

# EXTERNAL MEMORANDUM

**To:** Ms. Roberta Hudson  
SD DANR, Minerals & Mining  
Joe Foss Building  
523 E. Capitol Ave  
Pierre, SD 57501

**From:** Mr. Ken Nelson  
Mine General Manager  
Coeur Wharf  
10928 Wharf Road  
Lead, SD 57754

**Date:** November 21, 2022

**Subject:** Response to October 2022 DANR Comments on Wharf's Boston Expansion Large Scale Mine Permit

Wharf submitted a Large Scale Mine Permit to the South Dakota Department of Agriculture and Natural Resources (SD DANR) on June 13, 2022. Procedural completeness and technical comments were received from SD DANR in two letters dated July 13, August 16, and October 24, 2022. This response to comments memo specifically addresses comments from the October 24, 2022 letter. Wharf responses are in red.

Revisions to the permit application and appendices are provided in electronic format. Three hardcopies of each page with changes is also being mailed to SD DANR and revisions will be made to the copy on file with the Lawrence County Register of Deeds.

## Procedural Completeness Comments

1. SDCL 45-6B-6(8)(b), ARSD 74:29:02:04(3), ARSD 74:29:02:05, and ARSD 74:29:07:02 (7): Please provide a narrative description of the proposed depth and direction of mining along with a proposed timetable for mine sequencing. The response Wharf provided in the October 13, 2022, letter only gives additional information on the maximum depth of the Flossie Pit but does not provide a description of the depth for the remainder of the proposed mining areas or the direction in which mining operations will occur. Also, please include a proposed timetable for the mining for the proposed operation. {Example of information needed provided in Section 5.3.4 Pit Development and Sequencing, pg 98-101, American Eagle Mine Permit Application, 2011}. Also, the legend in Exhibit 23 should mention the extent of waste rock backfill.

The projected final mine design pit elevation is shown on Exhibit 23 in Appendix B. The contours in Exhibit 23 show the final elevation of the pit within the Boston Expansion, which ranges from approximately 6,260 (deepest part of the pit) to 6,640 ft elevation. The contours also show the adjacent mining area elevations.

As described in Section 5.3.4, mining will proceed from west to east in the Flossie area, initially beginning in early 2023. After the Flossie area is mined, mining will then commence at the east end of the project by Green Mountain and be directed west. Backfilling will occur as mining is completed and as access/min traffic allows.

Because the Boston Expansion area is so small (especially in comparison to the Green Mountain expansion in 2011), there are not separate “phases” of mining for the Boston Expansion as it’s merely incorporated into the existing mine phase of mining the Portland Ridgeline.

As noted in Section 5.4, all of the Boston area will be backfilled with waste rock. A note has been added to the Exhibit 23 legend indicating the entire pit fill is the same as the waste rock backfill extent.

The estimated timetable for mining activity within the Boston Expansion is anticipated to be from early 2023 through 2029 as provided in Table 5-1.

2. SDCL 45-68-7(8), SDCL 45-68-10, ARSD 74:29:02:09 and ARSD 74:29:02:12: All maps in the mine permit application are required to comply with the requirements of SDCL 45-68-10 and ARSD 74:29:02:12. ARSD 74:29:02:12(4) requires Wharf to identify on each map the statute and regulation it addresses. In your October 13, 2022, response letter, Wharf indicates Tables 1-1 and 1-2 were modified to include proper references to which exhibits fulfill the individual statutes and regulations. While this is good as it satisfies the requirements of ARSD 74:29:02:01, it does not fulfill the requirements of ARSD 74:29:02:12(4) which specifically requires Wharf to list each applicable statute and regulation on each map. Therefore, please submit updated maps in Exhibit B that meet these requirements.

The statute or regulation number has been added to exhibits in Appendix B. All exhibits are being resubmitted to address this comment.

3. SDCL 45-6B-7(10)(4): Instead of making a reference in Table 1-1 that no such facilities are proposed for the Boston Expansion, please include a statement in the Operating Plan that no reservoirs, tailings ponds, tailings disposal sites, dams, dikes, and other such facilities will be constructed in the Boston Expansion area. The section and page of the Operating Plan where the statement is located should be referenced in Table 1-1.

Such a statement has been added to Section 5.0 and referenced in Table 1-1.

4. SDCL 45-6B-10(2) and SDCL 45-6B-44: Please note the mine permit application will not be considered complete until DANR receives confirmation that adjacent landowners Ross and Amber Determan received a copy of the reclamation plan. Also, please explain what information regarding the reclamation plan was mailed to the Determans.

The Determan’s were provided with an electronic copy of Chapter 6.0 of the permit application report, excluding Section 6.11 Bonding. They were also provided with copies of Exhibit 23 and 31. A copy of the email sent to Ross Determan is attached to this comment response letter.

