

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B488570698

FACILITY: TILDEN MINING COMPANY LC		SRN / ID: B4885
LOCATION: 1 TILDEN MINE ROAD, ISHPEMING		DISTRICT: Marquette
CITY: ISHPEMING		COUNTY: MARQUETTE
CONTACT: BRENT KETZENBERGER , AREA MGR - ENVIRONMENTAL		ACTIVITY DATE: 11/27/2023
STAFF: Lauren Luce	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Investigate Company Reported Fugitive Dust Event at Gribben Basin		
RESOLVED COMPLAINTS:		

Complaint Investigation/On-site Inspection 11/27/2023

On 11/27/2023, the AQD received a report from Brent Ketzenberger, Environmental Manager, at Cleveland Cliffs that there was a fugitive dust lift-off event happening from the Gribben Basin. AQD staff visited the site from both M-553 and M-35. Fugitive dust was visible from M-553.

Brent Ketzenberger stated that helicopter hay application had started two weeks prior to the event, however, a number of days were lost due to mechanical issues. The helicopter was grounded on the day of the fugitive dust event due to high winds.

After the initial site-visit and phone correspondence, an email was sent requesting the following information:

1. What are the current actions being taken now to mitigate fugitive dust issues from the south tailings basin?
2. Were there any evaluations or preventative measures taken before the most recent freeze-dry conditions?
3. What are the current monitoring methods being taken?
4. Are there any forecasted exposed areas that could be of concern?

Also, please provide the following Fugitive Dust Emissions Control Plan records for the period 10/1/2023 through 11/27/2023:

1. Dust suppressant application quantities and locations in the tailings basin;
2. Tailings basin discharge points;
3. Fugitive dust inspection observations from the shift logs;
4. Any dust event reports.

Follow-up email from Brent Ketzenberger on 12/8/2023:

Ms. Luce,

Per your request, the information below is submitted regarding fugitive dust management at Tilden's tailings basin. For clarity, your original questions are stated here in bold italics with Tilden's responses directly following each.

1. What are the current actions being taken now to mitigate fugitive dust issues from the south tailings basin?

After Tilden observed fugitive dust originating from the active deposition zone in the south cell of the tailings basin intermittently over the period 11/27/23-11/28/23, the following actions were taken in response consistent with Tilden's Fugitive Dust Control Plan (FDCP). As of mid-day 11/28/23, there has been no further visible dust liftoff up to this submittal.

- Helicopter mobilization and mulching were initiated well before the event. Coverage activities continue as conditions warrant and weather conditions support safe access. While the helicopter provides access to beach areas that are otherwise inaccessible, mulch applications are slow, provide less efficient hay coverage and does not carry the benefit of crimping mulch into the surface. For those reasons, use is targeted specifically to those otherwise inaccessible areas with greater potential for liftoff.
- Beach conditions are re-assessed for stability on an ongoing basis to determine if tractor-based mulching is feasible without undue safety risks. Beach conditions have not allowed tractor-based mulching since the event to the date of this submittal.
- Placing pipe continues on our south dike for winter discharge.
- A ground crew near our pumphouse area is actively placing cover in areas where recent frost presence allows access.
- Existing hay mulch reserves on-site were re-assessed and deemed sufficient for currently anticipated coverage activities.
- Coverage of the north cell remains in place with no observed issues at this time.
- Current tailings discharge location has re-wet some areas that were experiencing fugitive dust lift off.

2. Were there any evaluations or preventative measures taken before the most recent freeze-dry conditions?

Tilden conducted fugitive dust management practices at the tailings basin consistent with Section 5.5 of Tilden's FDCP. Activities described by the plan which helped prevent or minimize fugitive dust before this event included:

- Ground-based hay application supplemented with targeted aerial application
- Water inundation of the tailings consistent with dam safety requirements; and
- Limiting moves of the tailings discharge location during winter operations.

Note: preparation for helicopter mulching is an ongoing process and requires extensive advanced planning to facilitate effective coverage. We had sourced several thousand bales and pre-mulched over 2,000 in preparation for the current aerial work. We strive to cover any exposed area as early as possible. The limiting factor for our primary method (ground applications) is safe access. The availability of the helicopter resource is limited so we proactively plan to use this

method during this period each year to cover areas not safely accessed by the ground equipment.

