUE
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March 22, 2019

Sandy Scherer
Montana Department of Environmental Quality
1520 E. 6th Avenue
Helena, MT 59620

Via email

RE: Montana Administrative Register 18-403

Dear Ms. Scherer,

On behalf of the Montana Building Industry Association (MBIA), we thank you for the opportunity to comment on the proposed amendments to DEQ Circular 7 with respect to human health standards for iron and manganese. MBIA has over 1,500 members involved in the construction industry, each with an average of 10 employees across the State of Montana.

We have worked with the Montana Association of REALTORS (MAR) on this issue, and would echo the comments that they have recently submitted.

MBIA requests that the board remove the iron and manganese standards from the proposed rule package. At a minimum the board should wait until after the economic impact statement is completed and reviewed by the public before considering human health groundwater standards for iron and manganese.

Thank you for the opportunity to comment, and for your consideration. Please feel free to contact me with any questions.

Sincerely,

Steve Snezek

Steve Snezek
Executive Director

Cc: Abby St. Lawrence, MBIA Legal Counsel

# MONTANA MINING ASSOCIATION

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March 25, 2019

Sandy Scherer, Legal Secretary
Department of Environmental Quality
1520 E. Sixth Avenue
P.O. Box 200901
Helena, Montana 59620-0901
Submitted Via Email: sscherer@mt.gov

RE: In the matter of amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 18.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7.

To Members of the Board of Environmental Review:

Thank you for the opportunity to submit comments on the above-referenced proposed rulemaking. The Montana Mining Association (MMA) is a trade association of mineral developers, producers, refiners and vendors from fifteen states, including Montana, and two Canadian Provinces. The mining industry is a major employer and taxpayer in Montana, and we believe the continued viability and growth of our members' operations are significant factors in the economic health of our state and its citizens.

The Montana Mining Association appreciates the extended public comment period and additional public hearing provided in the above-referenced proposed rulemaking. Since first learning of the rulemaking in December, MMA has been actively working with the mining industry, scientific consultants, and the Department of Environmental Quality (DEQ) to understand the impacts and evaluate the need for the proposed ground water standards for iron and manganese.

We support DEQ's recommendation to remove proposed ground water standards for iron and manganese from the rulemaking. Notably, the rulemaking proposal is a significant departure from how the EPA and other states approach iron and manganese regulation in ground water. DEQ noted that the proposed standard for manganese is more stringent than the federal guideline and EPA standards for iron and manganese in drinking water are secondary standards only, indicating a lack of priority for more stringent regulation. This indicates a need to proceed more slowly, if at all, and with more caution and certainty.

No other state appears to have ground water standards at the levels DEQ proposed for iron and manganese. Even the state of Minnesota, which analyzed the risk of manganese in a manner similar to that used by DEQ, has only provided a Health Risk Limit as guidance, to be used as "goals, benchmarks, or indicators of potential concern" for public water systems – not as water quality standards that regulate dischargers. See www.health.state.mn.us/divs/eh/risk/guidance/gw/index.html.

Because water quality standards will have wide-ranging, long-term physical and financial impacts on the regulated dischargers throughout Montana, with questionable need or benefit, we urge the Board to proceed with caution when faced with proposed standards that deviate from federal guidelines and that do not resemble anything being done or proposed in any other state.

Another important overall consideration should be the natural occurrence of iron and manganese in soil and ground water throughout the state. The abundance of iron and manganese in nature, combined with their solubility, make it likely that regardless of how clean a discharge to ground water is, once underground, the water will likely dissolve iron and manganese naturally. This natural effect makes it questionable whether regulating discharges with a new standard for iron and manganese will have any impact on ground water levels and whether the standards could be implemented, given that discharges to ground water do not have to be treated to a condition purer than the natural condition. Admin. R. Mont. 17.30.1005(3).

Our research indicates that neither the science nor the law supports the iron and manganese ground water standards as they were proposed.

## SCIENTIFIC ISSUES WITH THE PROPOSED IRON STANDARD

For iron, DEQ proposed a ground water quality standard of 4,000 µg/L based on a provisional reference dose derived by EPA under the Provisional Peer-Reviewed Toxicity Value (PPRTV) program. However, the DEQ calculations deviate from the EPA calculations because DEQ relied upon a different default body weight than EPA did. Therefore, DEQ calculated a lower reference dose than EPA did. The reference dose corresponds to the critical effect of iron, which is mild gastrointestinal distress caused by acute exposure; that is, to a large dose of iron all at once. This approach does not correspond to the typical environmental exposure, which should be based on much smaller exposures spread over all waking hours. Normal exposure over time does not have the same gastrointestinal response as a high level of iron ingested all at once. DEQ should not use the EPA PPRTV reference dose because it assumes high concentration one-time ingestion and is not relevant to typical environmental iron ingestion, which is spread out over time. Assuming that a 60-mg iron supplement is an exposure that causes gastrointestinal distress, an equivalent amount of iron provided in one 8-ounce glass of water would require a concentration of 253 mg/L. Even dividing the 253 mg/L by 1.5 to extrapolate a Lowest Observed Adverse Effect Level to a No Observed Adverse Effect Level results in an acute gastrointestinal endpoint of 169 mg/L or 169,000 µg/L. This is more than forty times greater than the proposed ground water standard at issue.

Additionally, the rulemaking proposal for iron does not consider the fact that iron is an essential requirement in human diets. DEQ's use of a Relative Source Contribution (RSC) for drinking water of 0.2 is overly conservative considering that the typical dietary intake of iron, as noted by EPA in 2006, is 11 mg/day. In fact, the Institute of Medicine's recommended daily allowance of iron for adult men and women is 8 and 18 mg/day, respectively. For pregnant women, the recommended daily allowance is 27 mg/day. The Institute of Medicine has noted that specific population subgroups may have higher nutritional requirements for iron and has recommended an upper limit for iron intake from supplements and diet of 45 mg/day. Conversion of that into a drinking water concentration for an 8-ounce glass of water results in 190 mg/L or 190,000 µg/L, again resulting in recommended dietary intake levels much higher than the proposed ground water standard.

Notably, EPA has not provided a Maximum Contaminant Level (MCL) or a drinking water health advisory level for iron. In fact, even EPA's Regional Screening Level (RSLs) for iron is 14,000 µg/L, more than three times greater than DEQ's proposed ground water standard of 4,000 µg/L. Iron has limited toxicity, is an essential component of a healthy diet, and only causes gastrointestinal distress from high doses administered at one time. Because the proposed rulemaking does not consider the need for iron in a healthy diet, the natural exposure to iron over time, and its limited toxicity, the proposed rulemaking for iron standards in ground water should be denied.

## SCIENTIFIC ISSUES WITH THE PROPOSED STANDARD FOR MANGANESE

The proposed ground water standard for manganese suffers from similar calculation inaccuracies and assumption deficiencies. For manganese, DEQ used a reference dose based on studies in rats that involved an entire daily dose delivered at one time, as opposed to exposure spread throughout the day as would be the case of a normal bottle-fed infant consuming manganese in infant formula made with ground water. The Agency for Toxic Substances and Disease Registry (ATSDR) and other scientists have found that a one-time highly acute dose of manganese can actually be tolerated for a much longer duration when it is instead delivered more continuously over a day in diet or in water. Furthermore, because the ATSDR indicates that there may be little difference in the sensitivity to manganese in rats versus humans, DEQ's calculations likely overestimate the risk of manganese by assuming that humans are more sensitive to manganese than rats. Other ATSDR studies indicate that there is insufficient data to establish a causal relationship between exposure to manganese in drinking water and neurobehavioral effects in humans. Further, DEQ applies a factor of 10 to address potential variability in the human population. The additional consideration of variation is unnecessary given DEQ already relied on a reference dose based on the most sensitive portion of the human population – developing fetuses and infants.

Finally, for manganese, DEQ's proposed ground water standard does not appear to consider that manganese is an essential dietary component and that exposure to manganese is significantly affected by the presence of iron and other minerals. Notably, the Food and Drug Administration (FDA) provides a minimum level, and no upper limit, of manganese required in infant formula. The Institute of Medicine has noted that the average manganese intake level in a 6-month old baby is estimated at 0.071 mg/kg-day, which is nearly three times the reference dose relied upon in this rulemaking. Additionally, because manganese in ground water usually occurs with iron and calcium, and because manganese, iron, zinc and calcium all interact to reduce their respective absorption and toxicity, bioavailability of manganese in ground water will likely be less than assumed in DEQ's calculations and in the studies they relied upon.

## LEGAL ISSUES WITH THE PROPOSED STANDARDS

For manganese, the Department states that the proposed standard is more stringent than the federal requirements. The Board may only adopt a water quality standard that is more stringent than federal requirements if it makes a written finding that the proposed state standard or requirement protects public health or the environment of the state and the state standard or requirement to be imposed can mitigate harm to the public health or environment and is achievable under current technology. § 75-5-203, MCA. DEQ has not provided sufficient evidence that iron and manganese actually constitute harm to the public health given that EPA and other states do not regulate these substances with MCLs but by aesthetic secondary guidelines. Here, given the rural nature of Montana and the likely distance between regulated discharges and drinking wells, the naturally high concentration of iron and manganese in ground water, and the prohibition on treating discharges to a condition purer than the natural condition, it is not clear how, if at all, the proposed standards will protect public health or mitigate harm to public health.

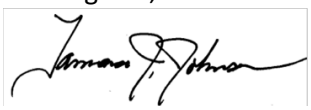
A fundamental policy of the Montana Water Quality Act is to "balance the inalienable rights to pursue life's basic necessities and possess and use property in lawful ways with the policy of preventing, abating, and controlling water pollution" and the Board must give "consideration to the economics of waste treatment and prevention." §§ 75-5-101(3); 75-5-301(2), MCA. The rulemaking proposal here contains no data regarding the economic impact of the proposal. Our experience indicates that treatment to the levels proposed in the standards will be technologically challenging and, even if treatment is possible, it would be cost-prohibitive for many industries.

We also question the appropriateness of enacting state-wide water quality standards to provide cleanup endpoints, as DEQ has described that purpose for these standards. If a cleanup endpoint is needed for remediation or other work, we urge the Board and DEQ to rely upon other established authorities, including the EPA's Regional Screening Levels (RSLs).

Similarly, we question the appropriateness of enacting state-wide water quality standards to address what DEQ has described as concerns connected to drinking water. We urge the Board to direct DEQ to instead consider addressing only scientifically-warranted drinking water guidance or regulations instead of placing another expensive and technologically complex (if not impossible) requirement on the regulated industries that discharge water.

In closing, again we appreciate the extended period to submit comments, the additional public hearing, and the DEQ's recommendation to remove proposed ground water standards for iron and manganese from the rulemaking. We urge you to concur with the DEQ recommendation.

Best regards,



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March 25, 2019

Sandy Scherer, Legal Secretary
Department of Environmental Quality
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Helena, Montana 59620 – 0901
Submitted Via Email: sscherer@mt.gov

RE: In the matter of amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.301001, 18.36.345,17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department circular DEQ-7

To Members of the Board of Environmental Review:

The Montana Petroleum Association and the Treasure State Resources Association want to thank you for the opportunity to comment on the above-referenced rulemaking.

First, we want to acknowledge the Board and the Department of Environmental Quality (DEQ) for providing the extension of the comment period. That additional time allowed our associations to seek input from our members and the scientific community concerning the impact of the proposed rules.

Many of our members work in industries that have a direct interest in water quality standards set by the state. We believe they should be achievable and based in sound science. Where proposed standards might exceed comparable federal standards, the required legal demonstration must be made. With regard to proposed standards for iron and manganese, we don't believe the case has been made that the changes are necessary.

As a result of that research, we want to wholeheartedly support the recommendation from DEQ that the standards proposed for iron and manganese be withdrawn from this proposed rulemaking. Our position is based on information from our members and more specifically the attached comments from our toxicology consultant, Dr. Roslind A. Schoof.

Again, MPA and TSRA thank the Board and the Department for their consideration of our comments.

Sincerely,

Alan Olson
Executive Director
Montana Petroleum Association

Peggy Trenk, CAE
Executive Director
Treasure State Resources Association

Attachment below

RAMBOLL

ENVIRONMENT
& HEALTH

Alan Olson
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*(transmitted via electronic mail as PDF)*

**COMMENTS ON PROPOSED HUMAN HEALTH GROUNDWATER CRITERIA TO BE ADDED TO DEPARTMENT CIRCULAR DEQ-7**

Date March 22, 2019

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Dear Mr. Olson,

DEQ states failure to incorporate six new human health groundwater criteria to Department Circular DEQ-7 may be significant. In the cases of iron and manganese, DEQ states these are considered important criteria to the Waste Management and Remediation Division for remedial activities and as a cleanup endpoint, respectively. The need for these criteria at this time is not clear considering that the U.S. Environmental Protection Agency (EPA) currently has regional screening levels (RSLs) for both iron and manganese in drinking water that could be relied upon by DEQ to guide remedial activities.

There is also a negligible likelihood that either metal in drinking water will pose any health risks because both metals make water virtually unpalatable at concentrations far below those that cause toxicity. Both iron and manganese are required human nutrients, with generally low toxicity when ingested. An understanding of the essentiality and toxicity for both metals was developed based on human studies. Thus, any standards need to be carefully crafted to protect both against deficiency and toxicity and considering the knowledge that has already been gained from human chronic ingestion.

Due to the lack of potability of elevated concentrations of these two metals, combined with the availability of screening levels to guide remedial activities, it is neither necessary nor advisable for DEQ to issue new groundwater criteria for iron and manganese at this time. The following sections describe the available toxicity values and screening criteria.

**Iron**

Iron exhibits only limited toxicity. The EPA drinking water RSL is 14,000 µg/L (as compared with DEQ's proposed criterion of 4,000 µg/L) and is based on minimal gastrointestinal effects that are readily reversible after exposure ceases. The EPA secondary MCL for iron of 300 µg/L is based on rusty color; sediment; metallic taste; reddish or orange staining in water above that concentration. Due to the limited toxic potential and the lack of potability of higher iron concentrations, EPA has declined to derive a primary MCL or a drinking water health advisory for iron.

The criterion proposed by DEQ is based on a reference dose (RfD) modified from the value of 0.7 mg/kg-day derived by EPA (2006). Instead of the 70 kg body weight used by EPA, DEQ used a body weight of 80

kg to derive an RfD of 0.592 mg/kg-day. EPA does not recommend using alternate body weights in this manner to modify their toxicity values even if the updated body weight of 80 kg for an adult is used in exposure assessment. DEQ's use of a relative source contribution (RSC) for drinking water of 0.2 is overly conservative considering that the typical dietary intake of iron cited by EPA (2006) is 11 mg/day as compared to the dose at the lowest observed adverse effect level of 60 mg/day from dietary supplements. With the exception of dietary supplements, sources of iron other than diet are expected to be minimal. For that reason, a much higher RSC value would still be protective of human health.

It is also worth considering the forms of iron likely to be present in drinking water as compared to the forms in the diet and in dietary supplements. Iron in the diet and supplements is usually in the reduced form, i.e., ferrous iron ($Fe^{+2}$), whereas iron in surface water or in treated drinking water supplies will mostly be in the oxidized form, or ferric iron ($Fe^{+3}$). Ferrous iron is much more soluble, and therefore more toxic, than ferric iron. Thus, applying a toxicity value based on exposure to ferrous iron will greatly overestimate toxic potential of most iron in drinking water supplies.

Based on consideration of the availability of an EPA RSL to guide remediation, the lack of potability of iron at concentrations in excess of the secondary MCL, and the lower toxicity of forms expected to be present in drinking water, it is not apparent why DEQ needs to propose a health-based criterion for iron at this time.

**Manganese**

In contrast with the proposed DEQ manganese criterion of 100 µg/L, EPA's regional screening level (RSL) for manganese in drinking water is 430 µg/L. Although EPA does not have a primary MCL for manganese, EPA (2004) developed a drinking water health advisory for manganese of 300 µg/L using the EPA RfD of 0.14 mg/kg-day and a 20% relative source contribution or RSC, as well as 3-fold modifying factor to account for increased bioavailability from drinking water. The EPA secondary MCL for manganese of 50 µg/L is based on black to brown color; black staining; bitter metallic taste in water above that concentration. Thus, it is highly unlikely that anyone will regularly consume water at concentrations as high as the RSL or the drinking water advisory.

The World Health Organization (WHO 2011) also has a safe drinking water guideline for manganese much higher than the proposed DEQ criterion of 100 µg/L. The WHO guideline of 400 µg/L was derived by applying an uncertainty factor of 3 to a no-observed-adverse-effect-level (NOAEL) based on the upper range of dietary intake to obtain a tolerable daily intake (TDI) of 0.06 mg/kg-day and allowing 20% of that value to be allotted to drinking water.

EPA includes two RfDs in the RSL table. One that includes dietary intake is the 0.14 mg/kg-day value listed in IRIS and is based on chronic ingestion of manganese in humans and takes into account both the essentiality and the toxicity of manganese. For non-dietary intake a lower RfD of 0.024 mg/kg-day was derived by subtracting dietary intake from the allowable daily dose and then dividing by a modifying factor of three. Using the non-dietary RfD, the resulting drinking water RSL of 430 µg/L is protective of a child drinking water. The child is assumed to weigh 15 kg and consume 0.78 L/day. The new RfD derived by Montana differs slightly from the RfD of 0.024 mg/kg-day used by EPA to derive the drinking water RSL.

The Montana criterion of 100 µg/L is based on a reference dose (RfD) of 0.025 mg/kg-day derived based on neurological effects observed in three rodent studies published in 2010, 2011 and 2013 (Kern et al. 2010, Kern et al. 2011, Beaudin et al. 2013) with a 1,000-fold uncertainty factor applied. The criterion is derived for water consumption by a 6 month old infant being fed powdered formula reconstituted with drinking water. Assumed body weight is 6.47 Kg and water consumption is 0.966 L/day. A relative source contribution (RSC) factor of 0.8 is applied to account for manganese content of the powdered formula and the result is rounded to one significant figure.

While the RfD derived by DEQ is based on more recent studies than those relied upon to derive the EPA RfD, it is not necessarily more reliable. The studies used by DEQ are conducted in animals, while EPA has focused on studies in humans that consider both the essentiality and toxicity of manganese. The 1,000-fold uncertainty factor applied to rodent data for the derivation of the DEQ RfD demonstrates that the level of confidence that this value is applicable to human infants is very low. In addition, the manganese in the animal studies are administered to the animals by micropipette or gavage in sucrose vehicle, a route of exposure that may be of questionable relevance. WHO (2011) states that rodent studies are not reliable predictors of adverse health effects of manganese in humans. Health Canada (2016) concluded that the new rodent studies do not share some of the limitations of earlier rodent studies as reliable predictors of potential adverse effects in human infants; however, there is still a great degree of uncertainty in how to extrapolate rodent doses to humans, especially for neurodevelopmental endpoints which are the basis for the derivation of the Montana DEQ.

Due to the uncertainties in extrapolating from high doses in epidemiology and toxicology studies to lower environmentally relevant doses, studies are underway to develop pharmacokinetic models to provide a basis for more accurate extrapolation (Yoon et al. 2011, Ramojou et al. 2017, Gentry et al. 2017, and Song et al. 2018). Accurate prediction of toxicity thresholds is especially important in view of the fact manganese concentrations in some liquid formulas exceed the drinking water guideline derived by DEQ (likely due to the increased need for manganese for development in the infant). WHO (2011) reports on a study that found infant formulas contain 50-300 µg/L of manganese. Health Canada (2016) notes that Canadian Food and Drug Regulations call for a minimum of 5 µg of manganese/100 Kcal (3.33 µg/100 mL of ready-to-feed infant formula), so that is equivalent to 33 µg/L.

Considering the availability of an EPA RSL to guide remediation, the lack of potability of manganese at concentrations in excess of the secondary MCL, the high level of uncertainty that underlies the RfD developed by DEQ, and the upcoming availability of pharmacokinetic models that will reduce the uncertainty is high dose to low dose extrapolations, it is not apparent that it is advisable for DEQ to propose a health-based criterion for manganese at this time.

Yours sincerely

**Rosalind A. Schoof,**
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Principal

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March 25, 2019

*Sent via email to sscherer@mt.gov*

Board of Environmental Review
c/o Sandy Scherer, Legal Secretary
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RE: In the matter of amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7

Members of the Board of Environmental Review:

Please accept these written comments, on behalf of Talen Montana ("Talen"), for the above-referenced rulemaking. Talen greatly appreciates the extended public comment period and agrees with the Department of Environmental Quality's ("Department's") recommendation to eliminate iron and manganese from consideration in this rulemaking.