5. SDCL 45-6B-32 - Grant of permit if application in compliance with law - Grounds for denial: Please follow the enclosed example from another mine permit application and submit a narrative explaining how Wharf addressed each subsection of SDCL 45-6B-32. Also, subsection (7) of this statute states that if the operator is currently found to be in violation of the provisions of this chapter with respect to any mining operation in this state it may be grounds for denial of this permit. The department has previously explained to Wharf that it is currently in violation of SDCL 45-6B-41, SDCL 45-6B-87, and SDCL 34A-2 due to the current concentrations of selenium in False Bottom Creek, which are consistently above the acute selenium surface water quality standard. Please address this issue in this section. Finally, Section 1.2 does not directly address the suitability of the land for mining. Please include a clear, concise statement that addresses the suitability of the land for mining.

The following information has been added to Section 1.1 of the permit application.

## **SDCL 45-6B-32 Compliance**

Wharf has paid the required application fees. The application is complete and the surety bond for the Boston Expansion is covered by the current bond. No part of the proposed expansion mining operation, the reclamation program, or the proposed future use is in violation to the laws and regulation of the State of South Dakota or the United States.

The mining operation will not adversely affect the stability of any significant, valuable, or permanent man-made structures located within 200 feet of the affected land, as no structures occur within 200 ft. A one call was completed, and no underground utilities or pipelines were found within the proposed area to effect of the permit application.

The mining operation will not be in violation of any county zoning or subdivision regulations. The proposed mining operation and reclamation will be carried out in conformance with the requirements of statute SDCL 45-6B-35.

Wharf is currently investigating the source of elevated selenium and testing potential treatment methods for False Bottom Spring located on the far northern border of the existing Wharf Mine. This spring is located on Wharf property immediately below the historic Bald Mountain Mill tailings repository, which was operated from approximately 1905 through just after WWII. Pilot testing of two potential treatment options is currently underway, and geochemical modeling of the upgradient area to better identify the source is nearly complete. Findings from these studies are anticipated to result in a formal compliance schedule to be incorporated in the forthcoming NPDES permit renewal for Wharf, which is currently being drafted by the DANR Surface Water group.

The proposed affected land is suitable for mining operation, as determined pursuant to SDCL 45-6B-33.

6. SDCL 45-6B-33-Unsuitable Land - No Permit Issued: Your revised application indicates that each subsection of this statute was addressed in Section 1.2. However, subsections 1, 2, 4, 5, and 6 were not addressed in this section. In addition, Table 1-1 lists the statute, but none of the subsections. Please address each of the following subsections and add a reference for all of the subsections to Table 1-1:
  - a. (1) Please provide a clear, concise statement on whether it is or is not physically or economically feasible to reclaim land to be affected by the proposed operation.
  - b. (2) Please provide a clear, concise statement on whether sedimentation of stream or lake beds, landslides, or water pollution can or cannot be feasibly prevented.
  - c. (4) Please provide a clear, concise statement on whether the proposed operation will result in the loss or reduction of long-range productivity of aquifer, public, and domestic water wells, watershed lands, aquifer recharge areas, or significant agricultural areas.
  - d. (5) Please provide a clear, concise statement on whether the biological productivity of the land is such that the loss would jeopardize threatened or endangered species of wildlife indigenous to the area.
  - e. (6) Please provide a clear, concise statement stating whether adverse socioeconomic impacts of the proposed mining operation may outweigh the probable beneficial impacts of the operation.

The subsections of SDCL 45-6B-33 have been added to Table 1-1 and addressed in the permit application in Section 1.1.

7. SDCL 45-6B-39 and ARSD 74:29:07:06: Please note the mine permit application will not be considered complete until DANR receives proof of consultation from the Lawrence County NRCS office that it was consulted during development of the seed mix.

The proposed seed mix for the Boston Expansion was submitted to the Lawrence County NRCS office. The NRCS has indicated they would like to remove a few of the species from the proposed seed mix and will provide Wharf and SD DANR their recommendations. Wharf will incorporate those suggested changes prior to initial seeding.

8. SDCL 45-6B-40 and ARSD 74:29:07:07: Wharf has indicated it does not plan to create a Bald Mountain topsoil stockpile. In Exhibit 27, it shows that all topsoil from the Boston Expansion area will be hauled to the Juno topsoil stockpile. However, in Sections 5.3.3 and 6.2.1, there are several references to "topsoil stockpiles". Please verify whether other topsoil stockpiles will be created for Boston Expansion topsoil. If not, please remove all references to "topsoil stockpiles" in these sections.

Material from the Boston Expansion will be placed in the stockpile at Juno. The "s" from the word "stockpile" is a typo. The application has been edited for clarity.

