Raptor Materials, LLC.

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Wednesday 31 August 2022

To: Robert D. Zuber, P.E.
Environmental Protection Specialist
Colorado Division of Reclamation Mining and Safety
Office of Mined Land Reclamation (OMLR)
1313 Sherman Street, Room 215
Denver, Colorado 80203

From: Garrett C. Varra, General Manager

Subject: Two Rivers Sand, Gravel and Reservoir Project, File No. M-2022-013, 112c Permit Application Adequacy Review #1 – REPLY

Dear Rob.

The Division of Reclamation, Mining and Safety (Division/DRMS), Office of Mined Land Reclamation (OMLR); reviewed the contents of the Original 112c permit application for the Two Rivers Sand, Gravel and Reservoir Project (TRP), File No. M-2022-013 and submitted comments. The Division was required to issue an approval or denial decision no later than July 17, 2022. Given the limited time to respond to those concerns and pending comments anticipated from the OMLR by 5 August 2022, an initial extension was requested and granted to 15 September 2022.

The review consisted of comparing the application contents with the specific requirements of Rules 1, 3, 6.1, 6.2, 6.4 and 6.5 of the Minerals Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials (effective date July 15, 2019). Any inadequacies were identified under respective exhibit headings, along with suggested actions to correct them.

We have reviewed the Division's comments and trust the following reply will serve to fully address them. For greater continuity and ease of reference, we have iterated the comments from the OMLR Adequacy Review (Review) of 24 June 2022 and 05 August 2022, necessitating a reply according to its respective item numbers from the Review, iterated in a graphical box, with our comments in blue following:

Prologue

The permit application has been prepared as a holistic document. We believe it would be inconsistent with the intent of the Rules and Regulations or good practice to approach it otherwise. Mining must be designed from the outset and operated through the life of the mine with closure in mind. To different degrees then, all the elements of the application are interwoven and form a narrative about the development, operation and ultimately closure of the mine. Naturally the Rules and Regulations must be segmented to at least address different elements of this process, but where the context of a discussion suggests certain discussions be combined, we have done this. There comes a point when the review will so put into fractions for purposes of style as to make the application fundamentally difficult to navigate or perform as a useful tool for compliance by the Operator.

To cross reference every subject or element of the application would make the document both unwieldy and likely harder to understand and comprehend, rendering it less likely to be useful to either the operator or regulator.

For example, while some information in Exhibits D and E addresses soils and vegetation, there is another exhibit completely devoted to the same. Similarly, there are independent exhibits intended to satisfy parts of Exhibit H – Wildlife Information, which may also add to the understanding of I/J – Soils and Vegetation and other data.

Soils and Vegetation are grouped because they are so contextually close and difficult to regard separately, so keen are their influences. This is not new and is also consistent with how we access established information of the same from SCS (NRCS) reports and data, as provided under Exhibit I/J: Soils and Vegetation Information, and maps. The vegetation, being typified according to soils, shown on the maps, fully complies with a map-based description of vegetation as it may naturally occur absent man caused modifications like agriculture or natural events like flooding or wildlife impacts, clearly evident in the aerial photographs used to enhance maps. Consequently, there are extensive references to Exhibit I/J throughout this application, in large part because soils are so integral to every aspect of the project, and it would be ungainly to repeatedly end every paragraph touching on the subject in Exhibits D, E, or others with redundant references.

The same logic applies to Exhibit G: Water Information, which may also have other supplemental water information contextually placed in other exhibits. An effort is made to call out these respective exhibits where the information desired in one exhibit is found in another, or as it may be otherwise be identified by a map legend.

With regard to map exhibits, please consider the aerial information at scale is intended

to speak pictorially and provide substantial detail. Typically maps includes additional information to aid clarity, even though such information is not necessarily called out by the Rules and Regulations. This serves to minimize extensive additional narrative. since a picture (commonly) really is worth a thousand words.

It should be considered that the Rules and Regulations call for a considerable amount of information that must appear on the included maps. Some discretion as to what is revealed and how on a given map exhibit is in part determined in the submittal to meet the demands of communicating to a broad audience. Some information that might appear or not appear on a given map are commonly represented on another for the sake of context with the associated narrative under the same or similar intent.

We are aware of the present-day names and full anacronyms of governmental agencies referenced in this submittal. It is a matter of convention versus free expression as a reasonable person might view it. Clearly, the Agency comments suggest it understands the application of the names and letters that we used. In other cases, we are unclear on apparent conflicts with the Rules and Regulations.

- OMLR (it has been suggested we remove this acronym as it does not exist):
  It's in your Definitions:
  Rule 1.1 (32)

  (32) "Office" means the Office of Mined Land Reclamation within the Division of Reclamation, Mining and Safety (DRMS).

  It's in your Rules and Regulations:

  Any reference to the Colorado Office of Mined Land Reclamation is consistent with the following Colorado Revised Statutes, as of year 2020 (Source: Justia › US Law › US Codes and Statutes › Colorado Revised Statutes › 2020 Colorado Revised Statutes › Title 34 – Mineral Resources › Article 32. Colorado Mined Land Reclamation Act › Section 34-32-105. Office of mined land reclamation – mined land reclamation board created.

  Universal Citation: CO Rev Stat § 34-32-105 (2020)

  (6) There is hereby created, in the division of reclamation, mining, and safety in the department of natural resources, the office of mined land reclamation and, in the department of

natural resources, the mined land reclamation board. The head of the office of mined land reclamation shall be appointed by the director. The head of the office of mined land reclamation shall have professional and supervisory experience in mined land reclamation, mining, or natural resource planning and management.

- Change "NPDES" to "CDPS" to reflect the requirements of the Water Quality Control Commission. Our only reference to NPDES was simply incorporating the following text directly from the rules.

  Rule 6.4.7 (5)

  (5) The Operator/Applicant shall affirmatively state that the Operator/Applicant has acquired (or has applied for) a National Pollutant Discharge Elimination System (NPDES) permit from the Water Quality Control Division at the Colorado Department of Health and Environment, if necessary.

Also, any effort to update agency names betrays our desire under the First Amendment to maintain a casual reference in place of convention, which is apparently easy enough to follow, and has been since 1999. For example:

- We use DOW in reference to the Colorado Division of Parks and Wildlife, but left out Parks – because wildlife is involved, but not parks. We are aware of their formal name and alphabet soup.
- For the Colorado Division of Water Resources, we may use DWR or OSE– for the Office of the State Engineer, or some, SEO for State Engineer's Office, which resides within the Division. Our abbreviations occur in parenthesis at least once in reference to their full expansion.

In future submittals, we will make efforts to bring some of these forward as desired, but for consistency and to avoid possible confusion in the many documents making up this application and in keeping with convention accepted in our submittals since 1999, it is preferred to maintain the current acronyms.

June 24, 2022 Adequacy Review – General Comments

1) On May 18, 2022, the Division approved a transfer of the Two Rivers Sand, Gravel and Reservoir Project 112 Application from Varra Companies, Inc. to Raptor Materials, LLC. Please provide a letter from Kevin Jeakins (as part of your response to this adequacy review) stating that Bradford Janes is authorized to act as a permitting representative of Raptor Materials LLC.

The work and prior submittals of Bradford Janes, a Professional Forester and Soil Scientist, having nearly 43-years of experience in orchestrating the diverse talents and content that comprise Minerals Section permits of the Colorado Division of Reclamation Mining and Safety's (DRMS), Office of Mined Land Reclamation (OMLR), is presently employed by Raptor Materials, LLC. (RM).

All submittals through our Office of Special Projects represented essential continuity from his work under the same with Varra Companies, Inc. His work continues, now under the direct responsibility, oversight and approval of my Office, as signified below; and continuing under Garrett C. Varra, General Manager and former President of Varra Companies, Inc.; all under the authority of Raptor Materials, LLC.

Please NOTE: Since the Application began under Varra Companies, Inc., a Succession of Operator to Raptor Materials, LLC has since been approved by the OMLR. Garrett C. Varra is now our new Permittee Contact and Designated Representative, until and unless otherwise notified.

Kevin Jeakins _____ Sep 2 _____, 2022

Kevin Jeakins, Vice-President
Raptor Materials, LLC.

2) Please commit to submitting Financial and Performance Warranties with the name Raptor Materials, LLC.

All financial and performance warranties necessary for the issuance of an approved OMLR Permit will be submitted, as underwritten by or for, **Raptor Materials, LLC**.

3) The Division received timely state agency comments from History Colorado and the Division of Water Resources, as well as a late comment letter from Colorado Parks and Wildlife. The letters from these agencies are included as an enclosure with this adequacy review letter. Please review the letters and provide comments accordingly.

The comments from History Colorado are acknowledged. RM intends to complete a Class III Intensive Cultural Resource Inventory of the permitted area.

Concerning comments from the Division of Water Resources, RM has affirmed in Item 54 of this response that all permits including well permits and documents related to water rights, such as a Substitute Water Supply Plan will be obtained and provided before actions requiring permits commence. A revised application for CDPS General Permit COG500000 Discharges from Sand and Gravel Mining and Processing is submitted with this response.

Comments from Colorado Parks and Wildlife are addressed in various comments throughout this response and in the response prepared by ERO dated August 26, 2022 attached as an addendum to Exhibit H.

Application Form

4) The application form must be updated to indicate that the new permittee is Raptor Materials LLC.

An updated and signed, Regular Impact (112) Construction Materials application form under Raptor Materials, LLC., is attached.

5) On Page 1, Item #1.1 of the application form, the Applicant indicated the type of organization as a corporation. Please provide the corporation seal on Page 8 of the application form, if the corporation does not have a seal please indicate "no seal".