Talen operates the Colstrip 2276 MegaWatt steam electric generation station located in Colstrip, Montana. Coal provides 31% of the United States' electric supply and the Colstrip facility is the 26th largest coal-fired electric power plant in the nation. In 2016, the Colstrip facility was the fifth highest producer of MegaWatt hours in the country. More than $360 million per year of household income results from the 3,740 jobs that exist as a direct result of the Colstrip facility. The Colstrip facility adds $638 million per year to the Montana economy and $104 million per year in local, county and state taxes. Not only is the Colstrip facility an economic driver, it is also focused on environmental protection, including efforts focused on groundwater. Since 2000, $300 million has been spent on environmental protection at the Colstrip facility. About half of that, $150 million, has been spent on water related controls, including groundwater remediation. Therefore, groundwater issues, including the proposed rulemaking referenced above, are important to Talen.

The proposed rulemaking for iron and manganese is inappropriate because it fails to appropriately regulate the alleged public health concerns noted by the Department, it does not consider the excessive background levels of iron and manganese that likely exist throughout the

state, it lacks an appropriate scientific basis, it does not consider the economics of waste treatment, and it creates confusion with Montana's groundwater classification system.

**Public Health Concerns**

The proposed rule amendment differs significantly from other states' regulation for iron and manganese. We could not find any other state regulation similar to the proposed rulemaking referenced above. For manganese, Minnesota analyzed the risk and provided a "Health Risk Limit" ("HRL") as guidance for public water systems, not as a water quality standard to regulate dischargers and remediation projects, as proposed here. *See* www.health.state.mn.us/divs/eh/risk/guidance/gw/index.html.

The difference is significant. The standards proposed here could become mandatory requirements for dischargers and remediation projects. Even though the amendment proposes standards "derived assuming that exposure is through drinking water only," there is no direct link between the proposed standards and drinking water. DEQ Ex. Summary, p. 008. Here, the proposed standards may or may not impact public health, depending on naturally high background concentrations and depending on the location of drinking water supplies relative to dischargers and remediation projects. In contrast, guidance for public water supplies, as provided by Minnesota, is not mandatory and directly impacts public health.

Additionally, the proposed amendment goes beyond EPA's recommendations for iron and manganese in groundwater. For both metals, EPA has established Tap Water Regional Screening Levels ("RSLs"). EPA's RSLs consider ingestion as well as dermal and inhalation pathways; therefore, the RSLs should be more conservative than any proposal based solely on ingestion, as the Department's is. Yet, the Department's proposal is significantly more stringent than the RSLs.[1] Additionally, EPA standards for iron and manganese in drinking water are secondary standards only; therefore, treatment for iron and manganese, even in drinking water, is not the highest priority. The rulemaking does not explain why the RSLs are not protective of public health, why the RSLs will not satisfy the state's needs for remediation projects, or why additional regulation beyond the federal drinking water standards is necessary.

For manganese, the Department states that the proposed standard is more stringent than the federal requirements. However, the proposed standard does not meet the requirements necessary for enacting a standard more stringent than the federal requirement. Mont. Code Ann. § 75-5-203 requires that the Board may not adopt a water quality standard that is more stringent than federal regulations or guidelines unless it makes a written finding, after a public hearing and public comment, that the proposed state standard or requirement protects public health or the

[1] The EPA Tap Water RSL for manganese is 430 µg/L, compared to DEQ's proposed standard for manganese of 100 µg/L. The EPA Tap Water RSL for iron is 14,000 µg/L, compared to DEQ's proposed standard for iron of 4,000 µg/L.

environment of the state and the state standard or requirement to be imposed can mitigate harm to the public health or environment and is achievable under current technology.

The rulemaking presents no evidence that the proposed standard will protect public health or the environment or that it can mitigate the harm to the public health or environment. Given the naturally high concentration of manganese in groundwater throughout the state, the prohibition on requiring treatment of "discharges to a purer condition than the natural condition of the receiving water," and the fact that many individual drinking wells are in rural areas that are not impacted by regulated groundwater discharges, it appears unlikely that the proposed standard will have any real or measurable impact on manganese concentrations in wells used for drinking water throughout the state. Therefore, the showing required by Mont. Code Ann. § 75-5-203 has not been, and likely cannot be, met for the proposed manganese standard.

**Background Levels**

Current data on ambient groundwater levels in the Colstrip area exceed the proposed standards, making regulation and compliance very difficult, if not impossible. In fact, the rules governing discharges to groundwater prohibit treatment to a purer condition than the natural condition. Admin. R. Mont. 17.30.1005(3). Background Screening Levels ("BSLs") have been calculated for five hydrostratigraphic groundwater intervals in the Colstrip area. For iron, the data was highly variable, likely because of the ubiquitous nature of iron in the environment. All of the background datasets for iron contained at least some data exceeding the proposed standard. For manganese, the calculated BSLs ranged from 260 to 2,480 µg/L, which significantly exceeds the proposed standard of 100 µg/L.

The abundance of iron and manganese naturally available in soils and underground, combined with the solubility of iron and manganese in water also make regulation and compliance very difficult, if not impossible. Iron is the most abundant element by mass in the earth and is the fourth most abundant element in the earth's crust. Manganese is the twelfth most abundant element in the earth's crust. Even if background levels are considered, this places an undue burden of proof (at a high cost) on dischargers and industry to demonstrate background levels for parameters that, according to the federal agencies, only warrant consideration as secondary standards.

**Scientific Basis**

The proposed amendment does not appear to be based on appropriate or accurate science. Using a human health risk-based analysis, the data provided do not support setting the standards at the proposed levels. First, because both iron and manganese are essential nutrients for humans, particularly infants, the minimum dietary requirements for iron and manganese should have been, but were not, considered in the rulemaking. Second, the use of a non-diet reference

dose for manganese is inappropriate. And finally, the Agency for Toxic Substances and Disease Registry's research regarding manganese toxicity in humans does not support the rulemaking.

**Economics of Waste Treatment and Prevention**

The Board must give "consideration to the economics of waste treatment and prevention" when formulating and adopting standards. Mont. Code Ann. § 75-5-301(2). This follows the fundamental policy of the Montana Water Quality Act to "balance the inalienable rights to pursue life's basic necessities and possess and use property in lawful ways with the policy of preventing, abating, and controlling water pollution." Mont. Code Ann. § 75-5-101(3). Here, the rulemaking proposal contains no discussion of the economics of waste treatment and prevention. Most water treatment systems are costly, and treatment to newly announced levels, that are lower than any current standards, will likely be expensive.

**Impact on Groundwater Classifications**

Finally, the impact on groundwater classifications should be considered and addressed in any rulemaking package. The only attribute that delineates classes of groundwater is specific conductance. Each class of groundwater must be maintained for its designated uses, including, for Classes I, II, III, use as drinking water. If the proposed standards are enacted, much of the groundwater throughout the state would no longer meet the standard for its designated use as drinking water.

For example, Class I groundwater is all groundwater "with a natural specific conductance less than or equal to 1,000 microSiemens/cm at 25°C." Admin. R. Mont. 17.30.1006(1). All Class I groundwater "must be maintained" suitable for public and private water supplies "with little or no treatment." Admin. R. Mont. 17.30.1006(1)(a)(i). However, given the high background concentrations of both manganese and iron throughout the state and the significant expense of treating manganese and iron to the proposed standards, enactment of the proposed amendment means that Class I groundwater throughout the state would likely no longer meets the standard required for its designated beneficial use as drinking water "with little or no treatment." It is not clear what impact this will have on the use and regulation of groundwater throughout the state.

In summary, the proposed iron and manganese standards are an anomaly among state regulations and they do not correspond to any federal requirements or guidelines. There is no evidence that the proposed standards will, or even could, protect or mitigate any harm to public health, in part because they do not consider the existing natural background of groundwater, which is generally much higher than the proposed standards. The scientific basis for the proposed standards appears flawed and does not reflect accurate risk-based analyses. Further, there has been no economic analysis of the treatment requirements that the standards would trigger, but it is likely that the proposed standards will create costly treatment that could hinder

on-going successful remediation. The proposed rules' impact on groundwater classifications should be considered and addressed. For at least the above-stated reasons, the Board should deny the proposed amendment, or at least deny it as it pertains to iron and manganese.

Sincerely,

Victoria A. Marquis
for Holland & Hart LLP

VAM:asf

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DEQ
Montana Department
of Environmental Quality

**MEMORANDUM**

**To:** Board of Environmental Review
Shaun McGrath, DEQ Director

**From:** Kurt R. Moser
DEQ Legal Counsel

**Date:** March 18, 2019

**Re:** HB 521 Analysis and Taking or Damaging Impact Assessment/Checklist

MAR Notice No. 17-403 - In the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7.

HB 521 Analysis

(Comparing Stringency of State Rules to Any Comparable Federal Regulations or Guidelines)

Pursuant to House Bill 521, the Board, under § 75-5-203, MCA, and the Department, under § 76-4-135, MCA, may not adopt a rule that is more stringent than comparable federal regulations or guidelines that address the same circumstances, unless the Board and Department make certain written findings concerning the proposed rule after public hearing and comment.

The Board has proposed to add six human-health groundwater criteria (diallate; dioxane, 1,4-; iron, PFOS, PFOA; and manganese) into Department Circular DEQ-7 ("DEQ-7"). The proposed criteria for diallate; dioxane, 1,4-; PFOS; and PFOA are equivalent to comparable federally recommended guidelines. Because the proposed criteria are not more stringent than comparable federal regulations or guidelines, adoption of the proposed rule amendments adding these four criteria is allowed without making the specific stringency findings under HB 521 and the 2015 amendments to § 75-5-203, MCA.

The proposed criterion for iron is also equivalent to the comparable federally recommended guidelines. Because the proposed criterion is equivalent to comparable federally recommended guidelines, adoption of the proposed rule amendment adding this criterion is allowed without making the specific stringency findings under HB 521 and the 2015 amendments to § 75-5-203, MCA. The Department, however, is now recommending that the Board withdraw the proposed iron criterion because of the need for additional agency coordination and the development of consistent implementation procedures, including, but not limited to, the consideration of natural background in criteria development.

The proposed criterion of 100 µg/L manganese is more stringent than comparable federal guidelines. The United States Environmental Protection Agency (EPA) recommends a criterion of 300 µg/L for manganese based on studies of dietary intake of manganese. Because the EPA recommended criterion for manganese is less stringent than the proposed manganese criterion, the Board of Environmental Review would need to make written findings from the hearing record as specified at § 75-5-203(2), MCA. For purposes of the criterion's incorporation into its subdivision requirements at ARM 17.36.345, the Department would also need to make similar findings pursuant to § 76-4-135(2), MCA.

The required stringency findings include a consideration of the costs to the regulated community that are directly attributable to the proposed manganese criterion. The Department has not compiled the required cost information and therefore cannot make the required stringency findings. For similar reasons as its recommendation for iron, the Department is now recommending that the Board withdraw the proposed manganese criterion because of the need for additional agency coordination and the development of consistent implementation procedures, including, but not limited to, the consideration of natural background in criteria development. If the Board intends to pursue a manganese criterion despite the Department's recommendation, the Department will compile the necessary cost information required under § 75-5-203(2), MCA.

Private Property Assessment Act – HB 311

The Montana Private Property Assessment Act, §§ 2-10-101 through 2-10-112, MCA, requires that, prior to adopting a proposed rule that has taking or damaging implications for private real property, an agency must prepare a taking or damaging impact statement. An "action with taking or damaging implications" means:

> [A] proposed state agency administrative rule, policy, or permit condition or denial pertaining to land or water management or to some other environmental matter that if adopted and enforced would constitute a deprivation of private property in violation of the United States or Montana Constitution.

§ 2-10-103(1), MCA.

Section 2-10-104, MCA, requires the Montana Attorney General to develop guidelines, including a checklist, to assist agencies in determining whether an agency action has taking or damaging implications. A completed Attorney General checklist for the proposed rules is attached. Based on the guidelines provided by the Attorney General, the proposed rule amendments do not constitute an "action with taking or damaging implications" in violation of the United States or Montana Constitutions.

Attachment A: Attorney General HB 311 Checklist

**MAR Notice No. 17-403** **ATTACHMENT A**

## PRIVATE PROPERTY ASSESSMENT ACT CHECKLIST

DOES THE PROPOSED AGENCY ACTION HAVE TAKINGS IMPLICATIONS UNDER THE PRIVATE PROPERTY ASSESSMENT ACT?

| YES | NO | | |
|---|---|---|---|
| ☒ | ☐ | 1. | Does the action pertain to land or water management or environmental regulation affecting private real property or water rights? |
| ☐ | ☒ | 2. | Does the action result in either a permanent or indefinite physical occupation of private property? |
| ☐ | ☒ | 3. | Does the action deprive the owner of all economically viable uses of the property? |
| ☐ | ☒ | 4. | Does the action deny a fundamental attribute of ownership? |
| ☐ | ☒ | 5. | Does the action require a property owner to dedicate a portion of property or to grant an easement? [If the answer is NO, skip questions 5a. and 5b. and continue with question 6.] |
| ☐ | ☐ | 5a. | Is there a reasonable, specific connection between the government requirement and legitimate state interests? |
| ☐ | ☐ | 5b. | Is the government requirement roughly proportional to the impact of the proposed use of the property? |
| ☐ | ☒ | 6. | Does the action have a severe impact on the value of the property? |
| ☐ | ☒ | 7. | Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally? [If the answer is NO, do not answer questions 7a. – 7c.] |
| ☐ | ☐ | 7a. | Is the impact of government action direct, peculiar, and significant? |
| ☐ | ☐ | 7b. | Has government action resulted in the property becoming practically inaccessible, waterlogged, or flooded? |
| ☐ | ☐ | 7c. | Has government action diminished property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question? |

Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b.

If taking or damaging implications exist, the agency must comply with § 5 of the Private Property assessment Act, to include the preparation of a taking or damaging impact assessment. Normally, the preparation of an impact assessment will require consultation with agency legal staff.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW AND
THE DEPARTMENT OF ENVIRONMENTAL QUALITY
OF THE STATE OF MONTANA

| | |
|---|---|
| In the matter of the amendment of ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, 17.30.1001, 17.36.345, 17.55.109, 17.56.507, and 17.56.608, pertaining to ground water standards incorporated by reference into Department Circular DEQ-7 | NOTICE OF AMENDMENT<br><br>(RECLAMATION)<br>(WATER QUALITY)<br>(SUBDIVISIONS)<br>(CECRA)<br>(UNDERGROUND STORAGE TANKS) |

TO: All Concerned Persons

1. On December 21, 2018, the Board of Environmental Review and Department of Environmental Quality published MAR Notice No. 17-403 regarding the public hearing on the proposed amendment of the above-stated rules at page 2446 of the 2018 Montana Administrative Register, Issue No. 24. On February 22, 2019, the board and department published MAR Notice No. 17-403 regarding an additional public hearing and extension of comment period at page 196 of the 2019 Montana Administrative Register, Issue No. 4.

2. The board has amended ARM 17.24.645, 17.24.646, 17.30.502, 17.30.619, 17.30.702, and 17.30.1001 exactly as proposed. The department has amended ARM 17.36.345, 17.55.109, 17.56.507, and 17.56.608 exactly as proposed.

In addition, the board has revised the ground water standards in Department Circular DEQ-7 for diallate; dioxane, 1,4-; perfluorooctane sulfonate (PFOS); and perfluorooctanoic acid (PFOA) as proposed. The board has determined it will not proceed with the proposed revisions to ground water standards in Department Circular DEQ-7 for iron and manganese at this time.

3. The following comments were received and appears with the department's response:

COMMENT NO. 1: We request an extension of the public comment period beyond the initial 45-day period which started on December 21, 2018.

RESPONSE: The department requested the extension from the Board of Environmental Review on February 8, 2019 and it was granted. The extended public comment period for both the department and board rules continued to 5:00 p.m. on March 25, 2019.

COMMENT NO. 2: We support the board's and department's proposed adoption of ground water standards for diallate; dioxane, 1,4-; iron; manganese; perfluorooctane sulfonate (PFOS); and perfluorooctanoic acid (PFOA).

RESPONSE: Thank you for the comment. See response to Comment No. 3.

COMMENT NO. 3: We support the department's recommendation that the rulemaking not proceed with the proposed ground water standards for iron and manganese, but instead proceed only with: diallate; dioxane, 1,4-; perfluorooctane sulfonate (PFOS); and perfluorooctanoic acid (PFOA).

RESPONSE: The board appreciates the department's recommendation, and the additional parties that requested Department Circular DEQ-7 to be revised without the proposed iron and manganese ground water standards. The department made this recommendation at the second public hearing on the proposed amendment of the rules on March 19, 2019. An important characteristic of diallate; dioxane, 1,4-; PFOS; and PFOA is that they are all manmade compounds and their natural background concentrations are zero. Iron and manganese, in contrast, are naturally occurring and in many locations natural background concentrations can equal or exceed the proposed criteria. Multiple department programs implement ground water standards, and the department is working to synchronize their methods, especially in relation to characterization of natural background. It is best this work be completed before, instead of after, the adoption of the iron and manganese criteria. As a result, the board and department are not proceeding with the proposed ground water standards for manganese and iron at this time. The board asks the department to continue working with the programs that implement Department Circular DEQ-7 to understand the details of how iron and manganese standards would apply in permitting and remediation decisions and to return to the board with this information.

COMMENT NO. 4: All of the proposed ground water standards are another unneeded and unjustified burden and huge expense for businesses who will have to test for them.

RESPONSE: The board and department do not agree with the comment. The board and department propose water quality standards that will protect public health and the environment. The requirement to test for specific water quality standards varies widely; it is not an automatic requirement for all businesses who discharge to state waters. The necessity for the ground water standards is explained in MAR Notice No. 17-403, starting at page 2446 of the 2018 Montana Administrative Register, Issue No. 24.

COMMENT NO. 5: The statements of reason should be clear that EPA's lifetime health advisory was not intended to be applied to ground water; it is a drinking water health advisory. The lifetime health advisory for PFOS and PFOA are non-enforceable and non-regulatory per EPA's 2016 memo "*Clarification about the Appropriate Application of the PFOA and PFOS Drinking Water Health Advisories."*

RESPONSE: The board and department do not agree with the comment. The referenced EPA memo addresses whether EPA's PFOA and PFOS health advisory can be used to manage risk related to exposure to these compounds through ingestion via food sources. It clarifies that, for PFOA and PFOS, EPA's lifetime health advisories (those used for the proposed rule) only apply to exposure involving drinking water. This is precisely the scenario the proposed rule addresses:

exposure to PFOA and PFOS in ground water, where drinking is a beneficial use. There is no assumption of exposure via food consumption included in the criteria.

COMMENT NO. 6: The new standards are more stringent than the drinking water standards currently in place. It does not make sense that the department would promulgate cleanup standards more stringent than drinking water standards.

RESPONSE: The board does not agree with the comment. There are currently no drinking water standards for any of the proposed criteria. See responses to Comment Nos. 3 and 7.

COMMENT NO. 7: The rulemaking proposal for iron and manganese is a significant departure from how EPA and other states approach iron and manganese regulation in ground water—no other state appears to have ground water standards at the levels proposed by the department.

RESPONSE: The department is charged with collecting and furnishing information related to the prevention and control of water pollution (75-5-212, MCA), and the board is responsible for formulating and adopting standards of water quality (75-5-301, MCA) which will protect the public health and the state's ground water resources. The consideration of the proposed iron and manganese standards falls clearly within these authorities. However, please see response to Comment No. 3.

COMMENT NO. 8: We appreciate the proactive efforts the department is taking to update water quality standards.

RESPONSE: Thank you for the comment. See response to Comment No. 3.

COMMENT NO. 9: The need for the iron and manganese criteria is unclear since EPA currently has regional screening levels (RSLs) for drinking water for them that could be relied on by the department to guide remedial activities.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standards for manganese and iron at this time. See response to Comment No. 3.

COMMENT NO. 10: The department's proposal is significantly more stringent than the regional screening levels RSLs.

RESPONSE: RSLs are calculated using CERCLA risk assessment guidance and are intended to be used as a concentration that would generally indicate if a chemical should be further considered at a superfund site. Department Circular DEQ-7 ground water standards are established under the authority of the state of Montana as provided for in 75-5-301(1), MCA, and are intended to protect beneficial uses. RSLs are a default calculation that account for exposures directly related to a specific site and evaluate dermal, inhalation, and ingestion pathways directly. Department Circular DEQ-7 ground water standards consider direct ingestion and use a relative source contribution to account for other exposure pathways. As noted elsewhere in the response to comments, the department has the delegated authority to establish state water quality standards more stringent than the federal water quality criteria.