The following is a summary of ground and aerial mulching activities completed year to date as a preventative measure moving into the typical time of year when freeze-dry conditions may be present:

- Gribben North – 478 acres covered via ground equipment.
- Gribben South helicopter work in progress over the last two weeks as Gribben South remains too wet to access with ground equipment. Helicopter has made 893 lifts/drops. Each lift is appx 2-2.25 bales per net. Helicopter work to date represents approximately 50% of budgeted amount of \$1.2M. This is expected to be sufficient to complete anticipated helicopter work but Cliffs is committed to additional helicopter work as conditions warrant and allow.
- Over the past 2 seasons, a significant amount of resources have been allocated to low ground pressure equipment research and development. A low ground pressure Marooka with a hydraulic booster pack on it operating a bale buster was initiated for use last fall and winter. A larger model Marooka has been developed that can operate the new bale processor we purchased without the extra weight of the previous hydraulic pack. We are hoping to see that machine very shortly for this upcoming winter season. Both of these initiative have facilitated improved access for placement of cover.
- 2 snowmobiles are onsite and ready to pack snow over loose tailings that even low ground pressure machines cannot access.
- Hay supply planning has been ongoing since the start of the growing season. Currently on track to use over 6,000 bales.

It should be noted that although weather forecasts are routinely monitored, they have been found to be of inconsistent value considering the limited accuracy of the forecasts. Covering exposed areas as early as possible while maintaining safe access continues to be the objective of the mobilization and application periods for both ground and aerial application programs.

3. What are the current monitoring methods being taken?

In conformance with Tilden's FDCP, once each shift, concentrator operators visually inspect Tilden's active tailings discharge point. If dust is observed, it is noted on the shift reports and the appropriate notifications are made which initiate a specific dust event inspection and report.

4. Are there any forecasted exposed areas that could be of concern?

Because Tilden is an active operation, there is always an active spigotting location which can be a positive as freshly deposited tailings contains moisture and prevents liftoff, but it also has the potential to become susceptible to freeze-dry weather conditions. Tilden's FDCP seeks to minimize the size of these areas, conduct regular monitoring and respond with the tools described in the plan to mitigate potential fugitive liftoff where practical. Ground mulching continues to be the most effective means of mitigation with an expanded targeted aerial application proving effective as conditions warrant and allow. The spring melt period adds moisture to the system which generally reduces further liftoff potential through the spring.

Also, please provide the following Fugitive Dust Emissions Control Plan records for the period 10/1/2023 through 11/27/2023:

1. Dust suppressant application quantities and locations in the tailings basin;

3,238 bales spread to date. Another 1,000 mulched ready for the helicopter to spread. Another 1,500 on the ground as well.

2. Tailings basin discharge points;

Please see the redacted discharge point records enclosed here as Attachment 1.

3. Fugitive dust inspection observations from the shift logs;

For purposes of brevity Tilden offers an example of a redacted shift log here as Attachment 2 along with this summary of the shift log records for the period of October 1, 2023 through November 27, 2023. During the period, 152 shift inspections were completed and of those, 151 indicated no observations of visible fugitive emissions. One shift log during the period indicated the presence of visible emissions at the time of the inspection with three dust events reports generated.

4. Any dust event reports.

Three dust event reports were recorded during the period of October 1, 2023 through November 27, 2023 and are included as Attachment 3.

Tilden remains committed to conducting fugitive dust management practices at the tailings basin consistent with Section 5.5 of Tilden's FDCP. In addition, Cleveland-Cliffs continues to identify and implement best practices across all of our operations and industry wide for fugitive dust minimization at tailings basins. Most recently, Tilden's expanded program for aerial application of mulch has proven effective to minimize fugitive dust lift off during the most recent extended period of dry and windy weather conditions across our area which created challenges at Tilden's operations. This program continues to be evaluated to address inherent challenges associated with aerial application of dust suppressants and improve the program's effectiveness.

Please let us know if you have any questions or require additional information.

Regards

Brent Ketzenberger

On 1/28/2024, AQD staff (Lauren Luce) met with Tom O'Brien, Environmental Engineer, Brent Ketzenberger, Environmental Manager, and Kris Scherer, Tailings Engineer, at Tilden Mine, to perform a site inspection of the tailings basin. The tailings basin is located 5 miles east of the mine, south of Goose Lake. The tailings basin covers 2500 acres and has a discharge rate of tailings at 10,000 gpm. The sludge mixture consists of 50-55% solids and water. The inspection consisted of a tour of the north and south basin by truck on the roads around the basin. Both basins were snow covered with hay clumping visible under the snow. One active discharge point was observed at the south end of the Gribben South.

During the tour around the south basin, the area where lift off occurred was identified by Kris Scherer. Approximately 4000 round bales of hay were used in hay application on Gribben South. An additional 1000 bales of hay are available on-site for the stockpile. The helicopter also will remain on-site through the spring. Kris Scherer stated that snowmobiles were on-site to pack snow and create wind rows when conditions allow. A new Marooka has also been purchased that will come into operation this season.

Based on the correspondence and on-site visit, it appears that Tilden Mine was following the practices outlined in their fugitive dust plan (4/28/2021) and that unforeseen mechanical issues with the helicopter resulted in fugitive dust lift off. No violation will be issued.

NAME 

DATE 2-12-24

SUPERVISOR 