Raptor Materials, LLC., is a Limited Liability Company and does not have a Corporate Seal. Consistent with Item #1, above, a newly completed 112 Construction Materials Application is provided as requested and having the signature of the Vice-President of Operations.

6.2 General Requirements of Exhibits

6) Rule 6.2.1(2)(b) requires maps be signed by a registered land surveyor, professional engineer, or other qualified person. Please submit signed copies of the Exhibit C and Exhibit F maps

All maps for Permit M2022-013, were submitted Digitally. All maps show they were 'Drawn by: B. L. Janes.' There is no reliable way to insert a legitimate signature on the maps.

Please allow this reply to serve as testimony and signatory that all maps previously created in cooperation with diverse content providers and technical support, with Autodesk software and utilized by the Office of Special Projects, from which the

final drawing was created by B.L. Janes. The content includes survey and aerial data for optimum accuracy and portrayal of all features and content to scale; including area roads, vegetation, and other obvious features as apparent or otherwise identified there-in, such as internal irrigation ditch-works all owned by Raptor Materials, LLC.

This Signature, below, bears witness to this effect that all maps as submitted prior to this date were digital reproductions on .pdf and in this instance were Drawn By: B.L. Janes.

B. Janes 31 August, 2022

B.L. Janes

PLEASE NOTE:
Future Map Submittals beyond those already provided with the Original Application, or under this Adequacy Reply, will come with separate letterhead bearing this OR a similar Affirmation relative to the assigned Cartographer, and Original (not facsimile) Signature in Blue Ink as Drawn By; will apply equally to ALL as Signified, Signed and Dated, as provided with that submittal.

Kevin Jeakins Sep 2, 2022

Kevin Jeakins, Vice-President
Raptor Materials, LLC.

6.4 Specific Exhibit Requirements – Regular 112 Operations

The following items must be addressed by the Applicant to satisfy the Mineral Rules and Regulations of the Mined Land Reclamation Board:

6.4.1 Exhibit A – Legal Description

7) The Applicant indicated that a portion of the permit area is in Sections 3 and 4 of Township 4 North, Range 65 West. However, it appears (based on the Exhibit Map in Exhibit B) that the text should indicate Range 66 West instead of 65 West. Please address this apparent error and revise the Exhibit A text as necessary.

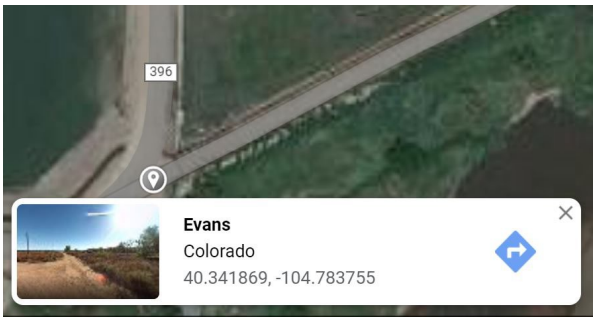
Exhibit A has been updated to reflect the correction, as attached.

8) It appears that the coordinates for the Central Field SW Entrance are incorrect. Please check them and revise the Exhibit A text as necessary. (The coordinates

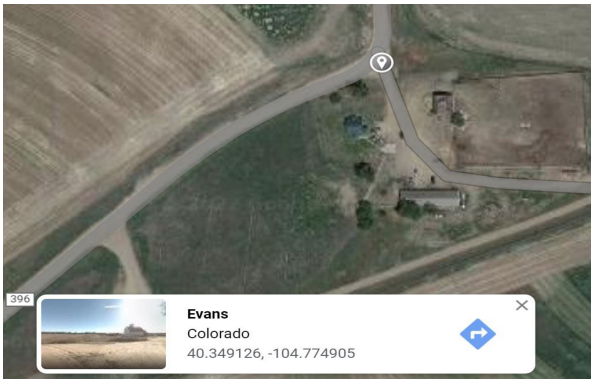
listed for this entrance appear to be near the Varra Coulson Project.)

Three locations were corrected as reflected in the revised Exhibit A, and verified via supporting Snippets of the coordinates captured from Google Maps, which follow, below:

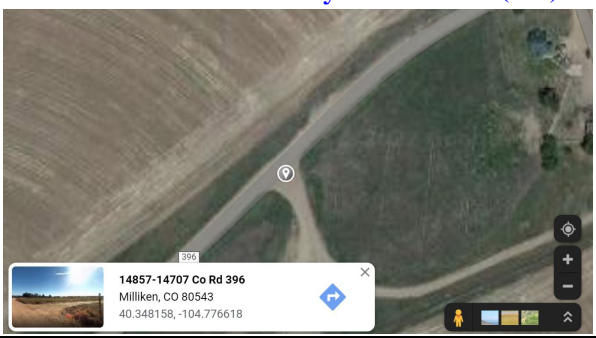
SouthWest Entrance:



The Homestead (North) Entrance:



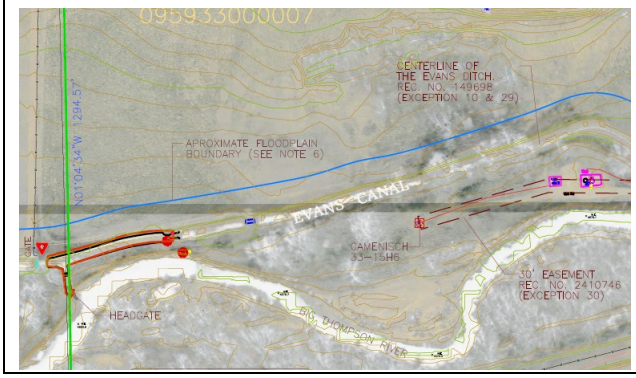
The Primary Entrance (#8):



6.4.3 Exhibit C – Pre-Mining and Mining Plan Maps of Affected Land

9) The irrigation ditches need to be clearly shown and labeled on the Existing Conditions Map (Exhibit C-1).

The Evans Ditch is labelled. The internal irrigation ditches are owned and controlled by RM, are visibly evident in the aerial image. While these company owned ditches are predominantly outside the extraction limits, some are inside the extraction limits and will be lost to extraction.



10) Also, per Rule 6.4.3I, the existing vegetation at the site should be shown.

Aerial images are provided to reflect a better understanding as to the nature of the diverse vegetation that either exists or could exist over the affected lands. Since it is stated that extraction occurs with the cropped lands exclusively, the denuded lands shown in the aerial image reflect the seasonal absence of crops. Crops may vary in composition from year to year, so any manifestations as to what kind of crop, if any; or the state of cover, is somewhat misleading.

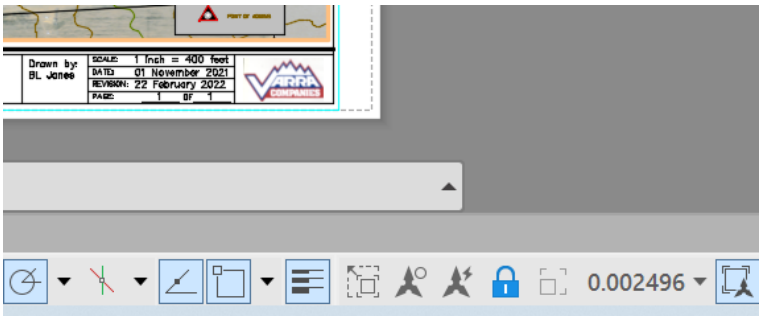
Still, while we believe the aerial image satisfies the requirement, it should also be understood that this submittal is consistent with those submitted to the OMLR since 1999. We believe your colleague, Peter Hays, can attest to this.

Further, there is ample information in Exhibit I/J – where the native vegetation that may exist as correlated to area soils is fully manifested in the included Range Site Descriptions, per SCS/NRCS publications. Further, information is provided that much of the cottonwood corridors that occupy a majority of the riverine areas have vegetation that is atypical, since it is highly overgrazed or otherwise disturbed by natural conditions, sporting a near monoculture of smooth brome or diverse annuals.

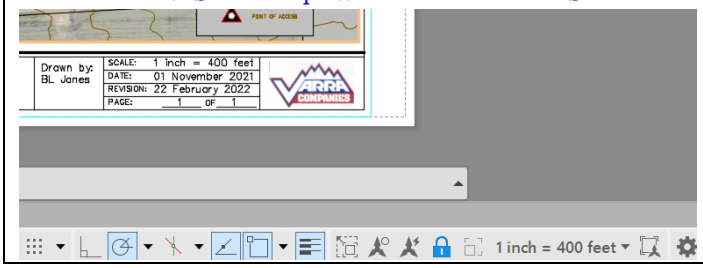
11) The scale on Exhibit C-1 appears to be incorrect. Please check and revise as necessary.

It was off, but so little you could just see a minor shift in the image as the Scale was remedied. A corrected version at 1" = 400' of the Original Drawing now in .pdf, is included with this submittal. Please keep in mind that in the translation of highly complicated drawings produced in Autodesk Civil 3D and Raster Design, some loss may occur as Adobe attempts to translates the .dwg files of Autodesk, into usable .pdf files necessary in communicating the OMLR permit to a diverse agency and public audience.