9. SDCL 45-6B-41 and ARSD 74:29:02:11(9), and ARSD 74:29:07:09: Instead of referring to Wharfs Storm Water Pollution Prevention Plan (SWPPP), Wharf needs to include in the mine permit application the sections of the plan that would address erosion and sedimentation control in the Boston Expansion area. Also, please verify if the Boston Expansion area is included in the current SWPPP. In addition, please submit a conceptual map showing potential erosion and sediment control structures for the expansion area. Finally, in the mine permit application, Wharf addresses permanent diversions, but it does not clearly address the status of storm water diversions. Does Wharf plan on installing any storm water diversions? If so, each subsection of ARSD 74:27:07:09 needs to be addressed.

The following information, including text directly from the current Wharf SWPPP, has been added to Section 5.3.6. Temporary erosion control structures will be used on an as-needed basis and located based on the presence of features that have potential for soil erosion; no pre-determined locations for these potential temporary erosion and sediment control structures exist, therefore a conceptual map is not applicable.

As the Boston Expansion area is above and an extension of the existing Portland Ridgeline Pits, there are not stand-alone stormwater features planned in the Boston expansion area. It will, however, as part of the active Wharf Mine, still be subject to the site SWPPP. As such, standard BMPs such as silt fence, straw bales, straw wattles, or water bars may be employed periodically if operational access and safety warrant. Wharf does not plan any permanent diversions, including storm water diversions, for the Boston Expansion area.

The SWPPP addresses active and inactive mining areas, including: sedimentation ponds, Ross Valley Spent Ore Facility, Juno/Foley Spent Ore and Rock Facility, Reliance Rock and Spent Ore Facility, Cleopatra Rock Facility, Trojan Rock Facility, Bald Mountain Reclaimed Tailings Area, Annie Creek Mine, Foley Ridge/Annie Arm Mine, Clinton Extension, Portland Mine Area (including the Boston Expansion), Plant Area in McKinley Gulch, Nevada Gulch Reclaimed Tailings/Mine Site, American Eagle Pit Rock and Spent Ore Facility, Green Mountain and Bald Mountain Pit Rock Facilities, Golden Reward Pits and Rock Facilities, inter connecting haul roads, EXNI drill trails, and storage areas.

There are areas which due to topography, activities, or other factors that may have potential for soil erosion. These include areas of the rock and spent ore facilities which have not yet been re-graded, re-contours and seeded; and parking and work areas around the processing buildings, office, and crushing area. Structural, vegetative, and/or stabilization measures which may be used to reduce erosion and sediment load, will include construction of diversion channels, lining channels with natural materials to reduce channel flow, grading areas to reduce rate of runoff, placing silt fences, straw bales, and re-seeding and mulching as appropriate.

The SWPPP contains a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the source of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharge from the site. The SWPPP provides that measures determined to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity shall be considered when determining reasonable and appropriate measures. Appropriate measures may include: vegetative swales, diversion to potential wildlife habitat, and reuse of collected storm water (such as for a process or as an irrigation source).

10. SDCL 45-6B-92(2): In Section 3.12.6, Wharf discusses fish life propagation which applies to all streams statewide. However, it does not discuss cold water fish life propagation waters which is a separate standard under South Dakota water quality laws that applies only to certain streams. Since there are streams classified as coldwater fisheries that could be impacted by the Boston Expansion project, please discuss mitigation of impacts to coldwater fish life in those streams.

The coldwater fisheries effluent standard (ARSD 74:51:01:32) is noted in Section 3.12.6, and cold-water fish life propagation is noted in the title of the section. Further, it is noted that no impacts to surface water or aquatic resources is anticipated. For added clarity, the section has been edited to add emphasis to coldwater fisheries and notes that impacts to cold water fisheries are not anticipated.

11. ARSD 74:2902:01: The following references in Tables 1-1 and 1-2 need to be revised:

- a. In Table 1-1, Wharf needs to list each subsection of SDCL 45-68-33. It also needs to remove the references to SDCL 45-68-33.2 through 33.8 as they address requirements for small scale mine permits and the Request for Determination of Special, Exceptional, Critical, or Unique Lands and do not apply to this mine permit application.

As noted in completeness comment 6, the subsections of SDCL 45-6B-33 have been added to Table 1-1 and addressed in the permit application in Section 1.1. References to SDCL 45-68-33.2 through 33.8 have been deleted from Table 1-1.

- b. In Table 1-2 under ARSD 74:29:07:04(2), Section 6.11.2.6 is referenced. However, this section addresses fencing instead of erosion control. Also, under ARSD 74:29:07:08(4), Section 6.11.2.5 is referenced. However, this section addresses sediment and erosion control during the postclosure period. Since this regulation covers the removal of temporary erosion and sediment control during final reclamation, this reference needs to be changed.

The section reference under ARSD 74:29:07:04(2) incorrectly referenced Section 6.11.2.6; the correct reference is Section 6.11.2.5. The typo has been corrected in Table 1-2. The reference for ARSD 74:29:07:08(4) was changed to Section 6.2.1.1.