COMMENT NO. 11: We question the appropriateness of enacting state-wide water quality standards to address what the department has described as concerns connected to drinking water.

RESPONSE: The board does not agree with the comment. The board's responsibility is to adopt scientifically supported water quality standards to protect beneficial uses. In the case of this rulemaking, ground water standards are proposed to protect "public and private water supplies" (ARM 17.30.1006(1)(a)(i) and (2)(a)(i). Scientific literature in the recent past has demonstrated, to our satisfaction, that the parameters included in this rulemaking may pose an unacceptable level of harm at certain concentrations to "public and private water supplies" and as such deserve consideration for a ground water quality standard.

COMMENT NO. 12: Given the availability of regional screening values to guide remediation, lack of potability when manganese concentrations exceed 50 µg/L, and the upcoming availability of pharmacokinetic models which will reduce uncertainty in high-dose to low-dose extrapolations, it is not advisable for DEQ to propose a health-based manganese criterion at this time.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for manganese at this time. See response to Comment No. 3.

COMMENT NO. 13: The showing required under 75-5-203, MCA, has not been met for manganese.

RESPONSE: The proposed criterion for manganese is more stringent than comparable federal guidelines. As a result, to adopt the proposed criterion, the board would need to make written stringency findings from the hearing record as specified at 75-5-203, MCA. The required findings include a consideration of the costs to the regulated community that are directly attributable to the proposed manganese criterion. The hearing record does not contain the required cost information and therefore the board cannot make the required stringency findings under 75-5-203, MCA. For this reason, the board agrees with the commenter that the showing required under 75-5-302, MCA, has not been met. The board and department are not proceeding with the proposed ground water standard for manganese at this time. See response to Comment No. 3.

COMMENT NO. 14: 75-5-301(2)(a), MCA, states that if a chemical exceeds the federal standards set forth in 40 CFR 141, the federal standard must be adopted. We believe that the adoption of the iron standard would violate this statute.

RESPONSE: The commenter misinterprets the statute. The cited statute, 75-5-301(2)(a), MCA, only applies to arsenic and other carcinogens and prescribes how standards are established at certain risk levels. Iron is not listed as a carcinogen in Department Circular DEQ-7 and the cited statute is, therefore, inapplicable. The board and department are not proceeding with the proposed ground water standards for iron at this time. See response to Comment No. 3.

COMMENT NO. 15: The inclusion of PFOS and PFOA at the proposed levels, for the purpose of establishing clean-up standards for hazardous waste

permitted facilities, exceeds the department's statutory authority to regulate ground water under the underground storage tanks statutes.

RESPONSE: The department is charged with adopting rules concerning underground storage tanks and related cleanup activities (75-11-505, MCA, and 75-11-319, MCA). The board is responsible for formulating and adopting standards of water quality (75-5-301, MCA) which will protect the public health and the state's ground water resources. The consideration and adoption of the proposed PFOS and PFOA ground water standards falls clearly within these authorities. These standards are state water quality standards that programs at the department use for the protection of human health and the environment, including the Hazardous Waste Program and the Underground Storage Tank Program. See response to Comment No. 18.

COMMENT NO. 16: The inclusion of PFOS and PFOA at the proposed levels, for the purpose of establishing cleanup standards for hazardous waste permitted facilities, is inappropriate, because the department is using the EPA's lifetime health advisory despite the EPA's recommendation against states using lifetime health advisories as a cleanup standard.

RESPONSE: DEQ agrees that the EPA Health Advisories should not be used directly as cleanup standards, and is not doing so DEQ does, however, use the equations and assumptions found in the EPA Health Advisories in calculating its own DEQ-7 standards that are protective of human health. Once approved, these standards are incorporated into DEQ-7 and have the force of law. Additionally, see response to Comment No. 15.

COMMENT NO. 17: The inclusion of PFOS and PFOA at the proposed levels for the purpose of establishing cleanup standards for hazardous waste permitted facilities is inappropriate. It is inappropriate to apply the new rule to site cleanups already governed by CERCLA or RCRA where cleanup is based on a site-specific human health risk assessment process.

RESPONSE: Site-specific human health risk-based cleanup levels are used when enforceable, promulgated standards such as those in Department Circular DEQ-7 are not available. Pursuant to CERCLA, the selected remedy must meet the threshold criteria of protectiveness and meet Applicable or Relevant and Appropriate Requirements (ARARs) unless a waiver is justified. 40 CFR 300.430. Department Circular DEQ-7 standards are a state ARAR that must be met. Likewise, for facilities regulated under the Montana Hazardous Waste Act, risk-based numbers are not used where enforceable, promulgated standards such as those in Department Circular DEQ-7 exist.

COMMENT NO. 18: The statutes cited as the department's authority to implement the proposed ground water standards (75-11-319, 75-11-505, and 75-11-309, MCA) have no readily apparent nexus to the establishment of new cleanup standards for hazardous waste permitted facilities based on ground water criteria.

RESPONSE: The commenter noted that the department cited 75-11-319, 75-11-505, and 75-11-309, MCA. Referencing 75-11-319, 75-11-505, and 75-11-309, MCA, was necessary so the department could adopt the current version of

Department Circular DEQ-7 by reference into necessary rules, including ARM 17.56.507 and ARM 17.56.608. The new water quality standards are used by multiple programs. Regardless of the regulatory authority that a party may fall under, it is a violation to cause pollution of any state waters (which includes ground water) or place or cause to be placed any waste where they will cause pollution of state waters. See 75-5-605, MCA. The board has separate authority, under 75-5-301, MCA, to adopt standards of water quality.

COMMENT NO. 19: The proposed ground water criteria for Department Circular DEQ-7 should not apply where other federal and Department of Defense environmental requirements govern.

RESPONSE: The state of Montana has primacy in regulating ground water as a state resource. The Montana Water Quality Act, 75-5-605, MCA, provides that it is unlawful to cause pollution of any state waters or place or cause to be placed any wastes where they will cause pollution of any state waters. Specifically, ARM 17.30.1006 classifies ground water into Classes I through IV based upon its specific conductance and establishes the ground water quality standards applicable with respect to each ground water classification. The quality of a class of ground water must be maintained so that it is suitable for established uses. Concentrations of substances in ground water within these classes may not exceed the human health standards for ground water listed in Department Circular DEQ-7, Montana Numeric Water Quality Standards. The DOD must not only comply with federal environmental laws regarding ground water but state requirements such as Department Circular DEQ-7 standards, also where those state requirements are more stringent. See also response to Comment No. 15.

COMMENT NO. 20: The PFOS and PFOA compounds are not identified in 40 CFR Part 261 as either characteristic hazardous wastes or listed hazardous wastes or toxic constituents, and no CERCLA/IRIS (risk-based) standard for the PFOA/PFOS compounds have been promulgated; therefore, adopting them in Department Circular DEQ-7 cannot expand the state's jurisdiction under RCRA as applied to the Department of Defense.

RESPONSE: The rulemaking at issue concerns Department Circular DEQ-7 and the state's authority to regulate pollution of ground water. All facilities regulated under the Montana Hazardous Waste Act must also comply with the Montana Water Quality Act, including compliance with the any specific state standards for ground water set forth in Department Circular DEQ-7.

COMMENT NO. 21: DEQ has not provided sufficient evidence that iron and manganese constitute harm to the public health.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standards for manganese and iron at this time. See response to Comment No. 3.

COMMENT NO. 22: The proposed rulemaking contains no data regarding the economic impact of the proposal, including that required under 75-5-301(2), MCA. We would like some information on that.

RESPONSE: The board and department are not proceeding with the proposed ground water standards for iron and manganese at this time. The department is continuing to work on clarifying and synchronizing its approach to implementing iron and manganese standards, especially for situations where there may be a large natural background component. When this work is completed, the economics of waste treatment and prevention will be considered for these parameters. Regarding diallate; dioxane, 1,4-; PFOS; and PFOA, the proposed ground water standards for these will be primarily (if not exclusively) used by the department's Waste Management and Remediation Division as cleanup endpoints. Remediation sites are assessed on a case-by-case basis and financially responsible or liable parties are required to remediate contaminated sites to a level that assures protection of human health, safety, and welfare and of the environment. These four ground water standards will primarily be addressed through remediation and not through the permitting activities contemplated under Title 75, chapter 5, MCA. No significant economic impacts are anticipated under the Montana ground water pollution control system permitting program as a result of the adoption of the proposed ground water standards for diallate; dioxane, 1,4-; PFOS; or PFOA. Please see response to Comment No. 3.

COMMENT NO. 23: What effect will the proposed standards have on ground water classification?

RESPONSE: The board is not revising Department Circular DEQ-7 to include ground water standards for iron and manganese at this time. The adoption of the proposed ground water standards for diallate; dioxane, 1,4-; PFOS; and PFOA, will have no impact on the ground water classes. Montana's ground water classes are described in ARM 17.30.1005 and 1006. The ground water classes and their associated beneficial uses are based on specific conductance, a measure of how salty the ground water is. Discharge compliance with the proposed standards, or for that matter, with any of the ground water standards already adopted in Department Circular DEQ-7, is a separate compliance consideration made on a parameter-by-parameter, case-by-case basis.

COMMENT NO. 24: How do the proposed standards coincide with the board’s authority to adopt rules under Public Water Supplies at 75-6-103(2)(a), MCA?

RESPONSE: The board has separate authority for (a) adopting rules pertaining to surface and ground water standards, and (b) adopting rules pertaining to maximum contamination levels for public water supplies. The proposed rulemaking fell under the board's authority at 75-5-301(2)(a), MCA, for surface and ground water standards. The department is currently working on manganese standards applicable to public water supplies; when proposed, those would be addressed by the board under its authority at 75-6-103(2)(a), MCA.

COMMENT NO. 25: The department's proposed 100 microgram per liter ground water standard for manganese is important for the protection of public health.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standards

for manganese and iron at this time. See response to Comment No. 3.

COMMENT NO. 26: The iron criterion proposed by the department is based on a reference dose (RfD; 0.59 mg/kg-day) modified from the RfD of 0.7 mg/kg-day derived by EPA in their 2016 PPRTV document. The department modified the RfD for a body weight of 80 kg, whereas EPA's RfD was developed using an assumed body weight of 70 kg. EPA does not recommend using alternate body weights to modify RfDs in this manner.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for iron at this time. See response to Comment No. 3.

COMMENT NO. 27: The 1,000-fold uncertainty factor applied to rodent data for the derivation of the department manganese RfD shows that the level of confidence in this value—in terms of applicability to human infants—is very low.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standards for manganese at this time. See response to Comment No. 3.

COMMENT NO. 28: DEQ applies an uncertainty factor of 10 to address variability within the human population in the development of the manganese criterion, but this is unnecessary because DEQ already relied on a RfD based on the most sensitive portion of the population—developing fetuses and infants.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for manganese at this time. See response to Comment No. 3.

COMMENT NO. 29: DEQ should not use the EPA PPRTV (2016) reference dose (RfD) because it assumes a high concentration one-time ingestion and is not relevant to the typical environmental iron ingestion, which is spread out over time.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for iron at this time. See response to Comment No. 3.

COMMENT NO. 30: The iron criterion does not consider that iron is an essential requirement in the human diet; DEQ's use of the relative source contribution for drinking water of 0.2 is overly conservative considering the typical daily iron intake is 11 mg/day.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for iron at this time. See response to Comment No. 3.

COMMENT NO. 31: The proposed cumulative standard cleanup level for PFOA and PFOS is not consistent with acceptable toxicological practices per EPA's *Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures*, August 2000.

RESPONSE: PFOA and PFOS are two compounds falling within a larger

group called Per- and Polyfluoroalkyl substances, or "PFAS." Other compounds in the PFAS group are PFHxS and PFNA. Among the compounds of the PFAS group, EPA found that PFOA and PFOS were detected at concentrations greater than the proposed criterion (0.07 µg/L) in 1.3 percent of all U.S. public water supplies serving 10,000 people or fewer. For this reason, EPA has focused on PFOA and PFOS criteria for drinking water. EPA's 2016 Health Advisory for lifetime exposure is for individual and combined PFOA and PFOS concentrations, consistent with how the board proposed the rule.

COMMENT NO. 32: The rationale in MAR Notice No. 17-403 fails to explain why both manganese and iron are proposed to be classified as toxins.

RESPONSE: The board agrees that the notice could have better explained the toxic effects of these elements, primarily those of iron. The board and department are not proceeding with the proposed ground water standards for manganese and iron at this time. See response to Comment No. 3.

COMMENT NO. 33: The Agency for Toxic Substances and Disease Registry indicates there is little difference in sensitivity between rats and humans, so DEQ's calculations likely overestimate the risk of manganese by assuming humans are more sensitive.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for manganese at this time. See response to Comment No. 3.

COMMENT NO. 34: Manganese, iron, zinc, and calcium all interact to reduce their respective absorption and toxicity, therefore the bioavailability of manganese in ground water will likely be less than assumed in the department's calculations and the studies they relied on.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standards for manganese and iron at this time. See response to Comment No. 3.

COMMENT NO. 35: Personal communication between EPA Region VIII's toxicologist offering a professional opinion as to the scientific quality of the recent manganese studies is insufficiently rigorous to cause DEQ to modify its manganese drinking water criterion to be more stringent then the federal equivalent.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for manganese at this time. See response to Comment No. 3. However, it should be noted that consultation with EPA Region VIII's Human Health Risk Assessor is provided for in state law for cases where the department derives toxic human health criteria (see pages 5 to 7, Department Circular DEQ-7, May 2017 edition).

COMMENT NO. 36: It is unclear where the values for the average body weight and water ingestion for infants zero to <6 months came from in the development of the manganese criterion.

RESPONSE: The board and the department appreciate the comment. The

board and department are not proceeding with the proposed ground water standard for manganese at this time. See response to Comment No. 3.

COMMENT NO. 37: In the development of the manganese criterion, why was the water consumption variable from Table 3-15 of EPA's Exposure Factors Handbook selected rather than that from a newer study (NHANES 2003-2006)?

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standard for manganese at this time. See response to Comment No. 3.

COMMENT 38: Abundance of iron and manganese naturally available in soils, combined with their solubility, make regulation and compliance difficult, if not impossible. Even if background levels are considered, it places an undue burden of proof on dischargers and industry to demonstrate background levels.

RESPONSE: The board and the department appreciate the comment. The board and department are not proceeding with the proposed ground water standards for manganese and iron at this time. See response to Comment No. 3.

Reviewed by:

*/s/*
EDWARD HAYES
Rule Reviewer

BOARD OF ENVIRONMENTAL REVIEW

BY: */s/*
CHRISTINE DEVENY
Chair

DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: */s/*
SHAUN McGRATH
Director

Certified to the Secretary of State, _____ 2019.

STATE OF MONTANA

BOARD OF ENVIRONMENTAL REVIEW
and the
DEPARTMENT OF ENVIRONMENTAL QUALITY

(1) I, Christine Deveny, Chair of the Board of Environmental Review of the State of Montana, by virtue of and pursuant to the authority vested in me through 75-5-201, 75-5-301, 75-5-303, 75-5-401, 75-5-802, 75-6-103, 82-4-204, MCA, do promulgate and adopt the annexed rules to-wit:

| | | |
|---|---|---|
| AMD: | 17.24.645 | Ground Water Monitoring |
| | 17.24.646 | Surface Water Monitoring |
| | 17.30.502 | Definitions |
| | 17.30.619 | Incorporations by Reference |
| | 17.30.702 | Definitions |
| | 17.30.1001 | Definitions |

as permanent rules of this board.

(2) I, Shaun McGrath, Director of the Department of Environmental Quality of the State of Montana, by virtue of and pursuant to the authority vested in me through 75-5-402, 75-5-411, 75-10-702, 75-10-704, 75-10-1202, 75-11-319, 75-11-505, 76-4-104, MCA, do promulgate and adopt the annexed rules to-wit:

| | | |
|---|---|---|
| AMD: | 17.36.345 | Adoption by Reference |
| | 17.55.109 | Incorporation by Reference |
| | 17.56.507 | Adoption by Reference |
| | 17.56.608 | Adoption by Reference |

as permanent rules of this department.

(3) This order, after first being recorded in the order register of this board, and the department, shall be forwarded to the Secretary of State for filing.

APPROVED AND ADOPTED _____, 2019

CERTIFIED TO THE

SECRETARY OF STATE _____, 2019

BOARD OF ENVIRONMENTAL REVIEW

BY: */s/*
CHRISTINE DEVENY, CHAIR

DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: */s/*
SHAUN McGRATH, DIRECTOR

**BOARD OF ENVIRONMENTAL REVIEW**
**AGENDA ITEM**
**EXECUTIVE SUMMARY FOR PROPOSED AMENDMENT OF RULES**

**Agenda Item # III.A.2.**

**Agenda Item Summary –** The Department requests that the Board amend as proposed Administrative Rules of Montana (ARM) 17.30.1001 and 17.38.101. The Department requests that the Board amend 17.30.1334 as proposed but to update the citations for authority and implementation to correct an inadvertent omission that appeared in the proposed rules. These amendments would incorporate New Rule 1, which establishes setbacks between sewage lagoons and water wells, into the Board's rules concerning concentrated animal feeding operations and would adopt the most the recent versions of Department Circulars DEQ-1, DEQ-2, DEQ-3, the Department New Community Water Supply Well Expedited Review Checklist, and the Department New Non-Community Water Supply Well Expedited Review Checklist, which would incorporate New Rule 1 into the rules providing the engineering requirements for public water supply and public sewage systems.

The Department intends to adopt New Rule I as modified in response to comments. The Department also intends to adopt as proposed ARM 17.36.103, 17.36.345, and 17.50.819, which would incorporate New Rule 1 into the department's rules concerning subdivisions and solid waste.

**List of Affected Board Rules –** The proposed amendments would affect Board rules adopted under authority of Sections 75-5-201, 75-5-401, and 75-6-103, specifically ARM 17.30.1001, and 17.38.101, as well as Department Circulars DEQ-1, DEQ-2, and DEQ-3, and the New Community and Non-Community Water Supply Expedited Review Checklists.

**List of Affected Department Rules –** The proposed amendments will affect Department rules adopted under the authority of Sections 75-5-411, 75-10-1202, and 76-4-104, MCA, specifically New Rule 1 and ARM 17.36.103, 17.36.345, and 17.50.819.

**Affected Parties Summary –** The amendments will incorporate New Rule 1, which establishes setbacks between sewage lagoons and wells, into the Board's rules concerning concentrated animal feeding operations and public water supply and wastewater systems. The Department's amendments would incorporate New Rule 1 into the department's rules concerning subdivisions and solid waste.

**Background –**The Board initiated rulemaking for the affected board rules at its December 7, 2018, regular meeting. The proposed amendments were published on December 21, 2017, MAR Notice 17-404, at pages 2455–78.

**Hearing Information –** The Board and Department held a public hearing on January 17, 2019. Sarah Clerget served as the presiding officer. The public submitted oral and written comments, which have been addressed in the notice of adoption.

**Board Options –** The Board may:

1. Amend ARM 17.30.1001 and 17.38.101 as proposed, amend ARM 17.30.1334 as proposed and update the citations of authority and implementation, and adopt the HB 521/311 analysis;
2. Amend the proposed rules with modifications the Board finds are appropriate and consistent with the scope of the Notice of Public Hearing and the record in this proceeding; or
3. Take no action to amend the proposed rules.

**DEQ Recommendation –** The Department recommends that the Board amend ARM 17.30.1001 and 17.38.101 as proposed, amend ARM 17.30.1334 and update the citations of authority and implementation, and adopt the HB 521/311 analysis.

**Enclosures –**

1. Notice of Public Hearing on Proposed Amendment, MAR Notice 17-404
2. Draft Notice of Amendment and Adoption, MAR Notice 17-404.
3. Presiding Officer Reports
4. House Bill 521/311 analysis
5. Comments Received
6. Draft Administrative Order

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW AND
THE DEPARTMENT OF ENVIRONMENTAL QUALITY
OF THE STATE OF MONTANA

| | | |
|---|---|---|
| In the matter of the amendment of ARM 17.30.1001, 17.30.1334, 17.36.103, 17.36.345, 17.38.101, and 17.50.819, adoption of New Rule I pertaining to definitions, and the amendment of Department Circulars DEQ-1, DEQ-2, DEQ-3 regarding setbacks between water wells and sewage lagoons | ) ) ) ) ) ) ) | NOTICE OF PUBLIC HEARING ON PROPOSED AMENDMENT AND ADOPTION<br><br>(SUBDIVISIONS)<br>(PUBLIC WATER ENGINEERING)<br>(WATER QUALITY)<br>(SOLID WASTE) |

TO: All Concerned Persons

1. On January 17, 2019, at 2:00 p.m., the Board of Environmental Review and the Department of Environmental Quality will hold a public hearing in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana, to consider the proposed amendment and adoption of the above-stated rules.