Then (the scale reflected as indicated at 0.002496):

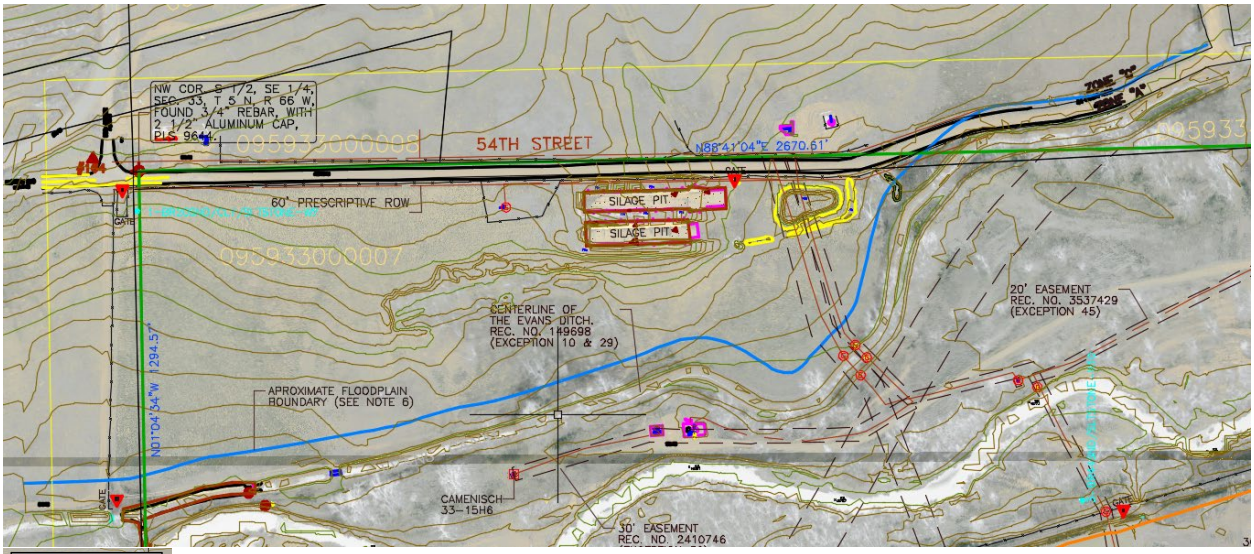


Now (the scale reflected as indicated at 1 inch = 400 feet – as set in Model Space). Note: Revised Map with corrected scale included in .pdf with this digital submittal:



12) The legend on Exhibit C-1 includes the 100-year floodplain, but the floodplain lines are not on the map. These lines should be added to this map as well as the Extraction Plan Map, Exhibit C-2.

The 100-year floodplain intersects the affected lands only to the north of the Big Thompson River and can be seen in both drawings. It's clearly identified in the C-1 Legend where the 100 Year Floodplain appears in True Blue. The line remained as a reference on Exhibit C-2, but having been called out on C-1, did not appear in the C-2 Legend.



13) For the sake of clarity, the Division recommends that the entire permit area be permitted to be affected, and this should be stated in Exhibit C and Exhibit D. (The Division recognizes that this statement is made in Exhibit L.)

Your language is accurate, for it provides more precisely that all lands within the permit boundary may become 'affected lands.' Regardless, this statement is included in the Original Submittal – Exhibit D, Pages 5 and 8:

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6.4.5 EXHIBIT D – Extraction Plan

5.11± feet from the surface, we determined the Static Water Level using the upper limit of 5.0± feet. The Cyan colored contour shown on Exhibit G: Water Information Map represents the Static Groundwater Elevation at 4675' at North-West Field, and 4673' at Central Field. Since completed reservoirs will be lined to meet State of Colorado Water Resources specifications and requirements, and since lined basins will ultimately equalize with the surrounding groundwater elevations, the Static Water Levels shown should reasonably reflect those of the both the lined or unlined state; and represent a proper reflection of the optimal surface area of the water over the finished basins. Varra Companies, Inc. has sufficient water to meet the circumstances and obligations of both the lined and unlined states; and as reflected under Exhibit G: Water Resources Information; until and unless the reservoirs have an approved liner, the Operator will dedicate sufficient waters to secure the reclamation of the resulting basins in the unlined state.

Planned Field Activities: The 409.23± acre parcel boundary forms the permit boundary, as reflected on exhibit maps. All lands under its direct control within the 409.23± acre permit area, are affected lands under C.R.S. 34-32.5-103(1), respective of this permit application. As a result, any changes required in the nature of planned extraction or reclamation will be made only through the Colorado Office of Mined Land Reclamation (OMLR), by Technical Revision only. If lands are needed beyond the designated permit boundary, those lands will be secured for the active OMLR permit by Amendment.

AND:

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6.4.5 EXHIBIT D – Extraction Plan

Operations will predominantly utilize unmodified existing agricultural field access roads (unless otherwise indicated), which will themselves be subsequently extracted in time where they fall within the extraction limits shown on Exhibit C-2: Extraction Plan Map. No other defined roads within the Extraction Limits will occur except for the temporary paths created by extraction equipment, or otherwise determined by subsequent Revision to the permit.

All existing agricultural roads outside of the designated extraction limits will be retained according to the desires of the landowner. The same shall form part of the final end use of the reclaimed lands, unless otherwise indicated in this submittal or by subsequent permit revision. For purposes of this submittal, all lands within the indicated permit boundary will be considered affected lands, but only those locations between the existing access roads, and which otherwise remain above the anticipated static water level of the resulting basins, will be soiled (where soil is absent) and seeded to establish vegetation consistent with the approved reclamation plan.

14) During the pre-operations ground truth inspection on June 14, 2022, the idea of relocating the access point at the northwest corner of the site (to the east) was discussed. Please update Exhibit C-2 to reflect any change in that location.

No changes to Exhibit C-2 are necessary as no change is proposed to access at this time. Alternate plant site development and access may be considered at a later time if possible and in consultation with the City of Evans. Any future changes will be included as part of a Technical Revision to the approved permit at that time.

15) Please add the following to the Extraction Plan Map, Exhibit C-2: roads, parking and equipment storage areas, levees, soil piles, keyways, settling basins, and other structures pertinent to the mining operation that are not currently shown on the map. Comments on the map can indicate where these features are subject to change.

There are no established parking and equipment storage areas. Parking may occur within planned active extraction, along existing access roads, or within the Homestead location.

Levees are also access roads for street legal vehicles and service trucks. These roadways atop the levees are not designated for extraction and are visible to scale on the outer perimeter of planned extraction areas.

There are no soil piles at this time, except that identified as stockpiled soil from the adjacent Westervelt Wetland Bank, and as established and set aside over the entire NE Section of Central Field, as stated in the application. Updates to soil stockpile conditions over the NE Section of Central Field, or other locations, may also be updated in required Annual Reports as conditions warrant.

As previously stated in the application, keyways are a feature that run at or near the toe of extracted slopes. It is unprecedented to show them in an application but can be updated in required Annual Reports to better reflect their size and extent, as they are field fit concurrent with extraction progress, which may vary in a manner difficult to portray in advance. Here's some additional information taken from the application on the planned keyways:

6.4.12 EXHIBIT L - Reclamation Costs

follow the perimeter of the extraction limits over approximately 75.45± acres in order to establish the perimeter keyway for the 127.10± acre Center Section of Central Field. The perimeter extraction will leave a 51.65± acre Core, that may be extracted as needed as keyway drainage capacity allows.

The initial extraction area is bordered to the South along a near 800± foot section of oil and gas line that is pending removal; along with the two oil and gas wells, also pending removal (refer to Exhibit C for ownership details). Extraction will not occur within 10 feet of these lines, or 25 feet from the wells, as indicated in the setbacks detailed under Exhibit D: Extraction Plan. Below this gas line is an existing pond and well that will be used as a Settling Basin Area, containing at present a solitary settling basin and pump as a point of discharge of groundwater. This pond may be expanded or added to below this line, and may then be extracted itself once discharge is discontinued for Central Field Operations.

Perimeter Keyway Extraction will maintain a perimeter slope no steeper than 1.25H:1V, except for the perimeter shown in red along it's extraction limit, and respective toe where cut slopes will not exceed 2.00H:1V; as indicated (refer to Exhibit S: Stability Analysis for additional information). At the toe of the cut perimeter slope is the keyway that runs below the extracted deposit of the basin, into the bedrock, which allows the subsurface waters to flow to the settling basin and discharge pumps necessary to keep the cut basin dry during a time of extraction and reclamation of the affected perimeter slopes.

The keyway dimensions may vary more or less from 4± to 8± feet in depth and 4± to 16± feet in width. Extraction must be broad enough to allow equipment to safely approach the toe and exise the bed dimensions where the resulting channel is sufficient to convey the groundwaters to the settling basin for discharge.

Please Note: The graphic representation of the Perimeter Keyway Extraction and Core are idealized, and may vary in shape and size presented. Annual Reports will report on the nature and extent of affected lands and more properly reflect actual conditions on the ground in a given year of operations.

6.4.4 Exhibit D – Mining Plan

16) In this and other exhibits, an effort should be made to update agency names. For example, the Colorado Division of Wildlife is now Colorado Parks and Wildlife. The abbreviation CDH should be CDPHE.

Please refer to the discussion as it applies to the use of agency names and anacronyms, as discussed in the Prologue, above.

17) The mining plan (aka extraction plan) requires more detail. In particular, the plan should include a schedule that specifies the areas to be worked for given phases, with ranges of time periods. The phases described in Exhibit D should be coordinated with the Extraction Plan Map, Exhibit C-2. The operator can change the plan later, as needed, with technical revisions and/or amendments. Additional clarification on the sequence of the mining plan is necessary to calculate the

required financial warranty.

Fields vs. Phases: As detailed in the Extraction Plan over pages 13 and 14 (copied below), we detail a modified Phasing Plan based upon Field Sections. The NW Field is Separated in the whole by a public road from Central Field, while Central Field is bound together in three contiguous Sections (you may consider them Phases, although not sequential phases as they can be accessed simultaneously in time). So, the Fields and Sections are distinct from conventional mining phases, in that with enough Warranty, any or all can be accessed and extracted independently and simultaneously, instead of sequentially.

