



Story County Planning and Development

6th Street, Nevada, Iowa, 50201

Ph. 515-382-7245 Fax 515-382-7294

www.storycountyiowa.gov

MEMORANDUM

TO: Story County Board of Adjustment

FROM: Amelia Schoeneman, Planner

RE: CUP02-90.6, Martin Marietta

MEETING DATE: April 15, 2020

Request Summary

CUP02-90.6 is a request for a minor modification to a conditional use permit to allow the off-site storage of rescue equipment/trailer for the mine in an existing 40' x 60' steel utility building located at 3210 N Dayton Avenue, Parcel 06-30-100-300, and the addition of four slurry drops at the Ames Martin Marietta Mine, 831 Riverside Road, on Parcels 05-13-300-415, 05-24-100-210, and 05-24-100-425. An off-site location is preferable for the rescue trailer and equipment to ensure accessibility during an emergency. The slurry is proposed to be pumped through a 16" above-ground black plastic pipe to the drops (drilled holes) into previously mined out areas underground. Currently, the piping occurs underground but the mine has become too full to continue below ground and above-ground piping is needed to complete the backfill of the mine with slurry. After the solids settle from the slurry, the water is reused. Martin Marietta anticipates using the drops one at a time for one to two years each until the mine under the drops is full. In total, the activity may occur for up to eight years. A driveway to the drop locations has already been constructed. When the underground areas are full, the drops will be plugged and drives removed. The proposed uses will not generate traffic above periodic daily checks of the pipe and monthly training and maintenance of the rescue equipment/trailer. The mine processing/surface area is not proposed to change beyond the additional slurry drops, pipeline, and driveway.

The Board heard the request at their December 18, 2019, meeting and February 19, 2020, meeting, and tabled it to request additional information. The Board requested testing of the slurry to determine its contents, a leak protection plan for the slurry pipeline, and that the Environmental Protection Agency (EPA) and Iowa Department of Natural Resources (DNR) authorize the injection of slurry into the mined-out areas prior to the Board taking action. Detailed summaries of the meetings are below. The original staff report, application, applicant's narrative, maps showing the conditional use permit boundary, rescue shed, and slurry drop locations and are included for the Board's reference on the agenda center. Martin Marietta has provided the testing results, leak protection plan, and authorizations from the EPA and Iowa DNR, as requested. These are also available on the agenda center. The EPA is authorizing the activity and will require biannual testing of the slurry and an annual report with the results. Staff recommends approval of the request with conditions, as listed on pages 7 and 8 of this memo.



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December 18, 2019, Meeting

Planning and Development staff recommended approval of the conditional use permit with conditions at the December 18, 2019, meeting. The conditions included:

- Conditions of the approved Conditional Use Permit Case No. CUP02-90 and subsequent modifications shall be maintained.
- When the use of the slurry drops ceases, the drops shall be plugged and the drive removed. The impacted area shall be revegetated.
- The conditional use permit for the slurry drops, including the conditional use permit boundary around the properties with the drops, shall expire as follows unless subsequent modifications are approved to extend the permit:
 - January 1, 2022, for drop 1 and parcel 05-13-300-415
 - January 1, 2026, for drop 2 and 3 and parcel 05-13-300-415
 - January 1, 2028, for drop 4 and parcel 05-24-100-425
- Additional berming or other measures shall be installed by slurry drop 1 and slurry drop 3 to provide additional protection to the South Skunk River and adjacent property from spills.
- A zoning permit for the 40' x 60' utility building on parcel 06-30-100-300 shall be submitted in 30 days from the approval of the conditional use permit.
- Annual inspection of the slurry drops and pipes by Planning and Development Staff shall occur.

The Board had several questions about the impact on the South Skunk River if the pipeline were to leak. Several members of the public spoke about similar concerns. Additional concerns expressed by the public included noise—the applicant noted that while slurry is not currently being pumped, it has been pumped (as needed) in the past, so this doesn't represent a change. The applicant also noted that there should not be noise from the slurry moving through the pipe. One property owner whose property was within fifty feet of a proposed drop also expressed concerns about the impact of a leak or spill on her property.