2. The board and department will make reasonable accommodations for persons with disabilities who need an alternative accessible format of this notice. If you require an accommodation, contact Sandy Scherer, Legal Secretary, no later than 5:00 p.m., January 10, 2019, to advise us of the nature of the accommodation that you need. Please contact Sandy Scherer, Department of Environmental Quality, P.O. Box 200901, Helena, Montana 59620-0901; phone (406) 444-2630; fax (406) 444-4386; or e-mail sscherer@mt.gov.

3. GENERAL REASON STATEMENT: Before 2017, 75-5-605(1)(c), MCA, prohibited any person from siting and constructing a sewage lagoon within 500 feet of an existing water well. In 2017, the Legislature passed House Bill 368 (HB 368), which removed the 500-foot setback and directed the Department of Environmental Quality to adopt rules establishing setback requirements between sewage lagoons and water wells to prevent water well contamination. The department now proposes to adopt New Rule I, which implements HB 368 by establishing setbacks between sewage lagoons and water wells to protect water wells from bacterial and viral pathogens that come from sewage lagoons.

The department administers multiple programs that will be affected by New Rule I, including the programs related to concentrated animal feeding operations, solid waste, public water supply engineering requirements, and subdivision review. The authority to adopt rules for those programs is shared by the department and the Board of Environmental Review. To ensure that New Rule I is applied consistently and predictably across those programs, the department proposes to amend the subdivision rules in ARM 17.36.103 and 17.36.345, and the solid waste rule in ARM 17.50.819. The board proposes to amend the water quality rules in ARM 17.30.1001 and 17.30.1334; the public water engineering rule in ARM 17.38.101;

and Circulars DEQ-1, DEQ-2, and DEQ-3. The specifics of each of these proposed amendments is discussed in more detail below.

The amendments to ARM 17.30.1001, 17.36.345, 17.38.101, and 17.50.819 would adopt and incorporate by reference the 2018 revisions to Circulars DEQ-1, DEQ-2 and DEQ-3, which are contained in this notice. Additionally, the amendments to ARM 17.38.101 would adopt and incorporate by reference the 2018 revisions to the New Community Water Supply Well Expedited Review Checklist and the New Non-Community Water Supply Well Expedited Review Checklist, which are contained in this notice. Under 2-4-307(2), MCA, an agency proposing to adopt material by reference is required to state where a copy of the omitted material may be obtained. In addition, the material must be available to the public for comment, through either publication in the register or publication in an electronic format on the agency's web page during the time that the rule adopting the material is itself subject to public comment. In this instance, the revisions to Circulars DEQ-1, DEQ-2, and DEQ-3, and the New Community and New Non-Community Water Supply Well Expedited Review Checklists that are being adopted by reference are set forth below. Thus, a statement of where a copy may be obtained and the publishing of the proposed rule on the department's website is not necessary.

4. The rules proposed to be amended provide as follows, stricken matter interlined, new matter underlined:

17.30.1001 DEFINITIONS (1) The following definitions, in addition to those in 75-5-103, MCA, apply throughout this subchapter:

(1) through (16) remain the same.

(17) "Unrestricted reclaimed wastewater" means wastewater that is treated to the standards for Class A-1 or Class B-1 reclaimed wastewater, as set forth in Appendix B of Department Circular DEQ-2, entitled "Montana Department of Environmental Quality Design Standards for Public Sewage Systems" (~~2016~~ 2018 edition).

(a) The board adopts and incorporates by reference Department Circular DEQ-2, entitled "Department of Environmental Quality Design Standards for Public Sewage Systems" (~~2016~~ 2018 edition). Copies are available from the Department of Environmental Quality, ~~Technical and Financial Assistance~~ Engineering Bureau, P.O. Box 200901, Helena, MT 59620-0901.

AUTH: 75-5-201, 75-5-401, MCA
IMP: 75-5-301, 75-5-401, MCA

REASON: As discussed in Section 6 of this Notice, the board is proposing to make changes to Circular DEQ-2 to make that circular consistent with the requirements of New Rule I. The board proposes to amend ARM 17.30.1001 to update the reference to this new edition of the circular to ensure that programs across the department are using the same and most recent edition of the circular. The board also proposes to make a housekeeping change to update the name of the engineering bureau to reflect current department organization.

17.30.1334 TECHNICAL STANDARDS FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (1) through (12) remain the same.

(13) CAFO sewage lagoons must meet the setbacks established in [NEW RULE I].

AUTH: 75-5-401, 75-5-802, MCA
IMP: 75-5-401, 75-5-802, MCA

REASON: The board is proposing to include New Rule I into the requirements for concentrated animal feeding operations (CAFOs) because the sewage contained in those lagoons can have similar or higher concentrations of pathogens than a sewage lagoon with human-derived sewage. Therefore, water wells near CAFO sewage lagoons need protection similar to water wells near sewage lagoons containing human-derived sewage.

17.36.103 APPLICATION--CONTENTS (1) In addition to the completed application form required by ARM 17.36.102, the following information must be submitted to the reviewing authority as part of a subdivision application:

(a) through (f) remain the same.

(g) if ground water is proposed as a water source, the applicant shall submit the following information:

(i) the location of the proposed ground water source, which must be shown on the lot layout, indicating distances to any potential sources of contamination within 500 feet, ~~and~~ any known mixing zone as defined in ARM 17.30.502 within 500 feet, and any sewage lagoon within 1,000 feet. If the reviewing authority identifies a potential problem, it may require that all potential sources of contamination be shown in accordance with Department Circular PWS-6; and

(ii) through (t) remain the same.

(u) if an application involves a change to the plans and specifications for a subdivision previously approved by the reviewing authority, a copy of the certificate of subdivision approval and a copy of the approved lot layout document; ~~and~~

(v) the information required in [NEW RULE I] regarding setbacks between sewage lagoons and wells; and

~~(v)~~(w) all additional information that is required under this chapter or that the reviewing authority determines is reasonably necessary for the review of the proposed subdivision.

AUTH: 76-4-104, MCA
IMP: 76-4-104, 76-4-125, MCA

REASON: The department is proposing to amend ARM 17.36.103 to require subdivision applications to identify any sewage lagoon within 1,000 feet of a proposed ground water source and to include in the application any information required by New Rule I. This is reasonably necessary to ensure that subdivision applications are reviewed and approved in accordance with New Rule I. This extends the protections of wells in New Rule I to subdivisions and provides consistency across programs administered by the department. The proposed

changes also would clarify that applicants need only identify those known mixing zones that are within 500 feet of a proposed ground water source, which eliminates any existing confusion about what the rule requires.

17.36.345 ADOPTION BY REFERENCE (1) For purposes of this chapter, the department adopts and incorporates by reference the following documents. All references to these documents in this chapter refer to the edition set out below:

(a) Department Circular DEQ-1, "Standards for Water Works," ~~2014~~ 2018 edition;

(b) Department Circular DEQ-2, "Design Standards for Public Sewage Systems," ~~2016~~ 2018 edition;

(c) Department Circular DEQ-3, "Standards for Small Water Systems," ~~2014~~ 2018 edition;

(d) through (k) remain the same.

(l) Department Circular PWS-6, "Source Water Protection Delineation," 1999 edition; ~~and~~

(m) the U.S. Department of Agriculture's National Soil Survey Handbook (USDA, NRCS, September 1999), and the Soil Survey Manual (USDA, October 1993), which contain a recognized set of methods for identifying the nature and characteristics of soils~~.~~ ; and

(n) [NEW RULE I] regarding setbacks between sewage lagoons and wells.

(2) remains the same.

AUTH: 76-4-104, MCA
IMP: 76-4-104, MCA

REASON: As discussed in Section 6 of this notice, the board is proposing to make changes to Department Circulars DEQ-1, DEQ-2, and DEQ-3 to make those circulars consistent with the requirements of New Rule I. All of these circulars are adopted by reference by the department in the subdivision rules. The department is proposing to amend ARM 17.36.345 to adopt those most recent versions of each circular and to adopt by reference New Rule I. Because New Rule I is designed to protect water wells from contamination from sewage lagoons, the protections in New Rule I should apply to subdivision applications that are reviewed by the department. This change is also reasonably necessary to promote consistency across programs administered by the department.

17.38.101 PLANS FOR PUBLIC WATER SUPPLY OR PUBLIC SEWAGE SYSTEM (1) through (19) remain the same.

(20) For purposes of this chapter, the board adopts and incorporates by reference the following documents. All references to these documents in this chapter refer to the edition set out below:

(a) Department Circular DEQ-1, ~~2014~~ 2018 edition, which sets forth the requirements for the design and preparation of plans and specifications for public water supply systems;

(b) Department ~~of Environmental Quality~~ Circular DEQ-2, ~~2016~~ 2018 edition, which sets forth the requirements for the design and preparation of plans and

specifications for sewage works;

(c) Department Circular DEQ-3, ~~2014~~ 2018 edition, which sets forth minimum design standards for small water systems;

(d) through (f) remain the same.

(g) Department Community Water Supply Well Expedited Review Checklist, ~~2014~~ 2018 edition, which sets forth minimum criteria and design standards for new community water supply wells;

(h) Department Non-community Water Supply Well Expedited Review Checklist, ~~2014~~ 2018 edition, which sets forth minimum criteria and design standards for new non-community water supply wells;

(i) through (21) remain the same.

AUTH: 75-6-103, MCA
IMP: 75-6-103, 75-6-112, 75-6-121, MCA

REASON: The board is proposing to amend ARM 17.38.101 to adopt the most recent version of Circulars DEQ-1, DEQ-2, DEQ-3, the Department Community Water Supply Well Expedited Review Checklist and the Department Non-community Water Supply Well Expedited Review Checklist. Doing so will incorporate New Rule I into the rules providing the engineering requirements for public water supply and public sewage systems.

These changes are reasonably necessary to ensure that new public water supply wells are not contaminated by sewage lagoons and that public sewage lagoons do not contaminate public or nonpublic water wells. These changes are also necessary to provide consistency across the programs administered by the department that deal with sewage lagoons and wells, or that adopt by reference the department circulars.

17.50.819 INCORPORATION BY REFERENCE AND AVAILABILITY OF REFERENCED DOCUMENTS (1) The department adopts and incorporates by reference:

(a) Department Circular DEQ-2, Design Standards for Public Sewage Systems (~~2016~~ 2018 edition), which sets forth design standards for public sewage systems;

(b) through (3) remain the same.

AUTH: 75-10-1202, MCA
IMP: 75-10-1202, MCA

REASON: The department proposes to amend ARM 17.50.819 to adopt the most recent version of Circular DEQ-2 so that all programs that adopt the circular use the same version, thus providing consistency and predictability across the programs administered by the department.

5. The proposed new rule for a subchapter provides as follows:

NEW RULE I SETBACKS BETWEEN SEWAGE LAGOONS AND WATER WELLS (1) For purposes of this rule, the following definitions apply:

(a) "Lagoon area" means the surface area of the lagoon within the design of the high-water mark.

(b) "Maximum day well demand" means the highest volume of water discharged from a water well on any day in a year.

(c) "Sewage lagoon" means any holding or detention pond that is used for treatment or storage of water-carried waste products from residences, public buildings, institutions, or other buildings, including discharge from human beings or animals, together with ground water infiltration and surface water present. For purposes of this rule, the term includes concentrated animal feeding operations but does not include storm water facilities or subsurface wastewater treatment systems.

(d) "Water well" has the same meaning as 75-5-103, MCA.

(2) All new water wells and new sewage lagoons must meet the setbacks in (3), unless the applicant demonstrates that a shorter setback is allowed under (4) or (6). Water wells and sewage lagoons that existed or were approved by the department before the effective date of this rule must meet the setbacks under either of the following circumstances:

(a) if the lagoon area is proposed to be increased; or

(b) if the maximum daily pumping rate of a water well is proposed to be increased.

(3) The following setbacks apply, unless the applicant demonstrates that a lesser setback is allowed under (4) or (6):

(a) 1,000 feet between a water well and the design high-water mark of a sewage lagoon;

(b) 200 feet between a well for a public water supply system with continuous disinfection that meets the 4-log virus inactivation and the design high-water mark of a sewage lagoon;

(c) 200 feet between a water well and the design high-water mark of a sewage lagoon if the geometric mean number of *E. coli* bacteria in the influent flow to the sewage lagoon does not exceed 126 colony forming units per 100 milliliters and 10 percent of the total samples do not exceed 252 colony forming units per 100 milliliters during any 30-day period; and

(d) 100 feet between a water well and the design high-water mark of a sewage lagoon if the applicant demonstrates there is no hydraulic connection between the sewage lagoon and the water well as demonstrated by groundwater gradients under the maximum day pumping rate or by confined conditions that prevent lagoon discharges from impacting the water well.

(4) A setback less than the setbacks in (3)(a) through (c) may be used if the applicant demonstrates that the distance needed to achieve 4-log pathogen reduction of effluent migration from the sewage lagoon to the water well is less than the setback distance in (3)(a) through (c). In no instance, however, may the setback be less than 100 feet.

(5) To make the demonstration in (4), the pathogen reduction between the sewage lagoon and the water well must be calculated according to one of the following methods:

(a) METHOD 1 – Travel Time Method - The vertical travel time in the vadose zone for the wastewater to reach groundwater is calculated using the following equation:

$$t1 = (d)*(\theta) \div (\alpha) \div 365$$

Where:

t1 = vertical travel time (days)
α is total effluent recharge – the maximum allowable leakage rate or actual measured leakage rate if the measured rate is available (in/yr)
θ is volumetric soil moisture (percent)
d is the depth to groundwater (in)

The horizontal travel time in the saturated zone for the wastewater to reach the water well is calculated using the following equations:

$$t2 = (x) \div [(K)*(i) \div (ne)]$$

Where:

t2 = horizontal travel time (days)
K is hydraulic conductivity of the saturated aquifer (feet/day)
i is hydraulic gradient (feet/feet)
ne is effective porosity (dimensionless)
x is the horizontal distance from the sewage lagoon to the water well (feet)

The total log pathogen reduction from the bottom of the sewage lagoon to the water well is calculated using the following equation:

$$Pt = (t1 + t2)*0.02$$

Where:

Pt = Log reduction of pathogens during vertical and horizontal travel
0.02 = log 10 pathogen removal/day

(b) METHOD 2 – Travel time and VIRULO - The horizontal travel time (t2) is calculated the same as for Method 1. The horizontal log reduction is calculated using the following equation:

$$Ph = (t2)*0.02$$

Where:

Ph = Log reduction of pathogens during horizontal travel

The pathogen reduction during vertical movement in the vadose zone is calculated using VIRULO. The value of Ph is added to VIRULO results to provide the total pathogen reduction from the bottom of the sewage lagoon to the water well.

(c) Other methods approved by the department.

(6) In calculating 4-log pathogen reduction under (4), the following requirements apply:

(a) Hydraulic conductivity must be based on the aquifer material most likely to transmit lagoon discharges to the water well and be determined by one of the following methods:

(i) The maximum hydraulic conductivity value of the aquifer material shown in Table 1. The hydraulic conductivity for aquifer materials not included in Table 1 may be calculated by the applicant using other methods acceptable to the department. The aquifer material must be the most permeable soil layer that is at least six inches thick and is below the bottom of the sewage lagoon infiltrative surface, as identified in any test pit or borehole. This method may only be used for facilities that are not requesting a source-specific ground-water mixing zone, as defined in ARM 17.30.518.

**TABLE 1**

| MATERIAL | HYDRAULIC CONDUCTIVITY (ft/d) |
|---|---|
| Basalt (permeable/vesicular) | 5,100 |
| Clay | 0.025 |
| Clay (unweathered, marine) | 0.00054 |
| Coarse sand | 94,500 |
| Fine sand | 51 |
| Glacial Till | 0.72 |
| Glacial Till (fractured) | 29.5 |
| Gravel | 201,600 |
| Gravelly sand | 1,020 |
| Igneous/metamorphic rock (fractured) | 76.5 |
| Igneous/metamorphic rock (unfractured) | 0.000054 |
| Karst limestone | 18,000 |
| Limestone | 1.5 |
| Limestone (unjointed, crystalline) | 0.30 |
| Loess | 0.27 |
| Medium sand | 569 |
| Sandstone | 1.5 |
| Sandstone (friable) | 3.0 |
| Sandstone (well cemented, unfractured) | 0.0036 |
| Sandy clay loam | 1.4 |
| Sandy silt | 0.27 |

| | |
|---|---|
| Shale | 0.00054 |
| Silt | 0.27 |
| Siltstone | 0.0036 |
| Silty clay | 0.013 |
| Silty sand | 45 |
| Tuff | 7.2 |
| Very fine sand | 21.4 |

(ii) A pumping test at least 8 hours long, representative of the hydraulic conductivity of the aquifer material, and conducted on a well(s) with complete lithology and construction details. Results for pumping tests must be submitted electronically on DNRC Form 633. Pumping tests must be conducted in accordance with the requirements in ARM 36.12.121(2)(a) through (f), (3)(a), (3)(c), (3)(g), (3)(i), (3)(j), and (3)(k).

(b) Hydraulic gradient must be based on the aquifer material most likely to transmit lagoon discharges to the water well and must be determined by one of the following methods:

(i) The regional topographic slope in an area that includes the water well and the sewage lagoon. The minimum hydraulic gradient that may be used with this method is 0.005 feet/feet, and the maximum gradient that may be used is 0.05 feet/feet. This method may not be used for facilities requesting a source-specific ground-water mixing zone as defined in ARM 17.30.518.

(ii) Groundwater potentiometric maps of the aquifer that accurately represent the local hydraulic gradient in the area of the water well and sewage lagoon.

(iii) Surveyed static water elevations in at least three wells that draw water from the aquifer, accurately represent the local hydraulic gradient in the area of the water well and sewage lagoon, and are measured on the same date to the nearest 0.01 foot.

(c) Soil type must be determined by test pits or boreholes. The following requirements apply:

(i) Test pits or boreholes must be completed to a minimum depth of 10 feet below the bottom of the sewage lagoon infiltrative surface or until an impervious layer, as defined in Circular DEQ-4, is encountered.

(ii) A minimum of two test pits or boreholes must be completed for the first 0.5 acre of lagoon area that is within 1,000 feet of a water well. A maximum of one additional test pit or borehole for each additional acre of lagoon area within 1,000 feet of a water well may be required if the department determines that additional test pits or boreholes are necessary to adequately characterize the soils between the sewage lagoon and the water well. The test pits or boreholes must be located to provide representative information on the soils beneath the sewage lagoon that affect the vertical and horizontal migration of pathogens from the sewage lagoon to the affected water well.

(iii) If the test pit or borehole locations are not within 50 feet of the toe of the sewage lagoon embankment, then the locations must be approved by the department before they are completed. The borehole method must provide a continuous soil sample that is representative of the soil and lithology profile.

(iv) Soils must be described according to the Unified Soil Classification System. The soil description must include information regarding the presence or absence of seasonal saturated conditions. If there is no evidence of saturated conditions from the test pit, borehole, or other evidence, then the depth to groundwater must be estimated as the bottom of the test pit or borehole.

(d) Soils with greater than 35 percent retained on the No. 10 sieve and geologic materials with fractures do not receive credit for virus reduction in the vadose zone.

(e) The well discharge rate used in calculations must be based on the maximum day well demand, which must be determined by using historic discharge rate records or other methods as approved by the department.

(7) The department may determine the setback calculated in accordance with this rule should be decreased—but in no instance shorter than 100 feet—if the applicant demonstrates equivalent protection of the water source that supplies the water well.

AUTH: 75-5-411, MCA
IMP: 75-5-411, MCA

REASON: The department proposes to adopt New Rule I, which establishes setbacks between sewage lagoons and water wells to protect water wells from bacterial and viral pathogens that come from sewage lagoons. Unlike the previous setback of 500 feet that was removed by the Legislature in HB 368, New Rule I uses scientifically based methods to calculate setbacks based on the distance needed between the lagoon and well to provide 4-log pathogen reduction, meaning a 99.99 percent reduction of those bacteria and viruses that may impact water wells.