One of the attributes of our Established Extraction Methodology is the use of flexibility to aid a rapid access to the deposit and completion of the basin. If needed, four separate extraction teams could be set up in each Section or Field to speed or adjust the extraction timeline. This has been a feature accepted by the Office over many submittals and many years. Your own Specialist, Peter Hays, can attest to this.

The timely application and use of Annual Reports, or Technical Revisions, to anticipate and adjust attending Financial Warranty to allow the operations to **pulse** over time is a humble approach that respects the requirements and objectives of the Rules and Regulations. The idea is designed to reduce the need for untimely delays and expensive permit revisions, as well as needless field operation conflicts that can also jeopardize Compliance with otherwise rigid self-imposed constraints. The greater beneficial effect is to flexibly match extraction and subsequent reclamation as operations adjust more naturally to shifts in market demand that determine the functional life of the mine. This is a projected 35-year life of mine operation that could be shortened or lengthened by economic influences and other factors for which we and your Office cannot reliably or genuinely foresee.

This answer will play out for Exhibit L as well, as the entire described Onset Area is not essentially planned for disturbance, simply the area where initial disturbance may onset, however, given possible directions NE and SE along an idealized core, could affect 8-16 acres over the course of the initial 2 years, unless we hit a depression and it takes 10 years instead. Unlikely as either are, they are projections in time. The actual areas will be monitored using aerial imagery and handheld survey instruments to monitor and report the acreages and make revisions to the Plan and estimated Warranty in response to the current market drivers of the business. We will then reflect this on related maps and as content through the annual report process as determined at the time.

Active Resource Recovery: Following soil salvage, the balance of the extractable deposit will be removed to the depth of the unconsolidated or weathered bedrock, transported by conveyor to the plant site pit run, and subsequently manipulated as desired by screening, crushing, washing, and other methods to size and properly dimension the earth product into diverse merchantable materials for sale. Resource recovery will commence radially North and East from a point near the existing pond and planned first discharge point shown near the Southern boundary of Central Field.

There are no fixed sequences or phases scheduled as part of the extraction plan. Instead, Fields are used instead of Phases to describe the activities, since each Field can be accessed concurrently instead of sequentially with the

6.4.5 EXHIBIT D – Extraction Plan

other; as reflected or otherwise updated as part of required OMLR Annual Reports. Under this method, extraction is 'pulsed.' As such, the rate of extraction and subsequent reclamation will slow or quicken according to influences of the markets, weather, and internal logistics. Flexibility in Operations encourages better outcomes when adapting to changing circumstance or unexpected field conditions, and may involve actively working different fields or different parts of the same field as necessary.

Generally, flexibility aids integrity of operations and encourages optimizing operational activity and subsequent reclamation of affected lands. Therefore, any method that accelerates the extraction timeline will be utilized, and should be encouraged to better engage the unpredictable elements and variables that reasonably affect the capacities of the Operator.

Exhibit C-2: Extraction Plan Map, shows the location and planned extraction limits, general direction of extraction, and related features described above; along with features made obvious in the included aerial image of the permit location and surrounding lands.

Additional information is provided under Exhibit C-1: Existing Conditions Map; which shows all known current and active significant man-made structures located on or within 200 feet of the permit boundary detailed under including creeks, roads, buildings, oil and gas facilities [such as tanks, batteries, wells and lines], and power and communication lines and support structures, easements and rights-of-way; located over the permitted lands or within 200 feet of the same. A listing of the adjoining surface owner's names and addresses located within these areas are listed under Exhibit C Text, correlated with those shown in the afore-mentioned Exhibit C-1: Existing Conditions Map.

18) The discussion on pages 6 and 7 regarding structures and easements should discuss which structures and easements will be relocated or removed from the site (if any).

For lands within the Extraction Limits, only those structures, easements, and rights-of-way shown in Exhibit C-2: Extraction Plan Map, are anticipated to remain from those shown under Exhibit C-1: Existing Conditions Map. If changes to existing or possible revised structures, easements, or right-of-way are in any manner retained, or where they might occur subsequent to OMLR approval of this application, then a Technical Revision will be submitted to update Exhibit C-2: Extraction Plan Map. All established set-back distances from planned activities will be maintained regardless.

Operations are not intended to affect existing structures, Easements or Right-of-Ways within the Planned Extraction Limits or related Processing Areas and Wash Pond, and are designed to avoid and retain any structure, Easement or Right-of-Way on the surface, and subsurface. Future agreements may be reached allowing mining in areas currently identified as being restricted to mining containing certain structures, Easements or Right-of-Ways.

Exhibit C-1 shows and identifies all these features understood by us, and the respective Surveyed information, and correlated Observation and Title Work upon which they are based and represented on the attending Maps. The Maps are not Surveys. They are Maps and as such, they comprise a reasonable representation of all site features, but must not be relied upon by themselves exclusively for location purposes. Maps and features are not a substitute for identification of underground structures and will rely upon location services of the 811 service.

Exhibit C-2 shows the remaining Oil Wells and Lines within Planned Operations at the time of the Submittal. Any revisions, additions, or modifications of residual Oil Wells or Lines will be avoided as represented on updated Maps and Revisions to the Permit, and consistent with Setback Distances identified in this submittal. Removal of any Existing Structures such as the Oil and Gas structures and or lines, will be updated on required Annual Reports, or by Technical Revision, as warranted, or as otherwise directed consistent with Colorado Statute.

19) On page 7, more detail is needed for the roads onsite. Please explain which roads will be built and which will be modified. Explain construction method and dimensions.

All lands within the Extraction Limits will be traversed during extraction and are not roads. Areas outside of Active Extraction that have existing agricultural access roads below the existing riverside berms, may be accessed by all manner of vehicles and equipment and may be modified accordingly.

In this instance, these are not leased lands but Owner Operator lands. As such, any improvement of existing access roads, or creation of new access roads, are capital improvements of the land. Therefore, all improvements to access are an asset to the landowner, and as such, will not be removed by a default by the operator, but retained subsequent to extraction where they are not otherwise removed by the same. This is established real property law.

As to design widths and composition, this will be field fit and determined, and updated in required OMLR Annual Reports. Road widths will vary but may typically be 10 to 40 feet wide depending on end use. Road surfaces will be fit for purpose and constructed using site produced materials if necessary to improve or establish the running surface.

20) On pages 12 – 13, the discussion on stockpiles should include text indicating that soil management practices will protect the soil piles from erosion, prevent contamination of the soil from toxic or acid-forming material, and ensure that the soil will remain usable for reclamation.

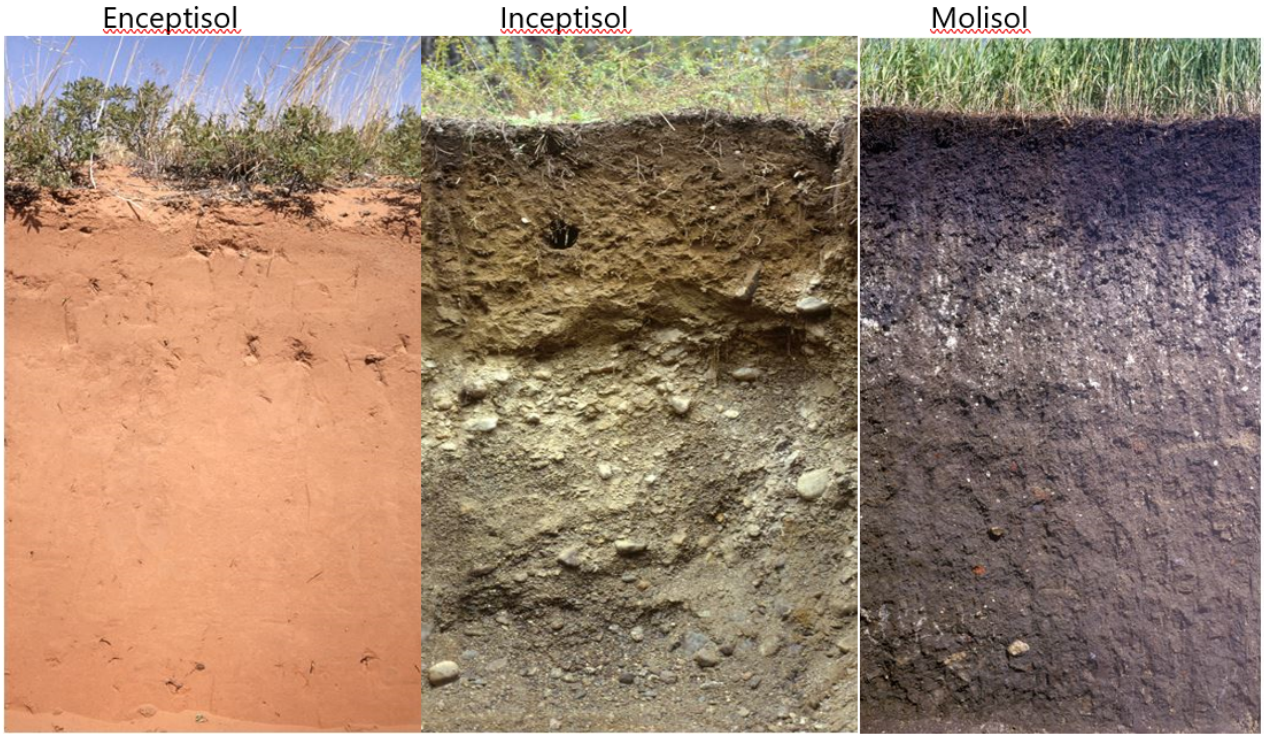
Comments 20, 23 and 32 we believe are best addressed in a comprehensive rather than fragmented manner.