The Story County Board of Adjustment approved a motion to table the request until testing and analysis of the slurry to determine its makeup was conducted and a pipeline leak protection plan was submitted.

February 19, 2020, Meeting

Martin Marietta submitted the requested slurry testing results and a pipeline leak prevention plan for the February 19, 2020, meeting. These documents are summarized below.

At the meeting, the Board of Adjustment tabled the request, as recommended by staff, until



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the EPA registered or permitted the slurry drop/injection activities. The Board also requested that Martin Marietta contact the Iowa Department of Natural Resources Water Quality Bureau and ensure no state-issued registration/approval is required and the state groundwater protection rules are met.

Slurry Testing Results

Martin Marietta provided the following summary of the test results, in addition to a copy of the analytical report from the laboratory that conducted the testing (Keystone Laboratories, Inc.):

An aqueous (water) sample from a slurry accumulation basin in the Ames Mine was collected on January 21, 2020. Sample testing was commensurate with products utilized in the mine (i.e. diesel fuel, motor oil, hydraulic oil, etc. used in operation of heavy equipment at the mine), as well as ammonium nitrate used in blasting of rock from mine headings.

The sample was submitted to Keystone Laboratories, Inc. in Newton, Iowa for analysis. Analysis included testing for low volatility petroleum hydrocarbons (diesel and oil), as well as nitrogen testing (ammonia nitrogen, nitrate, and total nitrate plus nitrite).

The test results were below applicable standards for the specified analytes. The following table provides a summary of the laboratory report included in Attachment 1.

Analyte	Results (mg/l)	Applicable Standards (mg/l)
TEH-Diesel	<0.1 (ND)	1.2 (Note 1)
TEH-Waste Oil	<0.1 (ND)	0.4 (Note 1)
TEH – Gasoline*	1.3*	None Established
Nitrogen, Ammonia	<0.1 (ND)	None Established
Nitrogen, Nitrate	9.3	10.0 (MCL)
Nitrogen, Nitrate + Nitrite	9.95	Note 2
Nitrite**	0.65**	1.0 (MCL)

TEH = Total Extractable Hydrocarbons

ND = Below Laboratory Detection Limits

MCL = Maximum Contaminant Level for Drinking Water Established by the US EPA

Note 1: Action Level from Iowa Department of Natural Resources (Iowa DNR) Tier 1 Screening Levels for Risk Based Corrective Action (RBCA) at Leaking Petroleum Underground Storage Tank Sites.

Note 2: Maximum Contaminant Level (MCL) for nitrate is 10 mg/L, and nitrite is 1 mg/L.

**See laboratory report footnote.*



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***Nitrite concentration is total nitrate + nitrite concentration (9.95 mg/l) minus the nitrate concentration (9.3 mg/l)*

The nitrogen, nitrate + nitrite concentrations found are typical when compared to monitoring data collected between 2010 and 2019 from the South Skunk River by the Iowa DNR near Cambridge (Location ID #10850002). These data are provided in Attachment 2 for reference.

To summarize, products used in the mine include diesel fuel and oil for heavy equipment, and ammonium nitrate as a rock-blasting agent. The applicant indicated that nitrogen, nitrate + nitrite was found in the water sample taken from the slurry and results are within drinking water standards. Diesel fuel or oil were not found in the sample. A substance was reported that was present within the laboratory testing range for gasoline but was not present in the full range for gasoline. The applicant indicates they do not use gasoline in the mine. After reviewing the results, staff sought additional information on the applicable standards and specifically the substance that was present in the range of gasoline. Staff contacted the Iowa Department of Natural Resources and Iowa Department of Agriculture and Land Stewardship, who referred staff to the Environmental Protection Agency (EPA). Staff contacted Kurt Hildebrandt, EPA Region 7, Water, Wetlands & Pesticides Division, who works on the EPA's Underground Injection Control program. Mr. Hildebrandt informed staff that Martin Marietta should register the proposed slurry drops with the EPA under the Underground Injection Control Program. Part of the registration would involve the EPA's review of the slurry test results.