12. ARSD 74:29:02:03: Exhibit 4B shows mining claims, but it must be revised to clearly identify mineral ownership in the same way Exhibit 4A clearly identifies surface ownership. Exhibit 4B is also titled "Boston Expansion Acreage" which implies the map only shows the expansion acreage. A separate map titled "Boston Expansion Mineral Ownership" should be submitted showing the mining claims and clearly identifying mineral ownership of all claims, including those with 50 percent Homestake ownership.

Wharf is the sole surface rights and mineral rights owner of the mineral to be mined. The mineral claims within the Boston Expansion, as shown on Exhibit 4B, are all Wharf owned. If Wharf were to develop a mine deeper than existing operations, there is an agreement with Homestake where they receive 50 percent of the minerals from the Precambrian deposit. This information and the exhibit title has been revised to "Boston Expansion Mineral Ownership" as suggested.

13. ARSD 74:29:06:02: Please follow the enclosed example from another mine permit application and submit a narrative explaining how Wharf addressed each subsection of ARSD 74:29:06:02.

The text below follows the general example provided by SD DANR and has been added to Section 6.2 of the application report.

**ARSD 74:29:06:02**  
**General Requirements for the Determination of Reclamation Type**

The regulatory assessment submitted with this permit demonstrates that the affected land has the capability of meeting reclamation criteria of ARSD 74:29:07. All land surrounding the proposed mine expansion is currently used for mining, rangeland, and homesites, which demonstrates that the post mining land use of rangeland is compatible with surrounding land uses. The Reclamation Plan found in Chapter 6.0 of this permit details support and maintenance activities required for successful implementation. There are no critical earthen structures that require a stability analysis.

Wharf has had successful reclamation operations in similar conditions throughout other parts of the Wharf Mine. The primary land use on the proposed expansion permit has been rangeland for several years and this will be the postmining land use. There are no public agency interests in the proposed mine expansion lands.

The outline of bond costs found attached to the Reclamation Plan in Section 6.11 shows that the proposed operation is practicable on the basis of private financial capability of completion. The schedule found in Table 5-1 of Section 5.1 of this permit integrates mining operation with the postmining reclamation and land use. The proposed rangeland land use is consistent with county land use plans and is of beneficial use to the owner.

14. ARSD 74:29:07:18: In Section 6.1, please describe the experience the Wharf staff has in developing and implementing reclamation plans.

The existing statement has been revised as follows: "the staff at Wharf that helped develop this reclamation plan have significant experience in developing and executing mine reclamation plans, as demonstrated by the well-established reclamation at Golden Reward as well as portions of the active Wharf Mine above Annie Creek and Ross Valley."

15. ARSD 74:29:07:02(3): Please address the view shed from Nevada Gulch. The department has re-evaluated site VP 3 NW referenced in the draft visual assessment and has determined the site does contain a significant view of the proposed Boston Expansion area from Nevada Gulch. The department apologizes for this confusion but feels it may be easiest to address this concern by reincluding this site into the overall analysis. Please note that VP-4 does not adequately address the view of the proposed Boston Expansion Area from Nevada Gulch as an analysis of the line of site for this photo shows that it would only address a very small portion of the easternmost corner of the proposed Boston Expansion Area.

VP3 W has been added back into the visual assessment as requested; a revised Appendix N is included with this submittal.

Technical Comments

1. Section 2.0. page 15: Please note any acreages discussed for assessing proposed expansion acreages need to clearly distinguish those acreages within the existing permit boundary versus those in the new permit boundary, except when discussing the total acreage amount. They should also be discussed separately as much as possible. As such, please clarify the following:



- a. In the fourth sentence of the third paragraph of this section, Wharf states "The Boston Expansion area has a permit area estimated to be 47.4 acres in size." Please clarify whether this is permit boundary acreage or permitted affected acreage and modify the sentence with the correct terminology.
- b. Also, please clarify if the acreage in the fifth sentence is permitted affected acreage.
- c. Finally, in the last sentence, is the permit boundary to permitted affected acreage ratio of 1:1.03 for the Boston Expansion area or the entire mine site? If it is just for the Boston expansion area, the ratio of permit boundary (47.4 acres) to permitted affected (40.6 acres) acreage, the ratio should be 1:1.17.

The 7.6 acres of new affected acreage within the current mine permit boundary should be accounted for separately from the new permit boundary acreage.

Comment addressed.

2. Section 3.3.3. page 40-41: This statement is made, "nitrate concentrations above 10 mg/L have only been observed in MW-19 in the past 5 Years." Please note that this is incorrect. Nitrates were also noted above 10 mg/L several times from 2002-2005 and 2011-2013.

The baseline analysis primarily focused on review of the last 5 years of water quality data for MW-19, hence the statement. To provide clarity, the statement has been revised.

3. Section 3.7.3, page 54: In the last paragraph of this bat section, please add an explanation of why temporary and permanent closures of the mine openings were done.

The last paragraph was modified, including the addition of the following text: "Though no bats were visually observed during emergence surveys in 2022, the shafts nonetheless were potential habitat. To minimize potential impacts to bats, it was essential to seal the shafts so that no bats could access the workings and become impacted before or during mining of the Boston Expansion.