Consistent with the backfill permit, it would be highly unusual that an alluvial aggregate operation would find potentially toxic or acid forming materials, nor would they if found be utilized. Sulfur is sometimes used on plains soils where acidification moderates alkalinity or the planting of evergreen trees which prefer a slightly acidic soil. Nonetheless the Operator's intent is not to create or import such a problem. If found on site such materials would be disposed of in an appropriate landfill. The application does attend to the real threat on irrigated lands, which is the accumulation of salts due to evapotranspiration in some circumstances of the lower soil profile, which profile is significantly absent in Unit 3 Soils, as iterated here:

Continued...next page...

6.4.5 EXHIBIT D – Extraction Plan

Unit 3 soils commonly form within floodplains. As a result, differing states of soil formation may exist within the soil unit designation; such as soils with little horizon development like Entisols and Inseptisols. Mollisols with deep well-developed horizons may exist in the minority and the near fringe of planned extraction. Refer to graphic above, and bleow.



Soil Morphology

With over a century of agricultural manipulation of area agricultural fields, prior mixing or importation of soils for land leveling, or flood plain management in the creation of levees, may have dramatically altered the original native soil profiles and properties. The native A profile of the upland terrace found within the agricultural Fields at the TRP, is predominantly modified as a plow (Ap) layer of 6.0± to 8.0± inches. The historic practice of incorporating manure into the plow layer should have served to maintain the organic base and quality of the cropped soils and accelerated soil horizon formation and development where it was lagging. Since the cropped soils have been irrigated, care should be taken not to salvage soils greater than 12.0± inches in depth to avoid mixing of potential accumulated salts.

We use Exhibit I/J to expand upon Soil and Vegetation considerations that are also considered relevant to Exhibit E – the Reclamation Plan and correlated as well in attending supplemental information provided from the U.S. Natural Resources and

Conservation Service (formerly the U.S. Soil Conservation Service). The SCS were the principal authors and creators of soil conservation and management throughout the United States, and the first to systemically incorporate plant-soil-water relations in their considerations, which are certainly a factor in our own and reflected in the correlated exhibits to reflect their influence and relevance in this submittal.

Persons familiar with the SCS/NRCS, know these are the authors of Soil Stabilization, so we commonly locate this information under Exhibit I/J, where the information used for those considerations resides. Subsequently, what follows is a guide through the Application to reveal how the matter was addressed. We hope this clarifies and assures the Office in this manner.

It should be understood that the application attempts to guide the reader point blank, as follows:

6.4.5 EXHIBIT D – Extraction Plan

Soils found within the entire project area are described more thoroughly under Exhibit I – Soils Exhibit, and the attending Exhibit I/J – Soils and Vegetation Map, shown not to scale, above. Additional geologic considerations are also included under Exhibit S – Stability Analysis.

Area and Site Geology: The area geology is typified by mixed alluvial and

Soil Stabilization methods are rather extensive in the application, intended to minimize erosion and impacts to waters and adjacent lands. Specifically, soil salvage and stockpile stabilization are called out by topic under Exhibit D, as follows:

Continued...next page...

Soil Salvage: Resource recovery will commence by first removing the upper [A profile/plow layer] six to twelve inches of soil [six (6.0±) inches typical], combined with existing grass or crop stubble. Removal will utilize scrappers or excavators, aided by dozers where necessary, and hauled to the Northeast Section of Central Field. All extraction and surface related activities detailed in this application will occur under an approved Fugitive Dust Permit issued by the Colorado Department of Public Health and Environment (CDH).

Until resoiling activity occurs, where harvested soils have been stockpiled and remain undisturbed for reclamation or sale, they will be seeded with the mixture specified under Exhibit L - Table L-1: Primary/Preferred Revegetation Seed Mixture. A stabilizing cover of native vegetation may take up to three years to fully establish the desired cover. In the event the native seed mixture fails, an optional mixture of predominantly introduced species will be used as a fall back to better assure a stabilizing cover of vegetation. Still, using the

6.4.5 EXHIBIT D – Extraction Plan

preferred native seed mixture offers opportunity to gauge the potential performance of the selected species prior to utilizing it over larger areas requiring reclamation later in the life of the resource recovery operation.

Once vegetation is established over the initial reclamation soil stockpiles, they will likely remain untouched for the life of the operation until final reclamation of remaining affected lands takes place. Where concurrent reclamation is possible, operations will utilize soil in an over the shoulder method when practical. In this manner, reclamation is expedited without increasing soil stockpile volumes while reducing expenditures related to labor, handling, and time.

There are no agents preventing the soil from functioning for reclamation other than the inevitable loss of some native soil structure, organic matter, and fertility that can be compensated for by any analytically determined need at the time of resoiling and revegetation, via analysis using of soil samples by the CSU Soils Laboratory. This and other measures are detailed in the application under Exhibit I/J: Soils and Vegetation Information, as follows:

Continued...next page...

Once applied to the surface, the new soils will be exposed to the raw forces of erosion until adequate vegetative cover and root mass develops. Erosion requires both detachment and transportation in order to occur. Running water, wind, and raindrop impact are the main forces of erosion acting upon the soil. The use of a sterile hybrid live cover crop will aid in the stabilization of the soil by allowing a quick vegetative cover to become established in advance of the native grasses. The hybrid will also serve as an aid to reduce competition resulting from the establishment and growth of unwanted pioneer species (weeds) on disturbed ground.

The attending reclamation seed mixture, and as approved, has a provision for the use of a sterile hybrid grass in lieu of mulch. Mulch, even when crimped with specialized equipment, is subject to being blown off the property, or reduced to an ineffective stubble. Often, it has been observed to intercept rainfall where it quickly evaporates from the stubble surface, limiting the benefits of light precipitation by preventing infiltration and percolation of moisture to the root zone. The hybrid on the other hand will establish quickly, but since it is sterile, will not continue to compete with the emerging native grasses. After two to three years, the hybrid grass will begin to die out just as the native grasses emerge and improve their dominance over the revegetated areas.

Increasing Organic matter, such as the incorporation of manure into fallow soils, will aid in the restructuring of the new soils by increasing the moisture and fertility holding capacity of the upper profile seed bed, while simultaneously facilitating healthier plant-soil-water relations and overall root development of the emerging grasses. As the roots of the emerging grasses develop and mature over time, the resulting root mass will serve to build upon the base percent organic matter content of the new soils, thereby increasing the potential for long term survival and spread of the established grasses. Soil testing may occur on the new soils to better gauge the need or success of any applied organic soil amendments respective of the resulting vegetative cover.

The addition of fertilizer may also aid in the establishment, growth and survival of the emerging grasses. Fertilizer may be applied to the seeded areas at rates determined from soil tests of the reapplied soils. To this end, soils may be sampled as needed. Sampling will utilize a hand auger and approved NRCS soil sample bags, and utilizing recommended procedures. Any soil testing will be conducted by the CSU Soil Laboratory in Ft. Collins, Colorado. The tests will be used to monitor soil quality and suitability of any amendments. Fertilizer may be withheld until after emergence to deter the encouragement of weed species. The use, composition and rates of

fertilization will be determined prior to the time of seeding where appropriate, and may be reported in the OMLR Annual Reports, as appropriate.

WEED MANAGEMENT PLAN:

Because the Agricultural Fields are the only planned area where the deposit itself will be extracted, it should be understood they are within the floodplain of two rivers. As such, stockpiling and placement of soil is initially designated outside of the flood plain on top of the pre-existing soil stockpile located over the NE Section of Central Field, until such a time as sufficient detention can be created to

accommodate above ground stockpiling. The application provided a copy of the Westervelt project detailing that this area of extraction was removed by the City of Evans from the floodplain. There are no floodplain impacts anticipated by continued stockpiling of soil over that location.

We can affirm here that stockpiling above the existing ground elevation will not occur in a manner understood to obstruct flood waters where they might occur within the existing floodplain. It is understood and agreed here-in that their longitudinal dimensions if they occur there should extend parallel to anticipated flood flows where they exceed a cone or other shape that might find its existence contrary to intent by volume beyond that which could be understood to be temporary, or transitory; especially outside of seasonality where flooding might be more reasonably anticipated.

What follows is information provided in the application (Exhibit I/J) that was intended to address this concern as to existing volume stockpiled at that location; and a volume which exceeds the necessary volume needed to reclaim the completed project. The thickness of topsoil capping to be placed is stated as "All affected lands between the extraction limits and remaining above the anticipated high-water mark of the basins will be capped with a minimum of six (6.0±) inches of soil, as supported by Exhibit I & J – Soils and Vegetation Information." In Exhibit E (p5) and "there is sufficient soil to assure a re-soil depth of approximately six inches over the basin banks above the anticipated static water level of the reservoirs" in Exhibit I/J (p4). Haul and push distances to re-soil will vary based on the actual progress rate and active sections of the operations. Where possible once the operation matures over the shoulder placement will be employed where possible for efficiency and best outcomes with soil. RM will report this activity in the Annual Report as the circumstances for re-soiling become clearer.

6.4.5 EXHIBIT I/J – Soils and Vegetation Information

A portion of *in situ* soils may be used in an over the shoulder method to resoil the completed banks of basin slopes or other upland areas in time. Commonly, soils will be parked in stockpiles until ready for application in a manner more fully described below.