The Underground Injection Control program was developed as part of the Safe Drinking Water Act to protect underground sources of drinking water through requirements for injection wells. The EPA must be notified of any injection well and the well at least must be inventoried. A well may be permitted if there is a need to condition the well's operation.

Prior to the December meeting, Martin Marietta requested a formal determination of applicability of the Underground Injection Control Program and submitted details of the proposal to EPA. The EPA had not provided a rule authorization/determination prior to the meeting. In addition, the EPA's Underground Injection Program website notes that the Iowa Department of Natural Resources Water Quality Bureau must be contacted for review of injection activities and Martin Marietta agreed to do this as well.

Slurry Pipeline Leak Protection Plan

Martin Marietta's Environmental Engineer submitted a leak protection plan that involves several different passive and active measures. The plan includes a site map showing the proposed location of the passive measures (rock checks and silt fences). The below descriptions



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of the measures are from the submitted plan:

Pipeline Materials

The pipe material selected for construction of the pipeline is thick walled High Density Polyethylene (HDPE) typical for this type of application. HDPE pipe sections will be welded every 50' and flanged every 500' (or as needed) to allow disconnection for periodic visual inspection of inner wall wear during operation, as well as rotation for even wear. Visual inspection will be practiced periodically during each year of operation and inspection frequency adjusted as pipeline wear advances. Pipe segments will be replaced, as needed, based on the wear observed during the visual inspection.

Pipeline Operational Controls

Controls will be installed to automatically shut down the operating pipeline in the event a leak is detected, and provide visual monitoring during operation allowing for manual shut down in the event of an observed leak. The controls will include:

- Flow sensors will be installed at the pumping station and at the operating slurry drop location. In the event of a flow difference between the pumping station and the operating slurry drop, the system will automatically shut down. The cause of the difference will be determined, resolved, and/or repaired before reactivating the operation.*
- Pressure sensors will be installed at key locations along the pipeline to monitor pipe pressure at different flow rates. If pressure sensors detect a drop or increase in pressure set for variable flow rates, the system will automatically shut down. The cause of the difference will be determined, resolved, and/or repaired before reactivating the operation.*
- Camera surveillance will be installed at key locations to allow visual monitoring of the most critical portions of the pipeline operation. The camera gimble will have the ability to rotate vertically and horizontally by operator control. Visual monitoring through camera surveillance provides additional measures for the operator to manually shut down the pipeline operation if a leak is observed.*

Testing & Maintenance

Automatic controls in place will be inspected, calibrated and maintained to assure effectiveness. Leak simulation apparatus will be installed at each operating slurry drop to allow testing of the automatic shutoff controls. The automatic controls will be tested quarterly during pipeline operations. Testing will provide assurance that leak prevention controls are operating appropriately.

Visual Inspection

The pipeline will be inspected visually on a frequent basis (approximately each day) during its operation. Inspections will allow identification and correction of minor leaks,



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assure the pipeline operation is leak free, and visual path for observation is clear.

Check Dams

Primary spill control will consist of rock check dams placed at key flow pathways to reduce the energy of a liquid slurry leak. The check dams will reduce or prevent channeling in the case of a leak under pressure. These measures would allow large fines to drop out and slow the slurry rate of flow reducing its erosional force. The check dams and their condition will be observed during visual inspection of the pipeline to assure they remain intact and are maintained for effectiveness.

Vegetation

The pipeline location is across vegetated land. The vegetation provides fines settlement properties and helps silt settle in the event of a slurry leak from the pipeline. If a slurry leak occurred, vegetation would be re-established in applicable areas affected.

Silt Fencing

Secondary spill control will consist of installing silt fencing down grade from the key flow pathways at the locations provided on Figure 1. The silt fencing will be placed to prevent sediment carrying water, that could result from a significant slurry leak, from reaching the Skunk River. The silt fencing will be inspected monthly and/or after large rain events during non-winter weather months. It will be maintained or replaced, as needed, to assure its effectiveness.