4. Section 3.10.3, page 65: The following information from Wharfs October 5, 2022, response letter should be added to the Noise Mitigation Strategies section:

Most residents can expect mining noises to continue at present levels and the Boston Expansion will not increase their current noise levels. The closest few residents in the northwestern-most corner of the subdivision nearest the Boston Expansion could expect temporary increases in mining noise associated with vegetation removal, berm construction, and initial blasts at the top of the ridgeline in the Boston Expansion area. After the upper benches are complete noise levels are expected to return to near-present conditions.

Comment addressed.

5. Section 3.12.1, page 68: In this section, Wharf states if reseeded reclamation areas do not show adequate growth after two years, analyses of the placed topsoil will be conducted to determine soil nutrient levels and appropriate fertilization requirements. The fertilizer requirements should be determined before the topsoil is placed, not after. Therefore, this statement needs to be revised to reflect this.

The statement in Section 3.12.1 has been revised as follows: "Prior to placement, topsoil analysis will be conducted to determine soil nutrient levels and appropriate additional fertilization requirements."

6. Section 5.3.2, page 81: In this section, Wharf states that the Boston Expansion area will be stripped in three phases of approximately 16 acres each. Please show the location of these three phases on a map. Also, since mining will begin in the west end of the Boston Pit, how does Wharf

plan to stabilize the current topsoil windrows and stockpiles and the current exploration area in the east end of the Boston Expansion until Phase 2 and 3 areas are stripped? (Note: If following the example outlined as Item #1 above, this will be addressed as well. This section can be corrected as needed, to match the information supplied in Section 5.3.4.)

See response to Completeness Comment No. 1. Section 5.3.2 has been edited to clarify there are not designated tree clearing phases but rather site preparation, including tree clearing and soil salvage, will begin in 2023 and progressively continue throughout the duration of operations in the Boston Expansion.

Wharf will stabilize temporary topsoil windrows and stockpiles associated within exploration in the Boston Expansion area by interim seeding and weed control as needed. Areas exhibiting runoff will be mitigated with the use of temporary straw bales or wattles for interim erosion control and will follow Wharf's erosion control plan. This information has been added to Section 5.3.6.

7. Section 6.2.1.1, page 94: In the fourth paragraph of this section, Wharf states the southwestern edge of the expansion area coincides with a draw, oriented northwest, in the Annie Creek watershed. Will this draw be disturbed or impacted during mining?

No, the draw in the southwestern edge of the Boston Expansion will not be disturbed by mining operations.

8. Section 7.0. Proposed Technical Revisions: In our July 2022 comment letter, we asked Wharf to remove "slash piles" from the "modifying topsoil stripping plans and storage" technical revision category and make it a separate category. However, we notice it was not included in the technical revision list in the revised application. Does Wharf want slash piles included as a technical revision category?

No, Wharf does not want to include slash piles as a technical revision category. There does not appear to be justification for slash pile management to require a technical permit revision.

9. Appendix B. Exhibit 5: Please submit a map showing the underground workings only in the Boston Expansion area. Please submit Exhibit 5 in at least an 11 x 17 format instead of 8 x 11 format.

Comment addressed.

10. Appendix B. Exhibit 6: There is a typo on this exhibit. In the Section-Township-Range coordinates provided on the map, the Range is currently identified as 20E. This should be changed to 2E.

Comment addressed.

11. Photos were provided for all sound monitoring sites addressed in the Sound Baseline Survey except for SND-07. Even though the original photo was corrupted and not available, Wharf should take a photo of SND-07 and include it in the survey.

Wharf staff took a photograph of sound monitoring site SND-07 located at the intersection of Last Chance Trail and Antelope Trail as provided below. The photograph is oriented looking northwest toward the Boston Expansion.





12. In the Baseline Sound Study, Section 4.1, there are comments on recording vehicle backup alarms during the study for sites SND-04 and SND-06. Please confirm that none of these alarms were associated with mining activity.

SND-04 was located at Terry Valley Road District storage shop outside the entrance to Wharf. Field notes indicate the backup alarm was from a truck right at the entrance to the Wharf Mine observed on the morning of July 28, 2021. The RESPEC engineer conducting the study can not recall the exact nature of that truck backup alarm but noted that throughout the study they paid particular attention to note observed sounds associated with the mining activity, and such backup alarms were not flagged as being a mining activity sound.

SND-06 was a paired location with Wharf meter 1249 at the overflow ski area parking lot. As noted in Section 4.1 of the baseline sound study, the truck backup alarms heard at SND-06 were associated with trucks within the overflow parking lot; said trucks were likely associated with the work being conducted by Montana Dakota Utilities Co., who were using the parking lot for their project staging area.