Consistent with existing zoned agricultural practices, soil from an adjacent wetland bank was approved by the City of Evans, and completed in early 2021. The City of Evans approved (refer to the Addendum at the back of this Exhibit) the placement of these soils within the floodplain of the upper North-East portion of Central Field, as shown on Exhibit C-2: Extraction Plan Map. These orphan soils are in place, seeded, and the area remains under continuing agricultural production, yet are no longer part of the area floodplain. The current extent of this 200,000± cu.yd. stockpile is represented on Exhibit L: Financial Warranty Map. This stockpile location area will also receive a portion of soils removed from planned extraction locations over other areas of Central and North-West Fields. It should be noted that a monoculture of cultivated corn occupies a majority of the planned areas of extraction, and will gradually be turned out of production through extraction. This soil may be utilized to line the resulting basins, for reclamation of affected lands above the static water level, or for market as warranted.

21) On page 14 in the second to last paragraph, the sentence that begins "Specific variations in the location of …" should be rewritten. The structure of this sentence does not follow standard rules of grammar, and (more importantly) the meaning is not clear. Please revise this statement accordingly.

The paragraph segment was simply a DRAFT oversight.

There is a tendency to look at lines drawn on a map in a rather precise manner. The forces of nature have laid down a valuable resource that cannot be defined with absolute precision and consequently, applications and actual conditions combined with human error and massive equipment sometimes are unable to make that pencil lined vision in ink line up with reality. Slight variations and departures in the field may occur from time to time, often to ensure safe conditions, minimize impacts, or to fulfil an obligation to maximize the recovery of the resource. Here's a better version that now clarifies this spot under Exhibit D:

'Minor variations may occur in the field over time from those represented on Exhibit Maps. The plans detailed in this application are based upon future events for which minor or temporary departures at any point in time may be evident. To the extent any significant departure in the field occurs in a time and manner not otherwise anticipated in these exhibits, the operator may cure by self-inspection, by observation from OMLR inspection in a timely manner, or by operator-initiated Revision to the Permit or otherwise via clarification in attending required OMLR Annual Reports.'

22) On page 14 in the last paragraph, the units are not specified (appears to be 125 feet), and this should be revised. Also, add a discussion on pipelines to this paragraph as appropriate.

As seen on the paragraph preceding the oversight, as reproduced by Snippet, below; underground gas lines or other underground facilities are referenced. The missing units are confirmed as 'feet,'.

Continued...next page...

The extraction limits assure through the use of setbacks that other interests are not affected by planned extraction. Extraction is set back uniformly at a minimum 10.0± feet from the edge of property lines; easements and rights-of-way; underground gas lines or other underground facilities, irrigation ditches and seep ditch, wells and other structures. Specific variations in the location of: stockpiles, boundaries of extraction, and related information relative to adjacent structures and easements; from that represented on Exhibit C-2: Extraction Plan Map.

Extraction will not occur closer than 125± from the face of a residential structure; unless there is a written accommodation with the owner of the residential structure that allows extraction to occur within a closer stated limit. Extraction will occur no closer than 25± feet from well heads and related above ground facilities. Extraction around well heads will be concurrently backfilled to maintain a 100± foot buffer from the balance of extracted lands. At all

23) On page 16, regarding the discussion on topsoil and overburden stockpiles, more detail is needed regarding the storage volumes and locations of the piles, including distances from the piles to the areas to be reclaimed. It is recommended that they be shown on Map C-5. It should also be stated that the piles will be configured to prevent obstruction of flood waters, namely elongate the piles to make them parallel to the flow direction.

There is no reference we can identify on p16 to stockpiles, at least not explicitly. There is discussion of backfilling cut slopes and topsoiling above water line. Nonetheless items 20, 23 and 32 all broadly relate to topsoil and need to be read together via a consolidated response to comment 20.

24) In the section Plant Site Development & Operations, text should be added regarding the details of structures that will be built, including the conveyor. Dimensions and other details should be provided to aid in the estimate of demolition

costs for these structures.

Equipment to be used at the plant site is described in the Plant Site Development and Operations section on p19 as shown below. Plant site equipment will be semi-mobile in nature and is not expected to require permanent foundations or footers.

The conveyor will be set on an elevated structure at varying heights to be situated about the 1 in 100-year flood level. An average height of 7 feet is expected. The conveyor will be supported by legs at intervals of approximately 20 feet with concrete blocks used as necessary to anchor the legs. Final conveyor specifications are to be determined but a 24-36" belt is anticipated.

6.4.5 EXHIBIT D – Extraction Plan

north-west of the existing Evans Ditch as it courses winds north of the Big Thompson River.

Plant activities will require a wash plant and attending wash pond to recycle wash water and receive discharge silts and other reject fines from the washed product. Plant and Wash Pond areas are identified on Exhibit C-2: Extraction Plan Map. The wash pond will function as recycling wash water and receiving basin for reject fines for the intended Plant/Processing activities. Since the basin functions in a closed system, it will not require dewatering.

Once the wash pond is established, wet plant operations can be created and join any dry plant activities in progress. Dry Plant operations can be readily established since water is not integral to their operations. Once established, wash pond water will function as a closed system. Settled materials from wash Ponds will be utilized as product or for reclamation as desired.

Plant equipment will include, but is not limited to, a crusher, screens, and conveyors, scale house and scale, and attending equipment. Resulting stockpiles of pit run and processed products may be temporarily stockpiled here with processed stockpiles, or combined as needed, until transported to market.

25) In the section Plant Site Development & Operations, text should be added regarding the control of prairie dogs. Will they be relocated?

Please see response item "Issue – Prairie Dogs" prepared by ERO dated August 26, 2022 attached as an addendum to Exhibit H.

26) The applicant should discuss the following (related to Rule 3.1.8): How will the operation minimize impacts on mule deer habitat during the winter season

(December 1 through April 30). This should include (but not be limited to) a discussion on fencing. Fencing should be limited as practical, and wildlife-friendly fencing should be used.

Please see response item "Issue – Mule Deer (severe winter range and migration corridors)" and "Issue – Fencing" prepared by ERO dated August 26, 2022 attached as an addendum to Exhibit H.

27) Include a discussion on how the operation will allow for deer and other animals to "escape" the mining operations.

Please see response item "Issue – Escape Ramps" prepared by ERO dated August 26, 2022 attached as an addendum to Exhibit H.

6.4.5 Exhibit E – Reclamation Plan

28) The Application form specifies that the post-mining land use of the site will be Developed Water Resource. Additionally, the Applicant has provided a shadowing/mounding analysis for the installation of clay liners. However, the Reclamation Plan notes (page 5) that lining of the reservoirs is an option only. If the Applicant wishes to maintain lining of the reservoirs as an option only, then the Application must be revised to reflect that the reservoirs will be reclaimed to open groundwater ponds. If the Applicant chooses to reclaim the reservoirs to open groundwater ponds, then the following options are available to address the liability associated with exposed groundwater:

Please consider the Application Form to be correct and disregard any ambiguity in the application exhibits. Raptor Materials intends to establish lined reservoirs in final reclamation for the purpose of establishing a Developed Water Resource.

a) Provide adequate bond to backfill the pit to two feet above the historic highest groundwater level.

The application is clarified to reflect choice of lined reservoirs for final reclamation eliminating the need for backfill calculations.

b) Obtain a court approved augmentation plan prior to exposing groundwater at the site.

As the pits will be open ponds until they are lined and approved by the Office of the

State Engineer, a court approved substitute water supply plan will be obtained prior to exposing groundwater at the site. This is stated in Exhibit E, p4, Specific Reclamation Elements and Methods, third paragraph.

Specific Reclamation Elements and Methods:

This application provides substantial detail of features utilizing aerial photography that is ortho-rectified to approximately 1.0± percent of surveyed accuracy. This highly accurate and detailed portrayal of planned extraction and reclamation is visible under Exhibit C-1: Existing Conditions, Exhibit C-2: Extraction Plan Map, and Exhibit F – Reclamation Map. How reclamation will occur over affected lands is further detailed under Exhibit L – Reclamation Costs.

As extraction progresses over the Fields south of the Big Thompson River, the resulting 1.25H:1V slopes (2H:1V, where indicated) created during extraction will be concurrently modified when and where practical. Concurrent reclamation is a natural incentive for Operations to speed site recovery while generally serving to lower attending financial warranty burdens. The cut slopes along the extraction limits perimeter will be finished graded by pushing the resulting pit bottom with a dozer until the resulting basin slopes conform with Rule 3.1.5(7).

Since the primary end use is Developed Water Resources, the basins are intended to hold waters based upon the rights assigned by decree, or as stipulated in regulatory compliance with the Colorado Division of Water Resources, Office of the State Engineer (OSE). This may include the need to augment water sufficient to cover the anticipated exposed groundwaters of the basins in the unlined state. The entire unlined basin is or will be sufficiently covered under an approved substitute supply plan. In order to again liberate waters set aside for augmentation, the basins will at some point in the life of the activity be lined to segregate the basin from Colorado groundwaters.

Alternatively, the Applicant may clarify that the post-mining land use of developed water resource will be achieved through clay lining the reservoirs. If the Applicant chooses to clay line the reservoirs, then the Applicant shall provide enough detail for the Division to calculate the cost to line the reservoirs.

The application will be revised to reflect choice of lined reservoirs for final reclamation. Details of reclamation to form lined reservoirs is contained in Exhibit E, pp 4-5, Specific Reclamation Elements and Methods.

Lining of basins involves the placement of low permeability compactable fill, from on-site or other suitably sourced geologic materials, into the keyway; the same keyway used to facilitate discharge to keep the basins dry and free of groundwaters at the time of extraction. The balance of the basin floors and slopes are also covered and compacted with the same materials until it meets the standards established under the August 1999 State Engineer Guidelines for Lining

Criteria. Typical to obtaining approval for the constructed liner, the lined basin must pass a 90-day leak test. Correspondence from the OSE approving the construction of the lined basin will be submitted to the OMLR on receipt; or as part of any request for release of the permit, in part or whole.