Regarding the passive measures, the check dams are proposed to be placed downslope of slurry drop 1 and 2 and the pipeline leading to these drops as these drops are closest to the South Skunk River. Silt fencing is also proposed in these areas.

Slurry drop 3 is proposed to be moved to a setback of 200 feet from the east external property line. It was previously proposed to have a setback of 50 feet from this common property line. The new placement will also cause any leaks/spills to flow to the west on the mine property rather than towards the external property. Martin Marietta is also proposing an earthen diversion berm to the southwest of slurry drop 3 and the pipeline. There is also a culvert in this area that will be closed in the event of a spill.

EPA and Iowa DNR Action

The EPA and Martin Marietta provided staff with the EPA's rule authorization on the injection of slurry underground. It is also posted on the agenda center for the Board's review. As part of the EPA's review, a second sample of slurry was analyzed. Per the rule authorization, "the use of wells to inject/emplace the wash water into the mined out portions of the underground operations to allow for settling of fines and particulate matter from the washing process before reuse in the washing process should not result in an adverse impact to any underground sources of drinking water or otherwise adversely affect the health of humans." However, the EPA did place several



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conditions on the authorization, including that Martin Marietta will sample and analyze the slurry biannually and submit the results to the EPA, only wastewater from the washing of crushed limestone is approved to be injected, the EPA should be consulted before alterations to the wash process that may change the chemical composition of the wastewater, and that the EPA be notified before new slurry drops are constructed to ensure testing requirements are adequate. An annual report is required to be submitted by January 31 that summarizes the operations and includes the slurry test results.

The EPA copied the Iowa DNR on the rule authorization. Martin Marietta also followed up with the DNR to ensure no other permits were required and provided staff with an email from the DNR that no further permission or authorization from the DNR is required. The email has been posted to the agenda center for the Board's review.

Recommendation and Alternatives

Based on the EPA's rule authorization, staff recommends that the Board find the standard for environmental protection for a conditional use permit is met, along with other standards, and approve the request with conditions.

The Story County Board of Adjustment may consider the following alternatives:

1. The Story County Board of Adjustment approves the Conditional Use Permit for the addition of slurry drops and off-site rescue equipment/trailer storage at the Martin Marietta Ames Mine as put forth in case CUP02-90.6, as submitted.
2. **The Story County Board of Adjustment approves the Conditional Use Permit for the addition of slurry drops and off-site rescue equipment/trailer storage at the Martin Marietta Ames Mine as put forth in case CUP02-90.6, as submitted, with conditions as follows:**
 - **Conditions of the approved Conditional Use Permit Case No. CUP02-90 and subsequent modifications shall be maintained.**
 - **When the use of the slurry drops ceases, the drops shall be plugged and the drive removed. The impacted area shall be revegetated.**
 - **The conditional use permit for the slurry drops, including the conditional use permit boundary around the properties with the drops, shall expire as follow, unless subsequent modifications are approved to extend the permit:**
 - **January 1, 2022, for drop 1 and parcel 05-13-300-415**
 - **January 1, 2026, for drop 2 and 3 and parcel 05-13-300-415**
 - **January 1, 2028, for drop 4 and parcel 05-24-100-425**
 - **A zoning permit for the 40' x 60' utility on parcel building shall be submitted in 30 days from the approval of the conditional use permit.**



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- **Annual inspection of the slurry drops and pipes by Planning and Development Staff shall occur.**
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- 3. The Story County Board of Adjustment denies the Conditional Use Permit for the addition of slurry drops and off-site rescue equipment/trailer storage at the Martin Marietta Ames Mine as put forth in case CUP02-90.6, as submitted.
- 4. The Story County Board of Adjustment remands the Conditional Use Permit for the addition of slurry drops and off-site rescue equipment/trailer storage at the Martin Marietta Ames Mine as put forth in case CUP02-90.6, back to the applicant for further review and/or modifications and directs staff to place this item on the May 20, 2020, Story County Board of Adjustment Agenda.