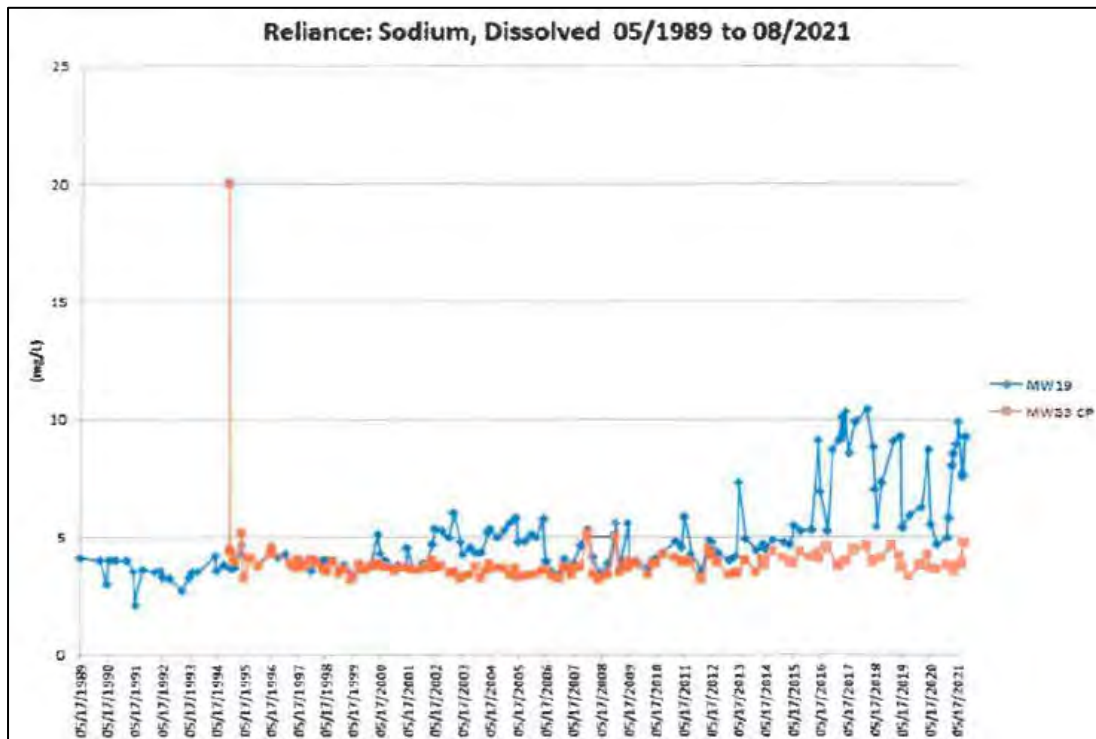
13. Appendix F, Groundwater Characterization Study, Section 3.5.2: The report states "No detections from any sample collected from the three baseline monitoring wells over the last 5 years: ... total cadmium, total copper, total gold, total selenium, total silver, total zinc, ... " This statement is somewhat misleading, as these parameters were not sampled in MW-19 and MW-33 during this time frame. Also, please note that if there is a dissolved metal concentration result in the analyses, there will also be a total metal value associated with the sample, even if the total metal constituent was not analyzed for.

The report has been revised for clarity. The total metals listed were removed from the list in Section 3.5.2 because total metals were not sampled in MW-19 and MW-33 over the time period reviewed.

14. Appendix F, Groundwater Characterization Study, Section 3.5.2: The report states "nitrate concentrations above 10 mg/L have only been observed in MW-19 in the past 5 years". Historical data review indicates this is not an accurate statement. Also, the statement regarding nitrate concentrations showing only "minor fluctuations" in MW-19 seems to be understated. Nitrate concentrations were below 2 mg/L for the first 10 years of data currently available to DANR, in MW-19. In comparison, the last five years of the data from the report show the highest value as 18.6 mg/L while the lowest was 5.78 mg/L.

This statement has been revised for clarity. The intent was to note that in the past 5 years that were reviewed for the “baseline” analysis, nitrate above 10 mg/L was observed in MW-19 and not observed at MW-33 or MW-66.

15. Appendix F, Groundwater Characterization Study, Section 3.5.2: The report states "Sodium values have had minor fluctuations. The increases and decreases at MW-33 and MW-19 mirror each other." When a historical overview of the data is reviewed this statement appears to be incorrect and in fact there appears to be a marked increase in sodium values within MW-19 as compared to MW-33 over the past five years. See graph below.



The discussion on sodium concentrations has been revised to better reflect the dataset.