Essentially, the pushed parent rock material will form the minimum 3h:1v slopes of the basin and be compacted to a permeability of 10^{-6}; forming a lined basin that complies with Colorado Water Law and Guidelines mentioned, above. In this manner, the lined basins will maintain a required separation and accounting of stored water from the underlying ground waters. Evidence of compliance with the rules and regulations of the Colorado Division of Water Resources will be provided to the OMLR on completion of the lined basins.

29) The reclamation plan requires more detail. In particular, the plan should include a schedule that specifies the areas to be reclaimed for given phases, with ranges of time periods. The phases described in Exhibit E should be coordinated with the Reclamation Plan Map, Exhibit F.

Refer back to Item #17: We avoid the use of 'Phases' to aid simultaneous development of Sections within Fields. The rules provide for clarity in Required Annual Reports and via Revision (Technical Revisions & Amendments). The goal is to provide flexibility in the document, addressing changes via the Annual Report, and minimize revisions.

30) The discussion on pit slopes (pages 4 – 5) should include a discussion on the method for grading these slopes, including push distances. Also, the discussion should include the method for verifying the final slopes and documenting this information.

Final slopes are readily determined using hand-held lasers. Push distances will vary by finished basin depth but are not anticipated to exceed 200 feet but will average significantly less than this. A Caterpillar D6 LGP or equivalent will be used supported by a compactor. Some material may be dumped in by articulated dump trucks working together with the dozer push and compaction.

31) The reclamation plan needs to state that all compacted areas will be ripped prior to addition of topsoil and seed.

It does:

All affected lands between the extraction limits and remaining above the anticipated high-water mark of the basins will be capped with a minimum of six (6.0±) inches of soil, as supported by Exhibit I & J – Soils and Vegetation Information. Timing and use of soil are detailed further under Exhibit I & J – Soils and Vegetation Information and Exhibit L – Reclamation Costs. Where compacted lands exist, and are to be revegetated, those locations will be ripped prior to re-

VARRA COMPANIES, INC. TWO RIVERS SAND GRAVEL AND RESERVOIR PROJECT MARCH 2022
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OFFICE OF MINED LAND RECLAMATION

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6.4.5 EXHIBIT E - Reclamation Plan

soil application. There are no known areas of compaction at the time of this application which would require such activity; and ripping remains a contingency of the application.

32) The reclamation plan needs to **include a clear plan for the storage and application of topsoil prior to seeding**. The plan should include push distances to the areas and minimum depth.

Items addressed under #20 and #23, should satisfy this concern.

33) On page 6, the discussion on seeding should include timing of seeding (and planting if applicable). At what time of year will seeding operations be conducted?

Generally, warm and cool seed mixtures can be treated in a myriad of ways. In Table L-1 this distinction is indicated in the column labelled "C/W". Cool season mixtures are often planted in the fall and warm in the spring, however, exceptions may apply. Some argue warm season grasses are better broadcast, while others like them drilled with the cool season grasses.

34) The weed control paragraph (page 9) should reference the more detailed plan in Exhibit I/J.

We understand your preference. Exhibit I/J is an integral part of the application, and the expansion on weeds made self-evident, by virtue of your own acknowledgement that it exists there. There is a significant plan to control weeds evidenced in both exhibits. We respectfully request the matter be settled as is to avoid needless revision.

35) The Backfill Notice must state the maximum quantity of inert fill that will be stockpiled on the site at any given time. This information is necessary to calculate the required financial warranty amount. Will buildings or other structures be constructed on backfill areas? If so, how will the material be placed and stabilized to prevent settling and voids?

Revisiting the Backfill Notice located at the back of Exhibit E: Reclamation Plan, it is noted that a Backfill Notice is required to address specifics in placement of external materials "generated outside of the approved permit area". The notice in this application however seeks to serve both that purpose and address the use of backfill generated within the MLRB permitted area.

The use of on-site fill is from extracted or processed reject materials, field fit at the time, depending upon the state of Operations. This is not predictable, but only inert fill, whether found on-site, or imported, will be utilized. There is no means to forecast fill material produced, but the use and location will be reported in required OMLR Annual Reports and addressed as necessary with adjustment to the financial warranty. This is an established practice with the OMLR from prior operations.

As to methodology and avoidance of instability of fill areas, the Notice states:

'All **backfill material** will be placed with sufficient fines to minimize voids and settling of backfilled areas and slopes. There are no known or expected acid forming or toxic producing materials or refuse at this location, nor will materials known to possess such qualities be knowingly utilized for fill. Any other refuse or reject materials that do not meet the definition of inert and requiring removal and disposal will be placed in closed containers and taken to an appropriate landfill for disposal, unless it is otherwise 'inert,' per **Rule 3.1.5(9)**, of the OMLR Rules and Regulations.'

36) The applicant should discuss the following related to the ponds:

- The use of very flat slopes (8H:1V) and irregular shorelines in some locations, to allow for diverse habitat.

We submit that is in inappropriate for lined basins. Some natural irregularity of man-made structures, easements, and right-of-way, will suffice for edge effect, as will the likely shallower slopes that may form along the sharper edges of the extraction limits, suggested in Exhibit F: Reclamation Plan Map, if lining is from the basin instead of the perimeter, otherwise, not so much. The purpose of the basin is optimal storage of water, consistent with the stated end use of Developed Water Resources.

- The use of constructed islands in the ponds for wildlife habitat.

Please see response item "Issue – Water Storage Ponds" prepared by ERO dated August 26, 2022 attached as an addendum to Exhibit H.

6.4.5 Exhibit F – Reclamation Plan Map

37) The permit boundary is not shown on this map and needs to be added (or the line weight needs to be larger to improve clarity).

Exhibit F has been revised.

38) A legend should be added to the map clearly showing what the hatching and other features represent. A yellow box is shown at the southeast corner of the site; please indicate if this symbol represents a real feature or if it is an error.

It was shown at a smaller scale to show the effect on the landform ecology of the area. A revised 1 inch = 200 scale map with legend is provided.

39) It appears that the map requires more detail regarding the processing area. Do the topographical lines on Exhibit F accurately show the post-mining topography? If not, the map needs to be updated.

Some minor leveling of this area is anticipated to take place however it is proposed to regrade with similar direction and slope to approximate original contour as part of reclamation unless the owner requires otherwise.

40) Per Rule 6.4.6, post-mining land uses should be shown on the map. This is especially important for the material processing and wash pond areas.

Exhibit F has been revised and the primary post-mining land use of Developed Water Resources is clearly evident on the map. Additionally, post-mining land use will be at the ultimate discretion of the owner, also the operator, and is described in Exhibits D and E.

Exhibit D, page 2

Commencing on the family farm in 1948, the Varra family combines nearly 73± years of operational experience that serves as testimony to a history of sound and thoughtfully executed operations of this kind. For the Two Rivers Sand Gravel and Reservoir Project, lands not otherwise occupied for Developed Water Resources will be improved to the highest possible end-use. Post Extraction Uses beyond the Primary Use of Developed Water Resources will likely comprise continuing and diverse general agricultural uses; as well as possible light residential, commercial, or industrial uses; as determined by right, or as otherwise authorized by the governing authority.

Exhibit E, p6

6.4.5 EXHIBIT E - Reclamation Plan

soil application. There are no known areas of compaction at the time of this application which would require such activity; and ripping remains a contingency of the application.

The final land configuration will ultimately result in two (2) reservoir basins totaling 234.06± surface acres, with a static water elevation surface area of 217.44± acres (refer to Exhibit F: Reclamation Map). The balance of unoccupied affected lands above the anticipated static water level will be stabilized where necessary utilizing the seed mixture as shown under Exhibit L - Table L-1: Primary/Preferred Revegetation Seed Mixture. Lands not otherwise occupied for developed water resources will be later developed to the highest possible end-use, and will likely comprise a mixed use which may include other general agricultural uses as well as light residential, commercial or industrial uses.

41) Several structures and easements are shown on Exhibit C-1, and none are shown on Exhibit F. Please explain if all of these structures will be removed during the mining and reclamation operations.

Please refer to response to Item 18.

42) The Division recommends adjusting the scale on this map. The current version includes considerable area that is beyond the permit boundary.

It was shown at a smaller scale to show the effect on the landform ecology of the area. A revised 1 inch = 200 scale map with legend is provided.

6.4.7 Exhibit G – Water Information

43) On Page 1 of Exhibit G, the text states that the site will drain internally. Please add a statement that the site will be operated to prevent any significant runoff from disturbed areas from flowing offsite. Also state that the site will be operated to prevent any negative impacts to the hydrologic balance of the two rivers.

We are not required to 'Prevent,' but rather 'Minimize' impacts. We believe the submittal conservation measures and provisions attain this standard.

Rule 3.1.6 "Disturbances to the prevailing hydrologic balance of the affected land

and of the surrounding area and to the quantity or quality of water in surface and groundwater systems both during and after the mining operation and during reclamation shall be minimized by measures, …"

Considerable efforts are made to control storm flows, including the use of grassed waterways. Some rilling will occur on cut slopes, but the sediment is inbound. A minor 6-inch furrow above cut slopes will create a 1-foot swale that could minimize such rilling, especially valuable on reclaimed slopes above the final estimated water level of the basins.

The stormwater management plan referenced in Exhibit I & J will address broader water management covering the material processing area and any piles of soil or inert fill constructed external to the excavations.

44) Describe the physical dewatering system and provide a description of the operation of this system.