In developing this rule, the department considered using a matrix of different setbacks for different types of water wells (e.g., domestic, stock, irrigation, incorrect construction) and different types of sewage lagoons (e.g., municipal wastewater, concentrated animal feeding operations, animal feeding operations). The department rejected this approach for three reasons:

(1) water wells often have their use changed over time (water well construction rules are the same for domestic, stock, and irrigation uses) without any regulatory requirement to report that change;

(2) there are insufficient scientific studies regarding the virulence of different types of stock or human wastewater sources; and

(3) a 4-log reduction criterion is consistent with existing regulations that define adequate disinfection to protect water wells from pathogens. Those regulations include, for example, Circular DEQ-1 and EPA's *Ground Water Source Assessment Guidance Manual*, EPA 815-R-07-023.

New Rule I provides two methods for determining the appropriate setback between a sewage lagoon and a water well. The first is in (3), which provides four default setbacks, depending on whether the water well or sewage is disinfected and whether the water well and sewage lagoon are hydraulically connected. The second is in (4), which provides applicants a process to use a lesser setback if the applicant can demonstrate that the lesser setback is sufficient to provide 4-log pathogen reduction. Applicants therefore have the choice to use the easy-to-apply default

distances or use a lesser setback if they can demonstrate that the lesser distance will not contaminate the water well. The specifics of each section for the rule are discussed below.

Section (1) defines words used in the rule, which is necessary to provide clarity, consistency, and predictability in the interpretation and administration of the rule.

Section (1)(a) defines the phrase "lagoon area" as the maximum area of the lagoon designed to contain wastewater. This definition was chosen to provide a meaningful distance between water wells and lagoons in the rule with respect to susceptibility of pathogen migration. The department considered but rejected defining lagoon area in relation to the area occupied by the embankment toe. That definition would be dependent on the depth of the lagoon and land slope and would therefore not be a good metric for determining distances and risks to water wells.

Section (1)(b) defines the phrase "maximum day well demand." This definition is designed to provide the most applicable discharge rate from a water well to use in assessing the potential for pathogens discharged from a sewage lagoon to reach the water well.

Section (1)(c) defines the phrase "sewage lagoon." The definition is designed to specifically eliminate sewage lagoon sources and other lagoon facilities that do not provide a significant source of pathogens to water wells (e.g., storm water lagoons) or have existing setback requirements in other regulations (e.g., septic systems and rapid infiltration systems). The definition does specifically include concentrated animal feeding operations sewage lagoons to eliminate any potential uncertainty for those systems.

Section (1)(d) defines the phrase "water well" as currently defined in the Water Quality Act (75-5-103, MCA) which is inclusive of all wells used to measure or produce groundwater.

Section (2)(a) requires existing sewage lagoons that are increasing the design high water mark area to comply with the rule. The rationale for this section is that sewage lagoons that expand the area occupied by wastewater have the potential to decrease the distance to nearby wells and therefore increase the risk of pathogen impacts to water wells. Increasing the lagoon size is typically also associated with increasing the amount of sewage stored in the lagoon, which creates more potential pathogen impacts to water wells.

Section (2)(b) requires existing water wells that are expanding their rate of water withdrawal to comply with the rule. The rationale for this section is that water wells that increase their withdrawal rates have an increased potential to draw wastewater from sewage lagoon discharges and therefore increase the risk of pathogen impacts to the water well.

Section (3) establishes four setback distances based on pathogen treatment and hydraulic separation between sewage lagoons and water wells. This section provides applicants with default distances instead of the potentially more difficult process of determining the distance needed to achieve 4-log pathogen reduction that is provided in (5).

The first default distance is provided in (3)(a), which establishes a distance of 1,000 feet between nondisinfected wells and lagoons. This 1,000-foot distance was chosen as the general default setback based on an analysis of common

hydrogeological conditions and parameters (hydraulic conductivity, hydraulic gradient, and effective porosity) that showed that 4-log pathogen reduction is generally achieved by a 1,000-foot separation between a sewage lagoon and water well. A review of several other western and midwestern states showed a variety of setbacks, but 1,000 feet is not out of the ordinary, with Nebraska and Indiana both using a 1,000-foot setback under specific conditions.

Section (3)(b) reduces the 1,000-foot setback to 200 feet between a public water supply well with continuous disinfection that meets 4-log pathogen inactivation and the design high-water mark of a sewage lagoon. The setback is reduced to 200 feet because 4-log pathogen reduction is achieved by treatment of the water. Even though the well is continuously disinfected, the setback is set at 200 feet (instead of 100 feet) to provide additional protection to the well, which is reasonably necessary due to the typically higher pumping rates from public wells (which create a shorter travel time for water between the sewage lagoon and water well), and the potential for an inadequate or failing disinfection system that would only need to be faulty for a short time to allow distribution of contaminated water to multiple persons. Non-public water supply wells are excluded from this section because there is no reliable mechanism to ensure proper installation, operation, and monitoring of a disinfection system.

Section (3)(c) reduces the 1,000-foot setback to 200 feet between a water well and the design high-water mark of a sewage lagoon that has been disinfected to levels required for surface water. The setback is reduced to 200 feet because the sewage entering the lagoon has the number of *E. coli* bacteria reduced via disinfection to the lowest number required in surface water classified as B-1 (ARM 17.30.623(2)(i)). The typical minimum setback between non-public water wells and surface water is 100 feet (ARM 17.36.323). Although the sewage lagoon *E. coli* numbers are reduced to surface water limits, the setback for this rule is increased to 200 feet to provide additional protection to the well, which is reasonably necessary due to the potential for an inadequate or failing disinfection system in the lagoon, the lack of monitoring in non-public wells, and the risk of natural bacterial sources such as wildlife waste that could increase the number of *E. coli* in the sewage lagoon.

Section (3)(d) proposes a setback distance of 100 feet between a water well and the design high-water mark of a sewage lagoon if there is no hydraulic connection between the sewage lagoon and the water well, meaning the wastewater leakage from the sewage lagoon cannot migrate into the water well either because of the direction of groundwater flow under maximum day pumping rates, or because an impervious geologic layer (e.g., thick clay or till layer) prevents wastewater leakage from entering the aquifer supplying water to the water well. In such cases, the lack of hydraulic connection means that the wastewater cannot physically enter the water well and provides adequate protection to reduce the setback to the minimum distance of 100 feet.

Section (4) allows applicants to use a lesser setback than those established in (3) if the applicant demonstrates that a shorter setback can provide 4-log pathogen reduction. This section provides a science-based method for siting lagoons and wells that protects public health and safety while giving applicants the flexibility to site wells or lagoons in locations that otherwise would not be allowed under the default setback distances in (3). This section requires a minimum setback

of 100 feet under all circumstances, which is an accepted and longstanding standard both in and outside of Montana and is consistent with numerous state rules and circulars that use 100 feet as a minimum separation between various wastewater sources and water wells (e.g., ARM 17.36.323, ARM 36.21.638, and Circular DEQ-1 section 3.2.3.1). Additionally, it is a prudent public protection policy to maintain a minimum setback between water wells and sources of contamination to guard against unforeseen circumstances and emergencies.

Section (5) provides two methods to determine the amount of pathogen reduction: the travel time method and the VIRULO method. This is reasonably necessary to provide applicants with accepted methods of calculating 4-log reduction, which provides consistency and predictability in the application of the rule. These two methods were chosen because they are common and accepted methods within the department and the engineering community. The first method is based on travel time calculations in both the unsaturated zone (where the wastewater moves vertically) and groundwater (where wastewater moves primarily horizontally) using common equations that are provided in this section. The travel time formulas in this section are based on Appendix B to 020-011-23 of the Code of Wyoming Rules, available at http://wwcb.state.wy.us/PDF/RulesAndRegulations/DEQ%20Chapter%2023.pdf. The calculated travel time is then combined with a default pathogen reduction rate of 0.02 log10 removal/day (as described in Appendix C of the EPA *Ground Water Rule Source Assessment Guidance Manual*, available at https://www.epa.gov/dwreginfo/ground-water-rule-compliance-help-primacy-agencies) to provide the log removal of pathogens.

Regarding (5)(b), the second method combines the travel time method in the groundwater and a model, VIRULO, for the unsaturated zone. VIRULO is an EPA-supported model that is commonly used in the department and the engineering community. Information about the model is available from the EPA at https://www.epa.gov/water-research/virus-fate-and-transport-virulo-model. Finally, the rule allows other methods to be used if approved by the department. This is reasonably necessary because the two listed methods, while common, are not the only methods that can be used to calculate 4-log pathogen reduction, and the rule gives applicants the flexibility to use those other methods.

Section (6) provides acceptable methods and technical requirements for determining hydraulic conductivity, hydraulic gradient, and soil types, which are site-specific parameters needed to demonstrate the 4-log pathogen reduction in (5). Specifically, those three parameters are needed for calculating travel time of the wastewater in the unsaturated zone and the groundwater. Travel time is needed for calculating the amount of pathogen reduction as the wastewater migrates towards the water well. Specific methods for determining those parameters are provided to promote consistency in applying the rule and to provide applicants with the expected level of detail.

Section (6)(a) provides methods and requirements for calculating hydraulic conductivity, which are necessary because hydraulic conductivity is one of the parameters needed to calculate travel time in groundwater. This section provides two different methods to calculate hydraulic conductivity. First, hydraulic conductivity may be calculated using the values in Table 1. This is a simple and

inexpensive method to estimate hydraulic conductivity that requires only information from the test pits or boreholes required in (6)(c) and the corresponding value in Table 1. Table 1 is proposed as part of this section to promote consistency in applying the rule and to provide applicants with a simple and quick method to determine hydraulic conductivity. The values in Table 1 were derived from reviewing existing published values of hydraulic conductivity and using 90 percent of the highest published value for each of the soil and rock types listed in Table 1. This higher value was used because it provides a faster travel time calculation and is thus more protective of water wells to account for uncertainty in estimating the true hydraulic conductivity of the aquifer materials. The sources considered in developing Table 1 were Patrick A. Domenico and Franklin W. Schwartz, *Physical and Chemical Hydrogeology* (1990); R. Allan Freeze and John A. Cherry, *Groundwater* (1979); Fletcher G. Driscoll, *Groundwater and Wells* (2d ed. 1987); C.W. Fetter, *Applied Hydrogeology* (1994); Mary P. Anderson and William W. Woessner, *Applied Groundwater Modeling* (1992); and Geotechdata.info, *Soil void ratio*, http://geotechdata.info/parameter/permeability.html (October 7, 2013). Finally, because Table 1 does not include all types of aquifer materials, New Rule I allows applicants to calculate the hydraulic conductivity for aquifer materials not included in the table by methods found acceptable to the department.

While the values in Table 1 are reasonably necessary to provide applicants with an easy and inexpensive method of calculating hydraulic conductivity, the resulting values are inherently conservative because the table used the larger values of the range of published values for hydraulic conductivity. Because of that, (6)(a)(ii) provides a more accurate but more expensive method to calculate hydraulic conductivity by allowing a pumping test in the aquifer that is most likely transmitting wastewater to the water well. The rule provides requirements on the methods and data needed to conduct an acceptable pumping test to promote consistency in applying the rule and to provide applicants with the expected level of detail.

Section (6)(b) provides requirements for calculating hydraulic gradient, which is necessary because hydraulic gradient is one of the parameters needed to calculate travel time in groundwater. This section provides three different methods for calculating hydraulic gradient, which vary from inexpensive but conservative to more expensive but more precise. These methods are necessary to provide consistency in applying the rule while giving applicants the flexibility to tailor calculations to their needs.

The first method is provided in (6)(b)(i), which provides a simple and inexpensive method to estimate hydraulic gradient using the topographic slope of the regional land surface that can be measured on a United States Geological Survey (USGS) topographic map or other topographic map. Using topography to estimate hydraulic gradient is conservative because it estimates a relatively larger hydraulic gradient; a larger hydraulic gradient value results in a faster travel time to the water well, less pathogen reduction, and a larger setback distance.

The second method is provided in (6)(b)(ii), which allows hydraulic gradient to be determined by using a groundwater potentiometric map that is representative of the hydraulic gradient of the aquifer that is most likely to transmit water between the water well and sewage lagoon. This method is simple and inexpensive but is more precise than the topographical maps allowed in (6)(b)(i). Section (6)(b)(iii) provides

the third and typically the most accurate and expensive method, which is to measure the local hydraulic gradient in the aquifer supplying water to the water well using water elevation measurements in at least three nearby wells.

Section (6)(c) provides location, number, and depth requirements for installing test pits or boreholes, as well as requirements for collection and description of the soils. This section is reasonably necessary because soil type is one of the parameters needed to calculate wastewater travel time in the unsaturated zone and the groundwater. This section allows both test pits and boreholes because each has advantages and disadvantages for evaluating soils. A test pit is typically dug with a backhoe and allows a large area of the soil column to be viewed, but test pits are limited in depth by the size of the backhoe and the wall strength. A borehole is typically dug with well drilling rig and provides only one narrow cross section of the soils, but the depth of the borehole is typically not limited.

Section (6)(c)(i) defines the minimum depth for the test pit or borehole as 10 feet below the bottom of the lagoon. This depth is necessary to determine the type of soil or rock that the wastewater will flow through after discharging from the lagoon and is consistent with requirements by the Natural Resources Conservation Service (NRCS) and accepted practices in the engineering community. If there is an impervious layer such as unfractured bedrock or a thick clay layer encountered before the 10-foot depth, the boring or test pit can be ended at that depth because the wastewater will not migrate below the impervious layer; the soil information above the impervious layer will be used for the pathogen reduction calculations.

Section (6)(c)(ii) provides the requirements for the number of test pits or boreholes based on the lagoon area. Two test pits or boreholes are required for lagoons with an area of less than 0.5 acres that is within 1,000 feet of a water well. Two boreholes are adequate to characterize the soils near a small lagoon, and the requirement is consistent with NRCS requirements for animal feeding operation lagoons. As the lagoon size increases, additional test pits or boreholes may be required to provide adequate information to characterize the soils near the sewage lagoon.

Section (6)(c)(iii) requires department approval for test pits and boreholes that are not within 50 feet of the lagoon embankment. Test pits and boreholes should be as close to the lagoon as possible to provide the best available information on the soils and rock beneath the lagoon. In some cases, however, an alternative location must be chosen, such as when an applicant does not have access to the land near the sewage lagoon. In those cases, the department needs to be involved with selecting the locations so that representative locations are chosen. This section also requires collection of a continuous soil sample if a borehole is used instead of a test pit. A continuous sample is important to define the correct soil/lithology to use in calculating the travel times in the unsaturated zone and groundwater. Boreholes are required to have continuous and representative samples because some borehole drilling methods do not provide detailed soil layer information that is needed for determining the correct soil properties. The rule allows the applicant to use any borehole method if it provides a representative and continuous soil sample.

Section (6)(c)(iv) requires that the commonly used Unified Soil Classification System (USCS) be used in describing soils. A common classification system was chosen to minimize confusion and interpretation errors when using New Rule I. This

section also requires that the portions of the test pit or borehole that are not below the water table be examined for indications of past saturated conditions. Current or past levels of saturated conditions are important in determining the appropriate vertical and horizontal travel times of wastewater leakage from a sewage lagoon. When there is no evidence of existing or past saturated conditions or impervious layers, using the bottom of the test pit as the level of groundwater is a conservative estimate for use in determining pathogen removal. The 10-foot minimum depth allows the applicant flexibility in ending the borehole or test pit at 10 feet if that depth is sufficient for determining an acceptable setback.

Section (6)(d) provides a maximum amount of coarse material allowed in a soil type to be eligible for virus reduction as it moves vertically in the unsaturated zone. The No. 10 sieve is sized to retain coarse sand and larger sized grains. According to the EPA VIRULO documentation, soils with 35 percent or more of coarse sand or larger grains do not provide any pathogen treatment because the wastewater migration is too rapid. Geologic materials with fractures (including but not limited to sandstone, limestone, shale, basalt, and granite) also do not provide any pathogen treatment for the same reason. This restriction only applies to the unsaturated portion of the travel time calculations; coarse soils and fractured materials do receive credit for pathogen reduction during the horizontal movement of wastewater in the saturated groundwater aquifer.

Section (6)(e) provides requirements for the maximum day well demand to determine wastewater travel time and hydraulic separation between sewage lagoons and water wells. The maximum day well demand is the most applicable well discharge rate to determine travel rates in groundwater and be protective of water wells; other rates such as instantaneous maximum or pump capacity are too high to provide a reasonable value for the travel time calculations, while lower rates such as annual average are too low for this purpose. Because the maximum day well demand is a new metric that has not been defined for water wells in the past, this section provides applicants the flexibility to show maximum day well demand by using historic discharge rate records, or by using other methods as approved by the department when measured discharge rates for the water well are not available or are insufficient to accurately determine the maximum day well demand.

Section (7) provides the applicant flexibility to use other means to determine a setback that is shorter (but no shorter than 100 feet) than what is calculated using the requirements in (3) through (6). This section is included because this rule does not address all potential valid methods and data requirements for determining pathogen reduction, and allows for other methods to be used when appropriate.

6. The proposed changes in Circulars are as follows:

<u>Circular DEQ-1:</u>

1.2.2 Detailed plans, including, where pertinent:

a. through f. remain the same.

g. location of all existing and potential sources of pollution, <u>including all sewage lagoons with the design high-water mark within 1,000 feet of the well site</u>

and all easements, ~~including easements,~~ which may affect the water source or underground treated water storage facilities;

h. through q. remain the same.

REASON: The board is proposing to amend Standard 1.2.2, which address the minimum requirements of what must be shown on the plans for a new public water supply well. The amendment would require that the location of any sewage lagoon within 1,000 feet of the well site must be identified in the plans, which is necessary so that the department can determine early in the review process if further evaluation is needed to ensure all water wells comply with New Rule I, and so that applicants are aware of its requirements early in the process and accordingly have a better basis for their decision making.

3.2.3.1 Well location

MDEQ must be consulted prior to design and construction regarding a proposed well location as it relates to required separation between existing and potential sources of contamination and ground water development. Wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any structure used to convey or retain industrial, storm, or sanitary waste; and from state or federal highway rights-of-way. Wells must meet the setback distance to sewage lagoons established in [NEW RULE I]. Well location(s) must be based on a source water delineation and assessment conducted in accordance with Section 1.1.7.2 of this circular.

REASON: The board is proposing to amend Standard 3.2.3.1, which provides siting requirements for proposed public water supply well locations to ensure that they are constructed at the correct distances from potential sources of contaminants, to require that wells must meet the setback distances in New Rule I. Because New Rule I is designed to protect water wells from contamination from sewage lagoons, the protections in New Rule I should apply to public wells reviewed under the public water supply laws and DEQ-1. This change is also reasonably necessary to promote consistency across programs administered by the department.

Circular DEQ-2:

11.29 Detailed Alternative Evaluation

The following must be included for the alternatives to be evaluated in detail.

a. through c.7. remain the same.

8. Protection of groundwater including public and private wells is of utmost importance. Demonstration that protection will be provided must be included. The Department must be contacted for required separation. Protection for water wells within 1,000 feet of the design high water mark of any sewage ponds must be in accordance with [New Rule I].

9. through 18. remain the same.

REASON: The board is proposing to amend Standard 11.29, which contains the site evaluation requirements for plans submitted under DEQ-2. The amendment would include a reference to New Rule I to alert applicants to its requirements, thus enabling the department to better assess and understand early in the project if a well will be impacted by the project and providing the applicant with a better basis for design and better information for decision making.

20.42 General Layout

Layouts of the proposed wastewater treatment plant must be submitted, showing:

a. through f. remain the same.

g. All wells located within 1,000 feet of the design high water mark of the sewage pond(s). Wells must meet the setback distance to sewage ponds as established in [New Rule I].

REASON: The board is proposing to amend Standard 20.42, which contains requirements for what must be shown on the plans for a new wastewater treatment facility. The board is proposing to amend this section to require that the location of any water well(s) in relation to sewage ponds comply with New Rule I. This amendment is necessary so that the department can determine if a further evaluation is needed to ensure all water wells are in compliance with New Rule I.