16. Your response to #19 of the August 16, 2022, DANR comment letter does not fully address the question presented. The state would have required one year of analysis on the three baseline wells MW-19, MW-33, and MW-66, if that sampling had been done monthly for a full suite of baseline parameters. However, neither MW-19 nor MW-33 have a full year of the appropriate baseline analysis in their history. The DANR approved the use of a minimum of five years, in lieu of the one year of baseline outlined in regulation, for both MW-19 and MW-33 since these wells have an established sampling history extending back decades. DANR's available data history for MW-19 begins in 1989 and in 1994 for MW-33. DANR requested MW-66 have twelve months of baseline sampling since it lacked the minimum five years required to meet DANR's exception. During analysis, it is up to Wharf and RESPEC to ensure the five-year timeline reviewed and presented is adequate to address the necessary detail of analysis for each site. Therefore, the previous question still stands. It is commonly considered appropriate when evaluating results in water analyses to use comparable time frames during the analysis. Water quality parameters may increase or decrease because of both dry or wet conditions, which have the potential to be shown in the rise and fall of ground water levels at the site. Why are the two different time frames utilized between Section 2.5 and 3.5 of the report? Does extending the time frame in Section 3.5 of the report change the final evaluation for any of the wells? Also, since the potentiometric map presented in the report was calculated prior to MW-66 being drilled, how was the potentiometric

map impacted when additional data available for this well is added to the calculations for the map?

Section 2.5 addresses the regional potentiometric surface which was created using average yearly water level data from 2000 through August 2017. RESPEC also reviewed data for baseline wells through 2020. As stated in response to comment 19 of the August 16, 2022 comments, "Water level data used to generate the potentiometric map had a different period of record primarily because the potentiometric map was created for use in groundwater modeling and for use in groundwater discharge permits for the entire Wharf Mine area, not exclusive of the Boston Expansion area nor the baseline analysis period. The use of a larger water level dataset to create the average potentiometric map was considered more appropriate for that application as the groundwater models created for the mine model a significantly long period of time." Because the potentiometric map represents an average regional water table, versus a specific limited date in time, it is more general and broader in its use and also more expansive in the data included in its production. A potentiometric map constructed only from data collected over the last 5 years, or the same time frame as presented for water quality data in Section 3.5, would show a slightly lower water table due to more recent periods of drought. Analysis of mine impacts using a higher water table from the long-term average would be more conservative when estimating the proximity of groundwater to the bottom of the pit.

The analysis and summary of water quality in the Boston Expansion area was primarily based on review of 5 years of historical data, with limited review of older data including review of historic nitrate concentrations at MW-19. The evaluation concluded that MW-19 appears to show mine impacts, MW-66 is upgradient of impacts, and MW-33 is generally similar to the results from other monitoring wells; this final evaluation would not change by extending the time frame of analysis. Though useful, an expanded historical analysis is not essential in understanding the current baseline conditions around the Boston Expansion.

The regional potentiometric map presented in the baseline groundwater report and permit application was generated prior to MW-66 being drilled. As noted in Section 2.5.1 of the groundwater report, "RESPEC also reviewed additional water level data through April 2020. The average water elevation for most wells from 2000 through 2020 was similar to the data used to generate the previous potentiometric map (2000–2017); therefore, updating the regional potentiometric map was not warranted." RESPEC also reviewed water level data for MW-66 collected between July 2019 and November 2021; water elevation in this Deadwood Aquifer monitoring well ranged from approximately 6,160.43 ft to 6,169.01 ft. As shown on the average potentiometric surface (Figure 2-4), the approximate water elevation was anticipated to be between 6,150-6,190 ft, noting that the contours near that well are marked as inferred. If data from MW-66 were to be directly incorporated and used to redraw the potentiometric map presented, the 6,200 ft contour could be slightly moved southwest, however the lack of other upgradient water level data south of MW-66 precludes editing the potentiometric surface with any certainty.

17. Appendix F, Groundwater Characterization Study, Section 3.5.3: The report states, "Historical impacts to groundwater from previous mining activities are evidenced in elevated occurrences of nitrate in MW-19 (Figure 3-3) and arsenic in MW-66." Please confirm that elevated arsenic concentrations in this well are a result of mining activities in this area and not a result of mineralization within the rock. Figure 2-4 of the report indicates this well is upgradient of current mining activities.

The report has been revised to clarify mining impacts in baseline reviewed wells are only noted based on nitrate in MW-19. Higher concentrations of arsenic in MW-66, upgradient of mining at Wharf, are likely the result of background mineralization within the rock.

18. Appendix F, Groundwater Characterization Study: There is an inappropriate name and a typo on pages A-4 and A-7 of this study. The sample site is referred to using an antiquated, derogatory

name (it should be referred to as "War Eagle"). This sample site is incorrectly listed as being in a miscellaneous drainage. This site is located at the top of the Cleopatra Creek drainage within 10 yards of the NPDES sample location on this same drainage. Also, in Tables E-1 and E-5, please provide a footnote on the tables indicating the water level data provided for 2000-2006 are annual averages.

Comment addressed.

## Crystal Hocking

---

**From:** Ross Determan <r.determancpa@gmail.com>  
**Sent:** Tuesday, November 22, 2022 7:21 AM  
**To:** Crystal Hocking  
**Cc:** Zietlow, Matthew  
**Subject:** Re: Wharf Boston Expansion Reclamation Plan

### This Message Is From an Untrusted Sender

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Received, thank you.

On Mon, Nov 21, 2022 at 1:24 PM Crystal Hocking <[crystal.hocking@respec.com](mailto:crystal.hocking@respec.com)> wrote:

Mr. Determan,

Attached is a copy of Wharf's reclamation plan for the Boston Expansion along with two maps, the first showing the proposed pit and the second showing the reclaimed topography contours.

Please respond to this email or to Matt Zietlow that you have received this reclamation plan information.

Thanks and have a Great Thanksgiving,

Crystal

Crystal M. Hocking, PE, PG  
*Project Geologist*

**RESPEC**  
3824 Jet Drive

Rapid City, SD 57703  
605.394.6451 office

[respec.com](http://respec.com)

## Crystal Hocking

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**From:** Zietlow, Matthew <mzietlow@coeur.com>  
**Sent:** Monday, November 21, 2022 4:17 PM  
**To:** Crystal Hocking  
**Subject:** Fwd: [External Email]RE: Wharf seed mix

### This Message Is From an External Sender

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FYI Crystal!!!

Sent from my iPhone

Begin forwarded message:

**From:** "Swan, Tyler - NRCS, Belle Fourche, SD" <Tyler.Swan@usda.gov>  
**Date:** November 21, 2022 at 4:02:22 PM MST  
**To:** "Zietlow, Matthew" <mzietlow@coeur.com>  
**Subject:** RE: [External Email]RE: Wharf seed mix

Matt,

I'm just getting back to you on your email from earlier.

I talked with Mitch Faulkner now and we would like to edit a few things: we have changed our stance on a couple of the species in the last decade and would like to remove them from the recommendation if that works for you.

I'm planning to work on this tomorrow (Tuesday) morning if that is alright.

Please let us know if you have any questions or concerns.

Tyler Swan

NRCS Soil Conservationist

Belle Fourche Field Office

1837 5<sup>th</sup> Ave S



Belle Fourche, SD 57717-2086

[Tyler.swan@usda.gov](mailto:Tyler.swan@usda.gov)

Office: 605-892-3368 Ext. 3071

Cell: 605-659-1479

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**From:** Zietlow, Matthew <mzietlow@coeur.com>  
**Sent:** Monday, November 21, 2022 11:43 AM  
**To:** Swan, Tyler - NRCS, Belle Fourche, SD <Tyler.Swan@usda.gov>  
**Subject:** RE: [External Email]RE: Wharf seed mix

Hey Tyler, any news on this? Just trying to get this one last thing wrapped up to send in our package to DANR today. Thanx!

Matt

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**From:** Swan, Tyler - NRCS, Belle Fourche, SD <[Tyler.Swan@usda.gov](mailto:Tyler.Swan@usda.gov)>  
**Sent:** Friday, November 18, 2022 1:37 PM  
**To:** Zietlow, Matthew <[mzietlow@coeur.com](mailto:mzietlow@coeur.com)>  
**Subject:** RE: [External Email]RE: Wharf seed mix

Nothing yet, I believe Mitch was out today. It will probably be Monday before I hear a response on this.

Tyler Swan

NRCS Soil Conservationist

Belle Fourche Field Office

1837 5<sup>th</sup> Ave S

Belle Fourche, SD 57717-2086

[Tyler.swan@usda.gov](mailto:Tyler.swan@usda.gov)

Office: 605-892-3368 Ext. 3071

Cell: 605-659-1479

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**From:** Zietlow, Matthew <[mzietlow@coeur.com](mailto:mzietlow@coeur.com)>  
**Sent:** Friday, November 18, 2022 12:55 PM  
**To:** Swan, Tyler - NRCS, Belle Fourche, SD <[Tyler.Swan@usda.gov](mailto:Tyler.Swan@usda.gov)>  
**Subject:** [External Email]RE: Wharf seed mix

**[External Email]**

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Use caution before clicking links or opening attachments.  
Please send any concerns or suspicious messages to: [Spam.Abuse@usda.gov](mailto:Spam.Abuse@usda.gov)

Hi Tyler, any update on this?

Thanx!

Matt

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**From:** Zietlow, Matthew  
**Sent:** Thursday, November 17, 2022 3:04 PM  
**To:** [tyler.swan@usda.gov](mailto:tyler.swan@usda.gov)  
**Subject:** Wharf seed mix

Hi Tyler and thanks for the discussion. Attached is the documentation from the last permitting effort with NRCS approval of the seed mix. We are still using this, and just need NRCS confirmation that you are still in approval of this mix for reclamation purposes here at the Wharf Mine in Lawrence County. Many thanks and let me know if any further questions!

Matt

*Matt Zietlow* | Environmental Manager

Wharf Resources (USA), Inc. | 10928 Wharf Road | Lead, SD 57754

t: 605.584.4155 | m: 775.304.1682 | [mzietlow@coeur.com](mailto:mzietlow@coeur.com)

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