89.22 Location

Sludge ponds must be located as far as practicable from inhabited areas or areas likely to be inhabited during the lifetime of the structures. The distance between the design high water mark of the sludge pond and any water well must meet the setback distance as established in [New Rule I]. ~~Siting of sludge ponds must comply with the requirements of the Department. In accordance with MCA 75-5-605, a minimum separation of 500 feet (152.4 m) between the outer toe of the sewage pond embankments and any existing water well must be maintained.~~

REASON: The board is proposing to amend Standard 89.22, which currently cites 75-5-605, MCA to establish a 500-foot setback for sludge ponds (the terms "pond" and "lagoon" are used interchangeably in DEQ-2) and existing water wells. It is necessary to delete this reference in the circular after the Legislature deleted the 500-foot requirement in HB 368 and required the department to adopt new setbacks, which the department is doing in this Notice. Sludge ponds are typically used as part of the solids holding process in mechanical wastewater treatment plants and pose the same risks of well contamination that sewage lagoons do, so it is necessary that the requirements of New Rule I apply to protect water wells near sludge ponds.

93.26 Water Well Separation

~~In accordance with MCA 75-5-605, a minimum separation of 500 feet (152.4 m) between the outer toe of the sewage pond embankments and any existing water well must be maintained.~~

~~Separation requirements for storage ponds are discussed in Section 121.115 (Storage Analysis) and Section B.6 (Setbacks, Separation and Buffer Distances for Reclaimed Wastewater Use).~~ The distance between the design high water mark of the sewage pond (including those used for the storage of effluent) and any water well must meet the setback distance as established in [New Rule I].

REASON: The board is proposing to amend Standard 93.26, which currently cites 75-5-605, MCA to establish a 500-foot setback for sewage ponds and existing water wells. It is necessary to delete this reference in the circular after the Legislature deleted the 500-foot requirement in HB 368 and required the department to adopt new setbacks, which the department is doing in this Notice. In place of the previous 500-foot setback, the board is proposing to adopt New Rule I, thus protecting wells from contamination from sewage lagoons reviewed under DEQ-2. The board is also proposing to delete the cross-reference to Standards 121.115 and Appendix B.6, which provide separation requirements for storage ponds. As discussed in the statement of reasonable necessity for those standards, the board is proposing to remove those requirements to consolidate all the requirements in New Rule I.

121.115 Storage Analysis

Adequate storage during inoperable periods must be provided. Justification and calculations associated with storage volume requirements must be provided including a month by month water balance based on maximum design conditions.

Design precipitation must be based on a 10-year precipitation return period as described in Section 121.103.11 b (Precipitation). Storage requirements for wastewater treatment ponds are located in Section 93.36 (Pond Design Criteria, Tables 93-1 and 93-2).

Evaporation (E) rates must be based on estimated lake evaporation in the local area, if available. Where monthly evaporation data is unavailable, average annual evaporation may be distributed based on the ratio of average monthly ETc to average annual ETc.

Average annual evaporation and monthly precipitation values for Montana communities can be found at the Western Regional Climate Center website.

~~Storage ponds are exempt from the requirements of Section 93.26 (Water Well Separation) provided the content has been treated to the levels established in Table 121-1 (Reclaimed Wastewater Classifications and Associated Treatment Requirements) and has been adequately disinfected. Wastewater is considered adequately disinfected if the geometric mean number of *E. coli* in the influent flow to~~

~~the storage pond does not exceed 630 colony forming units per 100 milliliters and 10 percent of the total samples does not exceed 1,260 colony forming units per 100 milliliters during any 30-day period.~~

APPENDIX B.6 Setbacks, Separation and Buffer Distances for Reclaimed Wastewater Use

The required distance of the approved use area from surface water and any well will be determined by the Department case-by-case based on the quality of effluent and the level of disinfection. In no case can reclaimed wastewater be discharged or applied directly to surface water unless an MPDES discharge permit is obtained from the Department.

~~Storage ponds are exempt from the requirements of Section 93.26 (Water Well Separation) provided the content has been treated to the levels established in Table B-1 (Reclaimed Wastewater Classifications and Associated Treatment Requirements) and has been adequately disinfected. Wastewater is considered adequately disinfected if the geometric mean number of *E. coli* in the influent flow to the storage pond does not exceed 630 colony forming units per 100 milliliters and 10 percent of the total samples does not exceed 1,260 colony forming units per 100 milliliters during any 30-day period.~~

The Department will establish buffer zones on a case by case basis as necessary to protect public health.

REASON: The board is proposing to amend Standards 121.115 and Appendix B.6, both of which provide exemptions from the setback requirements in Standard 93.26 for storage ponds that meet certain disinfection standards. Because the board is proposing to amend Standard 93.26 to include the requirements of New Rule I, the board is also proposing to remove the exemptions in Standards 121.115 and Appendix B.6 to consolidate the requirements in a single place, New Rule I, thus making it easier to understand and apply the setback requirements. In doing so, the board is also proposing to modify the existing requirements in these standards. The first change included in New Rule I is to not exempt storage ponds with adequate disinfection from a setback but rather reduce the setback from 1,000 feet to 200 feet. The second modification is to increase the required amount of disinfection that meets the following requirements: the geometric mean number of *E. coli* bacteria in the influent flow to the sewage lagoon does not exceed 126 colony forming units per 100 milliliters and 10 percent of the total samples do not exceed 252 colony forming units per 100 milliliters during any 30-day period. The rationale for those changes are provided in the statement of reasonable necessity for (3)(c) of New Rule I.

Circular DEQ-3:

1.2.2 Detailed plans, including:

a. and b. remain the same.

c. location of all existing and potential sources of pollution~~, which~~ that may affect the water source or underground treated water storage facilities, including all sewage lagoons with the design high-water mark within 1,000 feet of the well site;

d. through h. remain the same.

REASON: The board is proposing to amend Standard 1.2.2, which address the minimum requirements of what must be shown on the plans for new water wells serving small water systems. The amendment would require that the location of any sewage lagoon within 1,000 feet of the well site must be identified in the plans, which is necessary so that the department can determine early in the review process if further evaluation is needed to ensure all water wells reviewed under DEQ-3 comply with New Rule I, and so that applicants are aware of its requirements early in the process and accordingly have a better basis for their decision making.

3.2.3.1 Well location

Regarding a proposed well location, MDEQ must be consulted prior to design and construction as the location relates to required separation between existing and potential sources of contamination and ground water development. Wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any other structures used to convey or retain industrial, storm, or sanitary waste and state or federal highway rights-of-way. Wells must meet the setback distance to sewage lagoons established in [NEW RULE I]. Well location(s) must be based on a source water delineation and assessment conducted in accordance with Section 1.1.6 of this circular.

REASON: The board is proposing to amend Standard 3.2.3.1, which provides siting requirements for proposed small water system well locations to ensure they are constructed at the correct distances from potential sources of contaminants, to require that wells must meet the setback distances in New Rule I. Because New Rule I is designed to protect water wells from contamination from sewage lagoons, the protections in New Rule I should apply to small water system wells reviewed under Circular DEQ-3. This change is also reasonably necessary to promote consistency across programs administered by the department.

New Community Water Supply Well Expedited Review Checklist

ENGINEERING REPORT:

3.2.3.1 Well location

Wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any structure used to convey or retain industrial, storm or sanitary waste, and state or federal highway rights-of-way. Wells must meet the setback distance to sewage lagoons established in [NEW RULE I].

PLANS:

1.2.2. Detailed plans, including where pertinent:

c. through f. remain the same.

g. location of all existing and potential sources of pollution, including easements, which may affect the water source or underground treated water storage facilities, including all sewage lagoons with the design high-water mark within 1,000 feet of the well site;

i. remains the same.

3.2.3.1 and 3.2.3.2. Well location and continued protection zone.

Plans must identify the well isolation zone and all sewer lines, septic tanks, holding tanks, groundwater mixing zones and any structure used to convey or retain industrial, storm or sanitary waste and state or federal highway rights-of-way located within 100 feet of the proposed well. Wells must meet the setback distance to sewage lagoons established in [NEW RULE I].

REASON: The board is proposing to amend the New Community Water Supply Well Expedited Review Checklist, which contains the same requirements as in Circular DEQ-1, to require that wells must meet the setback distances in New Rule I and that all sewage lagoons within 1,000 feet of the well site be identified in the plans. These changes are necessary to ensure that the checklist matches the revisions in DEQ-1, to provide the protection of New Rule I to those wells, and to allow the department to determine early in the review process if further evaluation is needed.

New Non-Community Water Supply Well Expedited Review Checklist

ENGINEERING REPORT:

3.2.3.1 Well location

Wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any structure used to convey or retain industrial, storm or sanitary waste, and state or federal highway rights-of-way. Wells must meet the setback distance to sewage lagoons established in [NEW RULE I].

PLANS:

1.2.2. Detailed plans, including where pertinent:

a. and b. remain the same.

c. location of all existing and potential sources of pollution, including all sewage lagoons with the design high-water mark within 1,000 feet of the well site, which may affect the water source or underground treated water storage facilities;

d. remains the same.

3.2.3.1 and 3.2.3.2. Well location and continued protection zone

Plans must identify the well isolation zone and all sewer lines, septic tanks, holding tanks, groundwater mixing zones and any structure used to convey or retain industrial, storm or sanitary waste and state or federal highway rights-of-way located within 100 feet of the proposed well. Wells must meet the setback distance to sewage lagoons established in [NEW RULE I].

REASON: The board is proposing to amend the New Non-Community Water Supply Well Expedited Review Checklist, which contains the same requirements as Circular DEQ-3, to require that wells must meet the setback distances in New Rule I and that all sewage lagoons within 1,000 feet of the well site be identified in the plans. These changes are necessary to ensure that the checklist matches the revisions in DEQ-3, to provide the protection of New Rule I to those wells, and to allow the department to determine early in the review process if further evaluation is needed.

7. Concerned persons may submit their data, views, or arguments, either orally or in writing, at the hearing. Written data, views, or arguments may also be submitted to Sandy Scherer, Legal Secretary, Department of Environmental Quality, 1520 E. Sixth Avenue, P.O. Box 200901, Helena, Montana 59620-0901; faxed to (406) 444-4386; or e-mailed to sscherer@mt.gov, no later than 5:00 p.m., January 28, 2019. To be guaranteed consideration, mailed comments must be postmarked on or before that date.

8. The board and department maintain a list of interested persons who wish to receive notices of rulemaking actions proposed by this agency. Persons who wish to have their name added to the list shall make a written request that includes the name, e-mail, and mailing address of the person to receive notices and specifies that the person wishes to receive notices regarding: air quality; hazardous waste/waste oil; asbestos control; water/wastewater treatment plant operator certification; solid waste; junk vehicles; infectious waste; public water supply; public sewage systems regulation; hard rock (metal) mine reclamation; major facility siting; opencut mine reclamation; strip mine reclamation; subdivisions; renewable energy grants/loans; wastewater treatment or safe drinking water revolving grants and loans; water quality; CECRA; underground/above ground storage tanks; MEPA; or general procedural rules other than MEPA. Notices will be sent by e-mail unless a mailing preference is noted in the request. Such written request may be mailed or delivered to Sandy Scherer, Legal Secretary, Department of Environmental Quality, 1520 E. Sixth Ave., P.O. Box 200901, Helena, Montana 59620-0901, faxed to the office at (406) 444-4386, e-mailed to Sandy Scherer at sscherer@mt.gov, or may be made by completing a request form at any rules hearing held by the department.

9. Sarah Clerget, attorney for the board, has been designated to preside over and conduct the hearing.

10. The bill sponsor contact requirements of 2-4-302, MCA, do apply. The department notified the bill sponsor at his telephone number on February 15, 2018.

11. With regard to the requirements of 2-4-111, MCA, the board and the department have determined that the amendment and adoption of the above-referenced rules will not significantly and directly impact small businesses.

Reviewed by:

BOARD OF ENVIRONMENTAL REVIEW

*/s/ Edward Hayes*
EDWARD HAYES
Rule Reviewer

BY: */s/ Christine Deveny*
CHRISTINE DEVENY
Chairman

DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: */s/ Shaun McGrath*
SHAUN McGRATH
Director

Certified to the Secretary of State, December 11, 2018.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

| | | |
|---|---|---|
| In the matter of the amendment of ARM 17.30.1001, 17.30.1334, 17.36.103, 17.36.345, 17.38.101, and 17.50.819, adoption of New Rule I pertaining to definitions, and the amendment of Department Circulars DEQ-1, DEQ-2, DEQ-3 regarding setbacks between water wells and sewage lagoons | ) | Hearing Script |

1. This hearing is called to order. Let the record show that it is January 17, 2019, at 2:00 p.m. This hearing is taking place in Room 111 of the Metcalf Building, 1520 East Sixth Avenue, Helena, Montana. This is the time and place set for the public hearing in the matter of the amendment of ARM 17.30.1001, 17.30.1334, 17.36.103, 17.36.345, 17.38.101, and 17.50.819, adoption of New Rule I pertaining to definitions, and the amendment of Department Circulars DEQ-1, DEQ-2, DEQ-3 regarding setbacks between water wells and sewage lagoons. This public hearing is being recorded by Laurie Crutcher.

2. My name is Sarah Clerget. I am an assistant Attorney General for the State of Montana. I am assigned to the Agency Legal Services Bureau. The Board of Environmental Review has designated an attorney from Agency Legal Services Bureau to preside over and conduct this public hearing.

3. Copies of the notice of public hearing on the proposed rulemaking are available on the table near the door for anyone who has not received a copy. Anyone who wishes to make a statement or submit written materials at this hearing should fill out a Notice to Presiding Officer form and give it to me as soon as possible, if you have not done so already. The Notice to Presiding Officer forms are also on the table near the door.

4. Mont. Code Ann. § 2-4-302(7)(a) requires presiding officers at rule hearings to read the Notice of Function of Administrative Rule Review Committee. The notice that I am required to read is as follows:

Notice of functions of Administrative Rule Review Committee

Administrative rule review is a function of interim committees and the Environmental Quality Council (EQC). These interim committees and the EQC have administrative rule review, program evaluation, and monitoring functions for executive branch agencies and the entities attached to agencies for administrative purposes. In this

case, the EQC has those functions for the Department of Environmental Quality and for the Board of Environmental Review.

These interim committees and the EQC have the authority to make recommendations to an agency regarding the adoption, amendment, or repeal of a rule or to request that the agency prepare a statement of the estimated economic impact of a proposal. They also may poll the members of the Legislature to determine if a proposed rule is consistent with the intent of the Legislature or, during a legislative session, introduce a bill repealing a rule, or directing an agency to adopt or amend a rule, or a Joint Resolution recommending that an agency adopt, amend, or repeal a rule.

The interim committees and the EQC welcome comments and invite members of the public to appear before them or to send written statements in order to bring to their attention any difficulties with the existing or proposed rules. The mailing address is P.O. Box 201706, Helena MT 59620-1706.

**That completes the reading of the Notice of Function of Administrative Rule Review Committee.**

5. Mont. Code Ann. § 2-4-302(2)(a) requires each agency, which includes boards, to create and maintain a list of interested persons and the rulemaking subject or subjects in which each person on the list is interested. A person who submits a written comment or attends a hearing regarding proposed agency rulemaking must be informed of the list by the agency. The Department of Environmental Quality maintains lists of persons interested in various areas of rulemaking conducted by the Department and by the Board of Environmental Review so that the Department can provide these persons with notice of proposed rulemaking actions.

On the table near the door are forms for interested persons to designate their areas of interest in rulemaking so the Department can notify them of proposed rulemaking actions in their areas of interest. If you would like to be placed on a rulemaking interested persons list, please complete one of the forms and leave it on the table.

Notice of this hearing was contained in the Montana Administrative Register, Notice Number 17-404, published on December 21, 2018, in Issue No. 24, at pages 2455 through 2478. Under Model Rule of the Attorney General's Model Rules for the Montana Administrative Procedure Act, which have been adopted by the Department of Environmental Quality, I'm required to summarize the major provisions of the notice of public hearing.

Paragraph 1 of the notice gives notice of this hearing.

Paragraph 2 states the Board will make reasonable accommodations for persons with disabilities who wish to participate in this public hearing and gives details and contact information for requesting an accommodation.

Paragraph 3 sets out the general reason statement for this rule notice.

Paragraph 4 sets out the text of the proposed rule amendments.

Paragraph 5 sets out the text of New Rule I.

Paragraph 6 states the text of the proposed changes in the Circulars.

Paragraph 7 details how concerned person may submit their data, views, or arguments. Comments must be received no later than January 28, 2019.

Paragraph 8 of the notice indicates that the department maintains a list of interested persons who wish to receive notices of rulemaking actions proposed by the department. Further, persons who wish to have their name added to the list shall make a written request as outlined in this paragraph.

Paragraph 9 states that I, Sarah Clerget, have been designated to preside over and conduct this hearing.

Paragraph 10 states that the bill sponsor contact requirements of 2-4-302, MCA do apply. The department notified the bill sponsor telephonically on February 15, 2018.

Paragraph 11 states that the amendments and adoption of the above rules will not significantly and directly impact small businesses.

6. As stated in paragraph 7 of the Notice, written comments submitted after this hearing should be addressed to the Board and delivered to Sandy Scherer, Legal Secretary at the Metcalf Building, 1520 East Sixth Avenue, in Helena, Montana, or mailed to the Board at P.O. Box 200901, Helena, Montana 59620-0901, of faxed to (406) 444-4386, or emailed to sscherer@mt.gov. To guarantee consideration by the Board, comments must have been received in person or postmarked no later than 5 p.m. on January 28, 2019.

A complete copy of the notice of public hearing will be included in the official record of this hearing.

The authority of the Board of Environmental Review to undertake this rulemaking is contained in Montana Code Annotated Section 75-5-201, 75-5-401, 75-5-411, 75-6-103, 75-5-802, 75-10-1202, 76-4-104.

A presiding officer may ask questions of persons making statements at a hearing and may allow others to ask questions upon request. Persons making statements do not have an automatic right to provide rebuttal or other additional information after they have completed their statements. However, a presiding officer may request further information and may allow further statements for good cause, if requested.

The order of presentation by persons making statements will be as follows:

First, the Department will have the opportunity to summarize or otherwise explain the proposed rulemaking and its reasons for proposing the rules, and to offer any supporting information;

Second, the statements of proponents—that is, persons in favor of the rulemaking.

Third, the statements of opponents—that is, persons opposed to the rulemaking.

Fourth, the statements of anyone else wishing to be heard.

I shall call on persons to come forward to make their statements based on the Notice to Presiding Officer forms that are on the table near the door and that have been filled out and provided to me. If anyone wishing to speak has not filled out a form, please do so at this time and bring it to me.

Because we are recording this hearing, all persons making statements will be asked to come forward to the microphone. Prior to making your statement, please identify yourself by name, address, and affiliation, and whether you are a proponent or opponent of the proposal. If you intend to offer a document for consideration, please make sure that the document can be identified by reference to your name.

Given the time we have available, and based on the number of people who have filled out Notice to Presiding Officer forms indicating that they wish to speak, I will allow each person ____[ten] minutes to make oral statements. If you have more to say than your given time allows, you should submit written comments to the Board by the January 28th deadline.

ORAL STATEMENTS

DEQ statement re: proposed rulemaking

Proponents

Opponents

Others

CONCLUDE HEARING

Thank you for your attendance and statements. The public comment portion of this hearing is hereby concluded.

The Department and I will prepare a report for the Board of Environmental Review of this hearing and a summary of comments that are received after this hearing within the time allowed. The Board will consider the matter, probably at its next public meeting. A

schedule of Board meetings, agendas, and Board materials can be found on the Board's website at: deq.mt.gov/DEQAdmin/ber

DEQ
Montana Department
of Environmental Quality

# Memo

To: Board of Environmental Quality

Shaun McGrath, Director, DEQ

From: Aaron Pettis, Attorney, DEQ

RE: Stringency and Takings Analysis MAR Notice No. 17-404

ARM 17.30.1001, 17.30.1334, 17.36.103, 17.36.345, 17.38.101, 17.50.819, New Rule 1, Department Circulars DEQ-1, DEQ-2, DEQ-3, and the New Community and Non-Community Water Supply Expedited Review Checklists

Date: January 28, 2018

## Stringency Review

MAR Notice No. 17-404 is a joint rulemaking between the Department of Environmental Quality and the Board of Environmental Review. The core of the notice is New Rule 1, which proposes setbacks between sewage lagoons and water wells. The rest of the notice includes amending other rules that would adopt and incorporate the requirements of New Rule 1 into various programs administered by the Department.

The rules proposed to be adopted by the Department are New Rule 1 and ARM 17.36.103, 17.36.345, and 17.50.819. The authority for the Department to adopt these rules is found in Sections 75-5-411, 75-10-1202, and 76-4-104.

The rules proposed to be adopted by the Board are ARM 17.30.1001, 17.30.1334, and 17.38.101; Department Circulars DEQ-1, DEQ-2, and DEQ-3; and the New Community and New Non-Community Water Supply Expedited Review Checklists. The authority for the Board to adopt these rules is found in Sections 75-5-201, 75-5-401, and 75-6-103, MCA.

Under Sections 75-5-203, 75-10-107, 76-6-116, and 76-4-135, neither the Department nor the Board may adopt rules that are more stringent than comparable federal regulations or guidelines that address the same circumstances, unless the Department or Board, as appropriate, makes a written finding after a public hearing and public comment that the proposed state standard or requirement protects public health or the environment of the state and that the state standard or requirement to be imposed can mitigate harm to the public health or environment and is achievable under current technology.

Federal law does not contain setbacks between sewage lagoons and water wells. Accordingly, there are no federal regulations or guidelines comparable to the rules proposed in MAR Notice No. 17-404. Therefore, none of the proposed revisions would render any Department or Board rule or regulation more stringent than corresponding federal regulations, guidelines, or criteria, and no written findings are required.

Private Property Assessment Act Analysis

Under Section 2-10-105, MCA, an agency must complete a takings impact assessment before taking an action with taking or damaging implications. Such an action is defined as "a proposed state agency administrative rule, policy, or permit condition or denial pertaining to land or water management or to some other environmental matter that if adopted and enforced would constitute a deprivation of private property in violation of the United States or Montana constitution." Section 2-10-103(1), MCA.

Section 2-10-104, MCA, requires the Montana Attorney General to develop guidelines, including a checklist, to assist agencies in determining whether an agency action has taking or damaging implications. A completed Attorney General checklist for the proposed rules is attached to this memo. Based on the guidelines provided by the Attorney General, the proposed rule amendments do not constitute an "action with taking or damaging implications" in violation of the United States or Montana constitution.

**MAR Notice No. 17-404**

## PRIVATE PROPERTY ASSESSMENT ACT CHECKLIST

DOES THE PROPOSED AGENCY ACTION HAVE TAKINGS IMPLICATIONS UNDER THE PRIVATE PROPERTY ASSESSMENT ACT?

| YES | NO | | |
|---|---|---|---|
| ☒ | ☐ | 1. | Does the action pertain to land or water management or environmental regulation affecting private real property or water rights? |
| ☐ | ☒ | 2. | Does the action result in either a permanent or indefinite physical occupation of private property? |
| ☐ | ☒ | 3. | Does the action deprive the owner of all economically viable uses of the property? |
| ☐ | ☒ | 4. | Does the action deny a fundamental attribute of ownership? |
| ☐ | ☒ | 5. | Does the action require a property owner to dedicate a portion of property or to grant an easement? [If the answer is NO, skip questions 5a. and 5b. and continue with question 6.] |
| ☐ | ☐ | 5a. | Is there a reasonable, specific connection between the government requirement and legitimate state interests? |
| ☐ | ☐ | 5b. | Is the government requirement roughly proportional to the impact of the proposed use of the property? |
| ☐ | ☒ | 6. | Does the action have a severe impact on the value of the property? |
| ☐ | ☒ | 7. | Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally? [If the answer is NO, do not answer questions 7a. – 7c.] |
| ☐ | ☐ | 7a. | Is the impact of government action direct, peculiar, and significant? |
| ☐ | ☐ | 7b. | Has government action resulted in the property becoming practically inaccessible, waterlogged, or flooded? |
| ☐ | ☐ | 7c. | Has government action diminished property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question? |

Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b.

If taking or damaging implications exist, the agency must comply with § 5 of the Private Property assessment Act, to include the preparation of a taking or damaging impact assessment. Normally, the preparation of an impact assessment will require consultation with agency legal staff.

**From:** David
**To:** Moisey Scherer, Sandy
**Subject:** No. 17-404
**Date:** Tuesday, January 15, 2019 6:31:48 AM

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Greetings.....Just two comments on your rule change for the separation of water wells & lagoons.

1. You likely have this feature covered some where, but It would seem prudent to not allow the toe of a lagoon berm/slope to be in a flood plain. And, maybe a better design, would be to have several feet separating the toe of the slope and the 100 or even 500 year flood plain.

2. H B 368 didn't address this, but I would believe the same separation rules should apply to lagoons & waterways, creeks, rivers, etc.

Thanks,

James D. Simpson
David Simpson Construction LLC
www.davidsimpsonconstruction.com
406-855-9933

**From:** Scott Brown
**To:** Moisey Scherer, Sandy
**Subject:** MAR notice 17-404
**Date:** Thursday, January 17, 2019 10:27:19 AM

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In reviewing the above referenced notice MAR 17-404 on page 2462 it seems like the Hydraulic Conductivity of a gravel aquifer in ft/day may have a typo? It says 201,600 feet per day. That is about 38 miles. Seems high when most other Hydrology books have gravel at 10,000 feet per day as a maximum in clean well sorted gravel.

Thanks
Scott Brown
Montana Salinity Control Association

Sent from Outlook

USDA
United States Department of Agriculture

Natural Resources
Conservation Service

Montana State Office

10 East Babcock
Street, Room 443
Bozeman
Montana, 59715

Voice 406.587.6811
Fax 855.510.7028

January 14, 2019

Mr. Eric Urban
Water Quality Planning Bureau Chief
Montana DEQ Headquarters
1520 East 6th Avenue
Post Office Box 200901
Helena, Montana 59620

Dear Mr. Urban:

We are aware of the Public Notice for Comment on the Department of Environmental Quality's (DEQ's) adoption of New Rule 1 and we appreciate the opportunity to provide feedback on this topic. There are three (3) proposed changes to the rule.

The Montana Natural Resource Conservation Service State Geologist has reviewed the New Rule 1 and has provided input in an itemized listing enclosed with this letter

Thank you for your consideration and we look forward to the release of the adoption of New Rule 1.

Sincerely,

TOM WATSON
State Conservationist

Enclosure

cc: w/o enclosure
Steve Becker, State Conservation Engineer, NRCS, Bozeman, Montana

NRCS State Geologist Comments
New Rule 1

1. **The vertical travel time equation listed in the New Rule 1 is different than the typical Wyoming Method vertical travel time equation.**

   The following equation identified in the New Rule 1:

$$t1 = \frac{(d) * (\Theta)}{\alpha * 365}$$

   The Wyoming Method vertical travel time calculation includes two calculations:

$$t1 = \frac{(d) * (\Theta)}{\alpha * 0.5} \quad and \quad t1 * 365$$

   The big difference is the replacement of 0.5 (infiltration factor) with 365 days (time). It is not understood how this is a comparable swap. Could this be an error? Was it intend to have the calculation in the below format, still excluding the infiltration rate? If so, is there a reason for not wanting the infiltration rate constant?

$$t1 = \frac{(d) * (\Theta)}{\alpha} * 365$$

2. **In Table 1, there is a USDA classification mixed in with USCS classification, "Sandy Clay Loam".** The closest USCS comparisons to that USDA classification are CL and SC, depending the percent fines content (more or less than 50% fines).

3. **Page 9, (e), "The well discharge rate used in calculations must be based on the maximum day well demand…….".**

   In review of the vertical and horizontal travel time equations on pages 6 and 7 of the New Rule 1, and interpreting it as having no knowledge about either of these equations or the 4-log pathogen reduction analysis, both equations do not clearly identify that the well discharge rate (Q) is needed for the computations. Perhaps consider showing the effluent rate calculation/conversion to include the discharge rate (Q)? Below are suggested example conversions that may be incorporated into the New Rule 1.

$$Yearly\ Effluent\ Discharge = Discharge\ Rate\ (Q, gpd) * \frac{365\ days}{year} * \frac{1ft3}{7.48\ gallons}$$

$$= \text{Answser A ft3}$$

$$Soil\ Adsoprtion\ Infiltration\ Area = Discharge\ Rate\ (Q, gpd) * \frac{1\ ft2\ day}{0.52\ gallons}$$

$$= \text{Answer B ft2}$$

$$Effluent\ rate = \alpha = \frac{Answer\ A\ ft3}{Answer\ B\ ft2} = Answer\ Cft * \frac{12\ inches}{1ft} = \alpha\ inches/yr$$

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW AND
THE DEPARTMENT OF ENVIRONMENTAL QUALITY
OF THE STATE OF MONTANA

| | | |
|---|---|---|
| In the matter of the amendment of ARM 17.30.1001, 17.30.1334, 17.36.103, 17.36.345, 17.38.101, and 17.50.819, adoption of New Rule I pertaining to definitions, and the amendment of Department Circulars DEQ-1, DEQ-2, DEQ-3 regarding setbacks between water wells and sewage lagoons | ) ) ) ) ) ) ) | NOTICE OF AMENDMENT AND ADOPTION<br><br>(SUBDIVISIONS)<br>(PUBLIC WATER ENGINEERING)<br>(WATER QUALITY)<br>(SOLID WASTE) |

TO: All Concerned Persons

1. On December 21, 2018, the Board of Environmental Review and Department of Environmental Quality published MAR Notice No. 17-404 regarding the public hearing on the proposed amendment and adoption of the above-stated rule at page 2455 of the 2018 Montana Administrative Register, Issue No. 24.

2. The board has amended ARM 17.30.1001 and 17.38.101 exactly as proposed. The board has amended ARM 17.30.1334 exactly as proposed but has updated the citations for authority and implementation to correct an inadvertent omission:

AUTH: 75-5-201, 75-5-401, 75-5-802, MCA
IMP: 75-5-201, 75-5-401, 75-5-802, MCA

3. The department has amended ARM 17.36.103, 17.36.345, and 17.50.819 exactly as proposed.

4. The department has adopted New Rule I (17.30.1702) as proposed, but with the following changes, stricken matter interlined, new matter underlined:

NEW RULE I (17.30.1702) SETBACKS BETWEEN SEWAGE LAGOONS AND WATER WELLS (1) through (4) remain as proposed.

(5) To make the demonstration in (4), the pathogen reduction between the sewage lagoon and the water well must be calculated according to one of the following methods:

(a) METHOD 1 – Travel Time Method - The vertical travel time in the vadose zone for the wastewater to reach groundwater is calculated using the following equation:

~~t1 = (d)*(θ) ÷ (α) ÷ 365~~
t1 = [(d)*(θ) ÷ (α)] * 365

Where:

t1 = vertical travel time (days)
α is total effluent recharge – the maximum allowable leakage rate or actual measured leakage rate if the measured rate is available (in/yr)
θ is volumetric soil moisture (percent)
d is the depth to groundwater (in)

The horizontal travel time in the saturated zone for the wastewater to reach the water well is calculated using the following equations:

~~t2 = (x) ÷ [(K)*(i) ÷ (ne)]~~
t2 = [ne÷(K*i)] * [x – {(Q÷(2*π*K*b*i)) * (ln(1+((2*π* K*b*i*x)÷Q)))}]

Where:

t2 = horizontal travel time (days)
K is hydraulic conductivity of the saturated aquifer (feet/day)
i is hydraulic gradient (feet/~~feet~~ foot)
b is aquifer saturated thickness (feet)
ne is effective porosity (dimensionless)
π is pi, 3.14 (dimensionless)
Q is the maximum day well demand ($feet^3$/day)
x is the horizontal distance from the sewage lagoon to the water well (feet). Value is positive when well is downgradient of sewage lagoon, negative if well is upgradient of sewage lagoon.

The total log pathogen reduction from the bottom of the sewage lagoon to the water well is calculated using the following equation:

Pt = (t1 + t2)*0.02

Where:

Pt = Log reduction of pathogens during vertical and horizontal travel
0.02 = log 10 pathogen removal/day

(b) through (c) remain as proposed.

(6) In calculating 4-log pathogen reduction under (4), the following requirements apply:

(a) Hydraulic conductivity must be based on the aquifer material most likely to transmit lagoon discharges to the water well and be determined by one of the following methods:

(i) The maximum hydraulic conductivity value of the aquifer material shown in Table 1. The hydraulic conductivity for aquifer materials not included in Table 1 may be calculated by the applicant using other methods acceptable to the department. The aquifer material must be the most permeable soil layer that is at least six inches thick and is below the bottom of the sewage lagoon infiltrative surface, as identified

in any test pit or borehole. This method may only be used for facilities that are not requesting a source-specific groundwater mixing zone, as defined in ARM 17.30.518.

| **TABLE 1** | |
|---|---|
| **MATERIAL** | **HYDRAULIC CONDUCTIVITY (ft/d)** |
| Basalt (permeable/vesicular) | 5,100 |
| Clay | 0.025 |
| Clay (unweathered, marine) | 0.00054 |
| Coarse sand | 2,950 ~~94,500~~ |
| Fine sand | 51 |
| Glacial Till | 0.72 |
| Glacial Till (fractured) | 29.5 |
| Gravel | 13,500 ~~201,600~~ |
| Gravelly sand | 1,020 |
| Igneous/metamorphic rock (fractured) | 76.5 |
| Igneous/metamorphic rock (unfractured) | 0.000054 |
| Karst limestone | 18,000 |
| Limestone | 1.5 |
| Limestone (unjointed, crystalline) | 0.30 |
| Loess | 0.27 |
| Medium sand | 569 |
| Sandstone | 1.5 |
| Sandstone (friable) | 3.0 |
| Sandstone (well cemented, unfractured) | 0.0036 |
| Sandy clay loam | 1.4 |
| Sandy silt | 0.27 |
| Shale | 0.00054 |
| Silt | 0.27 |
| Siltstone | 0.0036 |
| Silty clay | 0.013 |
| Silty sand | 45 |
| Tuff | 7.2 |
| Very fine sand | 21.4 |

(ii) though (c)(iii) remain as proposed.

(iv) For purposes of defining soil effective porosity and volumetric soil moisture that are used in (5), soils ~~Soils~~ must be described according to the Unified Soil Classification System. The soil description must include information regarding the presence or absence of seasonal saturated conditions. If there is no evidence of

saturated conditions from the test pit, borehole, or other evidence, then the depth to groundwater must be estimated as the bottom of the test pit or borehole.

(d) through (7) remain as proposed.

5. The following comments were received and appear with the board and department's responses:

COMMENT NO. 1: The equation for vertical travel time for wastewater in the unsaturated (vadose) zone in (5)(a) is missing the infiltration factor (α) parameter, and appears to replace the infiltration factor with a time parameter, 365 days. Why is the infiltration factor, which is set at a value of 0.5 and is included in a similar equation used by the state of Wyoming, not included in the equation?

RESPONSE: The commenter is correct that the equation in (5)(a) for vertical travel time is different than the equation used by the state of Wyoming. The Wyoming method equation is designed for a subsurface drainfield where precipitation will have an effect on the amount of recharge that mixes with the wastewater. Because this infiltration affects the travel time calculation, the Wyoming method equation includes a 0.5 infiltration factor as an estimate of the percent of precipitation that infiltrates the ground. New Rule I, on the other hand, applies to sewage lagoons that are conservatively assumed to be filled with wastewater and are leaking at the constant design rate regardless of precipitation. Because of that, the equation in (5)(a) was modified from the Wyoming method equation for use with sewage lagoons by removing the 0.5 infiltration factor. The 365-day value in the equation was not used to replace the 0.5 infiltration factor but to convert the equation units from years to days, which was necessary to maintain consistent units between other parameters and equations in New Rule I.

COMMENT NO. 2: The following equation for vertical travel time for wastewater in the unsaturated (vadose) zone in (5)(a) is incorrect:

$$t_1 = (d)*(\theta) \div (\alpha) \div 365$$

The 365 (day) value should be multiplied by the product/quotient of the first three variables in the equation instead of being divided into the product/quotient of the first three variables.

RESPONSE: The department agrees that the equation incorrectly divided by 365 instead of multiplying by 365. The equation shown in the comment has been corrected as suggested and is shown below.

$$t_1 = [(d)*(\theta) \div (\alpha)] * 365$$

COMMENT NO. 3: The soil type of Sandy Clay Loam in Table 1 is incorrect. The Sandy Clay Loam soil type is from the United States Department of Agriculture (USDA) soil classification system, whereas the other soil types in the table were from the Unified Soil Classification System (USCS). The rule should be revised to include a USCS soil type such as Clay Loam or Sandy Clay instead of Sandy Clay Loam.

RESPONSE: The commenter is correct that the description of Sandy Clay Loam in Table 1 is from the USDA, but the department disagrees that the description is incorrectly included in Table 1. The geologic materials listed in Table 1 are based on published values of hydraulic conductivity from various sources and are not necessarily based on the USCS. Table 1 incorporates many other types of geologic materials that do not have a USCS classification.

Nevertheless, the comment indicates that New Rule I may not be sufficiently clear in its use of the USCS. While Table 1 is based on various sources, (6)(c)(iv) of New Rule I requires that test pit/borehole soils be described using the USCS. To clarify the issue raised by the commenter, the department has modified (6)(c)(iv) by adding the following language at the beginning of the section: "For purposes of defining effective soil porosity and volumetric soil moisture that are used in (5)." This modification does not change the meaning or intent of (6)(c)(iv) but has been added solely to provide clarification.

COMMENT NO. 4: One commenter stated that both the vertical and horizontal travel time equations in (5)(a) are incorrect because both equations omitted a variable for the water well pumping rate. The commenter also proposed some effluent rate conversions that would include the water well pumping rate.

RESPONSE: The department agrees that the equation for horizontal travel time should include a variable for the water well pumping rate but disagrees that the variable should be included in the equation for vertical travel time.

The equation for horizontal travel time in (5)(a) should include the well pumping rate to account for the non-linear hydraulic gradient that is created in the groundwater due to the withdrawal of water from the well. The current equation in New Rule I (shown below) uses a linear hydraulic gradient that in many cases does not accurately account for the well pumping rate.

$$t2 = (x) \div [(K)*(i) \div (n_e)]$$

The above equation has been revised in (5)(a) of New Rule I to the following equation that accounts for the well pumping rate. In modifying the equation, the department corrected a typographical error by changing feet to foot to correctly describe hydraulic gradient.

The definitions of the new variables in the revised equation have been added to (5)(a) as shown below.

$$t2 = [ne \div (K*i)] * [x - \{(Q \div (2*\pi*K*b*i)) * (\ln(1+((2*\pi* K*b*i*x) \div Q)))\}]$$

Where:

t2 = horizontal travel time (days)
K is hydraulic conductivity of the saturated aquifer (feet/day)
i is hydraulic gradient (feet/~~feet~~ foot)

b is aquifer saturated thickness (feet)
ne is effective porosity (dimensionless)
π is pi, 3.14 (dimensionless)
Q is the maximum day well demand (feet$^3$/day)
x is the horizontal distance from the sewage lagoon to the water well (feet). Value is positive when well is downgradient of sewage lagoon, negative if well is upgradient of sewage lagoon.

On the other hand, the department does not agree that the equation for vertical travel time in (5)(a) needs a variable for the well pumping rate. The vertical travel time equation only accounts for travel in the unsaturated zone. The rate of travel in the unsaturated zone is not impacted by fluctuations in the water table level caused by pumping of the water well, so the well pumping rate is not needed in the vertical travel time equation. The department does not agree that the commenter's suggested rate conversions should be added because the well pumping rate has been directly incorporated into the horizontal travel time equation as described above.

COMMENT NO. 5: The hydraulic conductivity value in Table 1 ((6)(a)(i)) for gravel material is incorrect. Table 1 has a value of 201,600 feet per day, while most other hydrology books have a maximum value of 10,000 feet per day for clean, well-sorted gravels.

RESPONSE: The department agrees that the hydraulic conductivity value for gravel in Table 1 (201,600 feet/day) is much higher than most published values. That hydraulic conductivity was based on a value from a commonly cited textbook (Freeze and Cherry, 1979). A review of the published data shows the commenter is correct that the gravel hydraulic conductivity value in Table 1 is over ten times larger than other published values and is likely not representative of gravel materials.

The department has modified the value for gravel in Table 1 from 201,600 feet/day to 13,500 feet/day. The department used 13,500 feet/day instead of the commenter's proposed 10,000 feet/day to maintain consistency in Table 1. Specifically, the hydraulic conductivity value of 13,500 feet/day is based on the same calculations for determining the other values in Table 1 as described in the statement of reasonable necessity for New Rule I.

The change in the hydraulic conductivity for gravel also required the department to reexamine the other values in Table 1 to ensure that the values were consistent with each other and to ensure that the Freeze and Cherry textbook did not use any other unusually high values. Table 1 proposed a hydraulic conductivity for coarse sand of 94,500 feet/day. This value is over 10 times higher than other published values for coarse sand and would be erroneously greater than the modified value for gravel. Accordingly, the department has modified the value for coarse sand in Table 1 from 94,500 feet/day to 2,950 feet/day to be internally consistent and to be consistent with published values other than the Freeze and Cherry textbook.

COMMENT NO. 6: Three commenters disagreed with the default 1,000-foot

setback distance in (3)(a). Two commenters stated that the default 1,000-foot setback was arbitrary and did not account for site-specific conditions. One of these commenters stated that more science should be used to account for variations in groundwater depth and geology, and another stated that the 1,000-foot setback should be reevaluated.

RESPONSE: The department does not agree that the 1,000-foot default setback is arbitrary. The 1,000-foot setback was determined using the pathogen reduction equations in (5)(a). By using those equations and using hydrogeologic conditions that can exist in high hydraulic conductivity and shallow aquifers in Montana, the department determined that a 1,000-foot separation from a sewage lagoon to a water well is needed to provide 4-logs of pathogen inactivation.

The department also does not agree that more scientific methods are needed in New Rule I to determine the correct setback. New Rule I uses site-specific and science-based information (e.g., geology, hydrology, and soil type) to allow reduction of the default 1,000-foot setback to as short as 100 feet by calculating or prescribing the necessary conditions to provide adequate pathogen reduction. In (3)(d), (4), and (5), there are several ways to demonstrate that a shorter setback than 1,000 feet is appropriate, including demonstrating a lack of hydraulic connection between sewage lagoons and water wells due to impermeable geologic layers; demonstrating a lack of hydraulic connection between sewage lagoons and water wells due to groundwater flow directions; and demonstrating adequate pathogen reduction as wastewater migrates through soils. In addition, (3)(b) and (3)(c) allow the reduction of the default setback to 200 feet if there is adequate disinfection of the well water or the sewage lagoon wastewater.

COMMENT NO. 7: Three commenters stated that New Rule I should apply only to domestic wells and should exclude stock and irrigation wells.

RESPONSE: The department generally does not regulate stock or irrigation wells. As part of this joint rulemaking, the department is adopting New Rule I by reference into the subdivision rules, and the board is adopting New Rule I into the public water supply and CAFO rules. New Rule I would therefore not apply to stock or irrigation wells unless department review was otherwise triggered under the subdivision, public water supply or CAFO rules. If department review was not required under those rules, New Rule I would not apply to stock or irrigation wells. If department review was required under those rules, the department and board disagree that New Rule I should apply only to domestic wells. Additionally, HB 368 required the department to adopt setbacks between sewage lagoons and water wells, which is a defined term in 75-5-102, MCA, that includes all wells, not just domestic wells. Finally, stock and irrigation wells may be converted to domestic uses. Such wells should be protected from lagoon pathogens just like any other domestic well.

COMMENT NO. 8: Two commenters stated that water from wells is necessary for cleaning and maintaining sewage lagoons and, in the case of agricultural lagoons, for animal care. The default 1,000-foot setback is excessive for this required maintenance and care.

RESPONSE: The department disagrees that the 1,000-foot default setback is excessive. As discussed in response to Comment No. 7, the department generally does not regulate stock or irrigation wells, so New Rule I would not apply to agricultural lagoons and wells unless department review was otherwise required under the subdivision, public water supply, or CAFO rules. Accordingly, New Rule I will not apply to many of the agricultural wells referenced by the commenters. Furthermore, the 1,000-foot setback is a maximum distance that in many situations can be reduced using site-specific information. Where necessary, the 1,000-foot setback minimizes the potential that contaminated water will be used for purposes other than sewage lagoon maintenance.

COMMENT NO. 9: The methods in New Rule I to reduce the default setback are cost prohibitive for stock and irrigation wells.

RESPONSE: The department disagrees. As discussed above in the response to Comment No. 7, New Rule I will only apply to those wells and lagoons that are otherwise subject to department jurisdiction (i.e., under the subdivision, public water supply, or CAFO rules), so New Rule I will not apply to many stock and irrigation wells. For those stock and irrigation wells that need to comply with New Rule I, the rule was written with multiple methods to determine most of the parameters needed to reduce the setback. Multiple methods were included specifically to make lower cost methods available where they are applicable, as discussed in the statement of reasonable necessity.

COMMENT NO. 10: Well drillers can tell the best place to locate a well when they are onsite, which might be closer than 1,000 feet from a lagoon.

RESPONSE: The department disagrees. While a well driller may be able to determine the best location of a well based on logistical considerations (e.g., power sources, pumping distances, elevation issues, adequate water supply, etc.), neither a well driller nor any other professional can determine the subsurface vulnerability of a water well to wastewater contamination without looking at site-specific geologic, hydrologic and soil conditions.

COMMENT NO. 11: The default 1,000-foot setback would lead to inefficient land uses in populous counties because a significant amount of property would be used up to satisfy the 1,000-foot setback.

RESPONSE: HB 368 required the department to adopt setbacks "to prevent water well contamination." As discussed in the statement of reasonable necessity and these responses to comments, the 1,000-foot default setback was determined to be necessary to protect water wells from lagoon contamination in vulnerable geologic settings. Nevertheless, as discussed throughout these responses, the default 1,000-foot setback may be reduced to as little as 100 feet, depending on site-specific factors. This ability to shorten the default setback provides significant flexibility that did not exist under the previous statutory requirement of 500 feet and would allow denser development where conditions are appropriate. Additionally, the 1,000-foot setback only restricts the location of water wells and sewage lagoons, not other development or other land uses that do not require a water well. Other required setbacks to the water well do not change based on whether the well is

closer to the sewage lagoon, so no additional land acreage is restricted by placing the well further from the sewage lagoon (it only changes the location of the restriction).

COMMENT NO. 12: One commenter stated that this rulemaking should more closely resemble the purpose for which HB 368 was introduced and passed, stating that the purpose of HB 368 was to align department setback requirements with the requirements adopted by the Department of Natural Resources and Conservation (DNRC) Board of Water Well Contractors. The commenter believed that the original draft of the bill would have established a 100-foot setback for both but stated that the department had morphed that idea into a 1,000-foot default setback.

RESPONSE: The department disagrees. The version of HB 368 passed by the legislature removed the statutory 500-foot setback and required the department "to adopt rules establishing setback area requirements between sewage lagoons and water wells to prevent water well contamination." As discussed in the statement of reasonable necessity and throughout these responses, the 1,000-foot default setback was determined to be necessary to prevent water well contamination from lagoon pathogens in vulnerable geologic settings. The department also has communicated with the bill's sponsor throughout the rulemaking process and has received no negative comments from the sponsor. The department notes that New Rule I has also been developed in coordination with similar revisions to DNRC rules to provide consistent setbacks between the two agencies.

COMMENT NO. 13: The toe of a lagoon berm/slope should not be allowed in a flood plain. Even better, there should be several feet separating the toe of the slope and the 100 or even 500-year flood plain.

RESPONSE: Thank you for your comment. Setbacks between lagoons and flood plains are outside the scope of this rulemaking, but the department and board may consider this issue in a future rulemaking. Nevertheless, Standard 51.2 of Department Circular DEQ-2 requires that treatment works structures and electrical and mechanical equipment must be protected from physical damage by the 100-year flood and that flood plain regulations of local, state, and federal agencies must be followed.

COMMENT NO. 14: Although not addressed by HB 368, the same separation rules should apply to lagoons and waterways, creeks, rivers, etc.

RESPONSE: Thank you for your comment. As noted by the commenter, setbacks between lagoons and waterways are outside the scope of HB 368 and this rulemaking. The department and board may consider this issue in a future rulemaking.

Reviewed by: BOARD OF ENVIRONMENTAL REVIEW

*/s/* BY: */s/*

EDWARD HAYES
Rule Reviewer

CHRISTINE DEVENY
Chair

DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: */s/* _____
SHAUN McGRATH
Director

Certified to the Secretary of State _____, 2019.

STATE OF MONTANA

BOARD OF ENVIRONMENTAL REVIEW
and the
DEPARTMENT OF ENVIRONMENTAL QUALITY

(1) I, Christine Deveny, Chair of the Board of Environmental Review of the State of Montana, by virtue of and pursuant to the authority vested in me through 75-5-201, 75-5-401, 75-5-802, 75-6-103, MCA, do promulgate and adopt the annexed rules to-wit:

| | | |
|---|---|---|
| AMD: | 17.30.1001 | Definitions |
| | 17.30.1334 | Technical Standards for Concentrated Animal Feeding Operations |
| | 17.38.101 | Plans for Public Water Supply or Public Sewage System |

as permanent rules of this board.

(2) I, Shaun McGrath, Director of the Department of Environmental Quality of the State of Montana, by virtue of and pursuant to the authority vested in me through 75-5-411, 75-10-1202, 76-4-104, MCA, do promulgate and adopt the annexed rules to-wit:

| | | |
|---|---|---|
| AMD: | 17.36.103 | Application--Contents |
| | 17.36.345 | Adoption by Reference |
| | 17.50.819 | Incorporation by Reference and Availability of Referenced Documents |
| NEW: I | 17.30.1702 | Setbacks Between Sewage Lagoons and Water Wells |

as permanent rules of this department.

(3) This order, after first being recorded in the order register of this board, and the department, shall be forwarded to the Secretary of State for filing.

APPROVED AND ADOPTED _____, 2019

CERTIFIED TO THE
SECRETARY OF STATE _____, 2019

BOARD OF ENVIRONMENTAL REVIEW

BY: */s/* _____
CHRISTINE DEVENY, CHAIR

DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: */s/* _____
SHAUN McGRATH, DIRECTOR

DEQ
Montana Department of Environmental Quality

Board of Environmental Review

# Memo

TO: Sarah Clerget, Hearing Examiner
Board of Environmental Review

FROM: Lindsay Ford, Board Secretary
P.O. Box 200901
Helena, MT 59620-0901

DATE: May 17, 2019

SUBJECT: Board of Environmental Review Case No. BER 2019-03 OC

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW

OF THE STATE OF MONTANA

| | |
|---|---|
| IN THE MATTER OF: NOTICE OF APPEAL AND REQUEST FOR HEARING BY WESTERN ENERGY COMPANY REGARDING APPROVAL OF SURFACE MINING PERMIT NO. C2011003F | Case No. BER 2019-03 OC |

The BER has received the attached request for hearing.

Please serve copies of pleadings and correspondence on me and on the following DEQ representatives in this case.

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Coal and Opencut Mining Bureau
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ATTORNEYS FOR WESTERN ENERGY COMPANY

**BEFORE THE BOARD OF ENVIRONMENTAL REVIEW OF THE STATE OF MONTANA**

| | |
|---|---|
| **IN THE MATTER OF:**<br><br>**THE NOTICE OF APPEAL AND REQUEST FOR HEARING BY WESTERN ENERGY COMPANY REGARDING APPROVAL OF SURFACE MINING PERMIT NO. C2011003F** | **CAUSE NO. BER 2019-_____**<br><br>**NOTICE OF APPEAL** |

Western Energy Company ("Western Energy"), through its counsel and pursuant Montana Code Annotated § 82-4-206(1)-(2), and Administrative Rule of Montana 17.24.425(1), hereby files this notice of appeal and request for a hearing regarding Montana Department of Environmental Quality's ("MDEQ") April 18, 2019 approval of the Rosebud Coal Mine Area F Surface Mining Permit Application, Permit No. C2011003F, which adds a condition excluding from the approved mine plan approximately 74 acres in T2N, R38E, Section 12 ("Section 12") on the basis that mining in Section 12 would result in a change in water

quality in the Rosebud Coal outside the permit area. Western Energy further requests that the Board of Environmental Review or its appointed hearing examiner hold a hearing on this appeal, pursuant to Administrative Rule of Montana 17.24.425(2).

DEQ's decision to exclude 74 acres of mineable coal from Section 12 was unlawful, erroneous, and not supported by the record. MDEQ's errors include, but are not limited to, the following:

1. On April 18, 2019, MDEQ issued its Permit, Record of Decision ("ROD"), Comprehensive Hydrologic Impact Assessment ("CHIA"), and Written Findings for Western Energy's Area F mining permit application. Based on Western Energy's permit application for Area F, the ROD, and Written Findings, MDEQ approved the Area F Permit with three stipulations, two of which are not the subject of Western Energy's appeal.

2. Western Energy seeks review of the stipulation of the permit that prohibits mining of approximately 74 acres in Section 12 within Area F. The stipulation provides:

> ARM 17.24.405(6)(c): As described in Section 9.6.5 of the Cumulative Hydrologic Impact Analysis, based on information contained in the permit application, DEQ has determined that the proposed mine plan in T2N, R38E, Section 12 is likely to result in a change in water quality in the Rosebud Coal outside the permit boundary which could result in material damage. As such, the application does not affirmatively demonstrate that the hydrologic consequences and cumulative hydrologic impacts of

> mining in Section 12 will not result in material damage to the hydrologic balance outside the permit area. Therefore, in accordance with ARM 17.24.405(4), DEQ does not approve mine passes proposed in T2N, R38E, Section 12. The area excluded from the mine plan is shown in Figure 4 of the written findings.

3. Section 9.6.5 of the CHIA, referenced in the Permit, provides that:

> At the far northwest permit boundary, groundwater will most likely flow to the northeast from spoil into unmined Rosebud Coal outside the permit boundary after mining. Based on the water quality observed at nearby Rosebud Coal sourced Spring 7, DEQ conducted a simple water mixing calculation to estimate the changes in TDS concentration outside the permit boundary. Based on the groundwater model fluxes, approximately 62 percent of the water in the Rosebud Coal just north of the permit boundary is sourced from spoil. Assuming Spring 7 represents Rosebud Coal water quality in this location, TDS is estimated to increase from 1,165 mg/L to 4,937 mg/L at this location. This corresponds to an increase in specific conductivity from 1,725 µS/cm to 7,310 µS/cm. This represents a change in groundwater class from Class II before mining to Class III after mining, and would result in material damage.

4. MDEQ had not previously raised any concern with Rosebud Coal water quality outside of the northern permit boundary in any deficiency letters related to Western Energy's permit application. Therefore, Western Energy did not have any opportunity to provide additional data or information related to MDEQ's analysis, modeling, or findings.

5. MDEQ's findings, as summarized in the CHIA and Permit, are erroneous for several reasons:

a. MDEQ's referenced regional groundwater model should not have been used for the highly localized evaluation of groundwater north of the permit boundary because this model was not intended for localized water quality evaluations and, instead, was developed to evaluate regional groundwater drawdown (quantity);

b. MDEQ's water mixing calculation, sourced from the Spring 7, allegedly shows a relationship between TDS and specific conductance, but fails to provide details that Western Energy can confirm;

c. MDEQ fails to recognize that Spring 7 water quality is not representative of the groundwater quality of the Rosebud Coal in the area. First, the data on Spring 7 is variable—it is not Class II all the time, it is sometimes Class III. Second, Spring 7 likely receives a portion of its water from rainwater that filters through a scoria outcrop, in essence, improving the water quality relative to the groundwater in the coal seam.

d. MDEQ fails to recognize that Rosebud Coal is generally unconfined near its outcrop and the saturated thickness near the outcrop is typically 3 to 4 feet. The lack of water column coupled with the low permeability at the monitored wells precludes the development of any viable water supply well for any use, including domestic or stock use. As a result, it is highly unlikely that drilling a well located just to the north of the permit boundary into the Rosebud Coal could supply

sufficient groundwater for any useful purpose. Hence, the application of use classification criteria is essentially meaningless at this location; and

e. MDEQ failed to recognize that most groundwater flow (seepage) associated from the strata in Section 12 flows easterly as opposed to northeasterly and, as a result, will be manifested at Spring 7. Thus, it is highly unlikely there would be material damage in the Rosebud Coal north of the permit boundary as purported by MDEQ.

6. For the foregoing reasons, MDEQ's stipulation excluding 74 acres of mineable coal in Section 12 was erroneous and unlawful. Western Energy requests that the stipulation be vacated and the matter be remanded to MDEQ with instructions to reissue the permit without the stipulation.

DATED this 17th day of May, 2019.

*/s/ John C. Martin*
John C. Martin
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ATTORNEYS FOR WESTERN ENERGY COMPANY

## CERTIFICATE OF MAILING

I hereby certify that on this 17th day of May, 2019, I caused to be served a true and correct copy of the foregoing document and any attachments to all parties or their counsel of record as set forth below:

| | |
|---|---|
| Lindsay Ford<br>Secretary, Board of Environmental Review<br>Montana Department of Environmental Review<br>P.O. Box 200901<br>Helena, MT 59620-0901<br>Lindsay.Ford@mt.gov | [ ] U.S. Mail<br>[X] Overnight Mail<br>[ ] Hand Delivery<br>[ ] Facsimile<br>[X] E-Mail |
| Mark Lucas<br>Montana Department of Environmental Quality<br>1520 East 6th Avenue<br>P.O. Box 200901<br>Helena, MT 59620<br>mlucas@mt.gov | [ ] U.S. Mail<br>[X] Overnight Mail<br>[ ] Hand Delivery<br>[ ] Facsimile<br>[X] E-Mail |

*/s/ John Martin*

12521418_1

**IN THE SUPREME COURT OF THE STATE OF MONTANA**
**THE OFFICE OF THE CLERK OF SUPREME COURT**
**HELENA, MONTANA 59620-3003**

May 22, 2019

RE: District Court Case No: DV 18-0869

**N O T I C E  O F  F I L I N G**
Supreme Court No.
DA 19-0299

SIGNAL PEAK ENERGY, LLC,

Plaintiff and Appellant,

v.

MONTANA ENVIRONMENTAL INFORMATION CENTER, STATE OF MONTANA BOARD OF ENVIRONMENTAL REVIEW, ELLEN PFISTER, and STEVE CHARTER,

Defendants and Appellees.

Notice of Appeal was filed on May 22, 2019 and assigned the above Supreme Court case number.

PLEASE NOTE the time for filing the appellant's opening brief has NOT yet begun. Another notice will be sent when this office receives the district court record, the filing of which initiates the briefing schedule pursuant to the Montana Rules of Appellate Procedure.

***As a reminder, one can follow this case online through the Clerk of the Supreme Court's Public View Docket at*** *http://supremecourtdocket.mt.gov/.*

Sincerely,

Bowen Greenwood

**PO BOX 203003 ● HELENA MT ● 59620-3003 ● TELEPHONE: (406) 444-3858 ● FAX: (406) 444-5705**

**No. DA _____**

IN THE

# Supreme Court of the State of Montana

SIGNAL PEAK ENERGY, LLC,

*Plaintiff/Appellant*,

VS.

MONTANA ENVIRONMENTAL INFORMATION CENTER, STATE OF MONTANA BOARD OF ENVIRONMENTAL REVIEW, ELLEN PFISTER, and STEVE CHARTER,

*Defendants/Appellees.*

ON APPEAL FROM THE MONTANA THIRTEENTH JUDICIAL DISTRICT COURT,
YELLOWSTONE COUNTY, HON. DONALD L. HARRIS, PRESIDING
CASE NO. DV-18-869

## NOTICE OF APPEAL

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*Attorney for Defendant/Appellee Montana Board of Environmental Review*

NOTICE is given that Signal Peak Energy, LLC, the Appellant above-named and who is the Plaintiff in that cause of action filed in the Montana Thirteenth Judicial District Court, Yellowstone County, as Cause No. DV-18-896, hereby appeals to the Supreme Court of the State of Montana from the Order dated November 14, 2018 and the Order dated March 25, 2019. The Judgment entered in such action on April 22, 2019 and the Notice of Entry of Judgment was filed on April 24, 2019.

**THE APPELLANT FURTHER CERTIFIES:**

1. That this appeal is not subject to the mediation process required by M. R. App. P. 7.

2. That this appeal is not an appeal from an order certified as final under Mont. R. Civ. P. 54(b).

3. That all available transcripts of the proceedings in this cause have been ordered from the court reporter contemporaneously with the filing of this Notice of Appeal, per M. R. App. P. 8(3).

4. That included herewith is the filing fee prescribed by statute.

5. That a copy of this Notice of Appeal is being served by mailing a copy to the clerk of the district court and counsel of record for the other parties, per M. R. App. P. 4(4)(d).

Dated: May 22, 2019.

*/s/ Kyle A. Gray*

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*Counsel for Appellant*
*Signal Peak Energy, LLC*

12529520_v1

## CERTIFICATE OF SERVICE

I, Kyle Anne Gray, hereby certify that I have served true and accurate copies of the foregoing Notice - Notice of Appeal to the following on 05-22-2019:

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Electronically Signed By: Kyle Anne Gray
Dated: 05-22-2019