A copy of the discharge permit application provided to CDH is included with this submittal. It will indicate information about the pump capacity and discharge rates. Exhibit D: Extraction Plan devoted a section to it, and AWES devoted a report to it, as provided with the other attachments in this reply. Here's what the permit application stated, followed by a blow-up of the feature visible near the #10 Piezometer, under Exhibit G: Water Information Map:

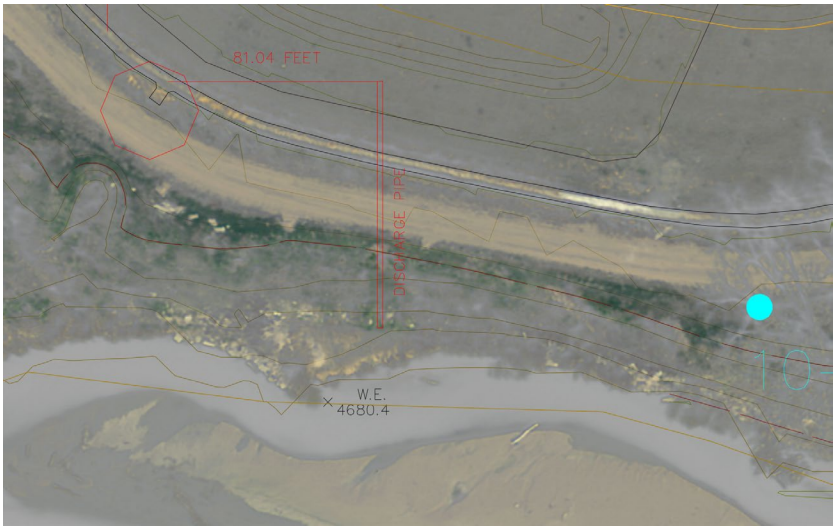
6.4.5 EXHIBIT D – Extraction Plan

preferred native seed mixture offers opportunity to gauge the potential performance of the selected species prior to utilizing it over larger areas requiring reclamation later in the life of the resource recovery operation.

Once vegetation is established over the initial reclamation soil stockpiles, they will likely remain untouched for the life of the operation until final reclamation of remaining affected lands takes place. Where concurrent reclamation is possible, operations will utilize soil in an over the shoulder method when practical. In this manner, reclamation is expedited without increasing soil stockpile volumes while reducing expenditures related to labor, handling, and time.

Dewatering: As extraction activity progresses into the aggregate profile, groundwater must generally be removed in advance through the use of pumps and subsequent discharge into area tributaries. A complete dewatering evaluation was performed by AWES in their report of 27 July 2020, as provided at the back of Exhibit G: Water Information. The report concludes that 'the results of analytical and numerical solutions indicate that the proposed mine dewatering activities will not adversely affect the regional groundwater hydrology.' The reader is further assured that all discharge of waters will be conducted under an approved CDH discharge permit.

Initial dewatering of the property in preparation for extraction and resource recovery will occur by establishment of a dewatering pump and/or well in the Southern boundary near an existing agricultural pond. The point of discharge is on Exhibit G: Water Information Map. Other discharge locations may occur in time as needed and otherwise approved under the applicable CDH discharge permit requirements. Subsequent CDH approved discharge locations will be field fit and the location updated in the following OMLR Annual Report.



45) The Water Information exhibit should provide a detailed discussion of floodplain management at the site. This must include a discussion of the conveyor crossing of the Big Thompson River. It should also reference the Floodplain Permit report by Headwaters Corporation, as appropriate.

Operational elements of floodplain management are described in Exhibit D.

Exhibit D, p6

> Wetland conditions appear confined within portions of the stream terrace and bank-full stage of the rivers, and along segments internal to the Evans Canal. Extraction will form a depression (basin) within the floodplain as shown in Exhibit C-2: Extraction Plan Map. Temporary above ground fill may occur within the floodplain, and as part of this permitted activity, provided the above ground volume does not exceed the below ground volume created by extraction. All product stockpiles and processing will occur within the city limits of Evans under this application, and North and outside of the floodplain boundary of the 100-year floodplain of the Big Thompson River. The floodplain extent will be visually marked in the field to better assure the integrity of the floodplain.
>
> Material transport of raw materials from extraction locations to the plant site will occur via conveyor (see route on Exhibit C-2: Extraction Plan Map). This will in turn serve to minimize impacts to area transportation corridors. The actual location, extent, and nature of the conveyor systems not otherwise designated in this submittal will be provided as updates in the required OMLR Annual Reports.

As described in this response concerning items 23 and 24, additional detail on the floodplain management and the conveyor was stated as follows:

From Item 23 Response

We can affirm here that stockpiling above the existing ground elevation will not occur in a manner understood to obstruct flood waters where they might occur within the existing floodplain. It is understood and agreed here-in that their longitudinal dimensions if they occur there should extend parallel to anticipated flood flows where they exceed a cone or other shape that might find its existence contrary to intent by volume beyond that which could be understood to be temporary, or transitory; especially outside of seasonality where flooding might be more reasonably anticipated.

From Item 24 Response
The conveyor will be set on an elevated structure at varying heights to be situated about the 1 in 100-year flood level. An average height of 7 feet is expected. The conveyor will be supported by legs at intervals of approximately 20 feet with concrete blocks used as necessary to anchor the legs. Final conveyor specifications are to be determined but a 24-36" belt is anticipated.

A wider span than typical will cross the Big Thomson River at an elevation above the 1 in 100-year flood level.

46) To ensure that the Two Rivers project minimizes impacts to the hydrologic balance of the rivers, the application needs to include a water quality monitoring plan, specifically for the alluvium. ~~[see Section 20 – Exhibit G in Adequacy Response]~~ The groundwater monitoring plan should be developed in accordance with Rule 3.1.7(7)(b) and should include a Quality Assurance Project Plan (QAPP) for the collection of groundwater samples. The plan should provide mitigation steps if there is an exceedance at a groundwater or surface water monitoring location. Potential impacts to quality and/or quantity the nearby domestic wells should also be addressed. A copy of the Division's Groundwater Monitoring and Protection Technical Bulletin has been included as an enclosure to this letter for your reference.

This was an oversight. Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

47) Change "NPDES" to "CDPS" to reflect the requirements of the Water Quality Control Commission.

Acknowledged and noted that our only reference to NPDES was simply incorporating text directly from the rules. Please see Prologue.

Exh H – Wildlife

48) Indicate which recommendations on wildlife protection in "Threatened and Endangered Species Habitat Assessment, Two Rivers Parcels" (ERO, 2022) will be implemented at the site. This report was submitted with Exhibit H of your application.

Please see response item "Issue – Wildlife Protection Recommendations" prepared by ERO dated August 26, 2022 attached as an addendum to Exhibit H.

Exhibits I/J

49) This exhibit should include a discussion on wetlands in the project area, including the wash pond and material processing areas. Please state that operations will be conducted to minimize impacts on wetlands or state that no operations will be conducted in wetland areas.

Under Exhibit M is an approved U.S. Army Corps of Engineers report designating 'No Permit Required.' Most of the wetlands as they occur at the Big Thompson River are predominantly limited to the channel itself. If and when a conveyor is built upon the projected line, the footings are not expected to exceed the requirements for a Nationwide Permit, but if they will, a Nationwide Permit will be applied for and secured prior to affecting such areas. It simply isn't anticipated at this time. If a Nationwide Permit is necessary, the OMLR will be provided with the necessary justification or approval under an OMLR Technical Revision to that end.

Please refer to Item #45 for additional clarification.

50) In the Weed Management Plan, the paragraph that mentions the State of Colorado noxious weeds list should state that List A species will be eradicated and List B Species will be controlled. The plan should also describe the efforts that will be made to control List C species, including field bindweed, a focus in Weld County. The Division recognizes that mapping and vector identification can be useful tools for weed control, but these practices should not delay treatment of weeds.

Weed management will be under the supervision of a certified weed management specialist. All applicable requirements currently in force at the time will be adhered to.

6.4.12 Exhibit L – Reclamation Costs

51) This exhibit should be updated, as necessary, to match any revisions to Exhibits D and E, per the adequacy items for those sections. This includes details on structures.

RM has reviewed Exhibit L and believes it adequately reflects changes to Exhibits D and E.

52) The cost estimate should include a task for ripping areas that will be topsoiled and vegetated.

An allowance could be made for ripping a percentage of the area assuming it becomes compacted.

53) The Applicant has noted under the Reclamation Plan (page 5) that **water shares** will be dedicated to the Division of Water Resources (DWR) to cover the liability associated with exposing groundwater. **Please be aware that the Division no longer accepts the dedication of water shares to DWR as a bonding mechanism.** The Applicant will need to post a financial warranty to allow for **backfilling the areas of exposed groundwater or a financial warranty to cover the cost of installing clay liners in the reservoir**. Please see additional comments under Item No. 29.

Raptor has confirmed and will amend the application to state that Developed Water Resources will be the post-mining use for the pit excavations and will provide financial warranty appropriate for cost of constructing lined pits.

6.4.13 Exhibit M – Other Permit and Licenses

54) Please commit to providing copies of all required and approved permits and licenses to the Division when available. This should include well permits and documents related to water rights, such as a Substitute Water Supply Plan.

Raptor affirms copies of all required and approved permits and licenses will be obtained and provided before actions requiring permits commence.

6.4.14 Exhibit N – Source of Legal Right to Enter

55) This document must show that Raptor Materials LLC (rather than Varra Companies, Inc.) has the legal right to enter lands under this permit.

The exhibit is updated and attached.

6.4.18 Exhibit R – Proof of Filing with County Clerk and Recorder

56) Please provide an affidavit or receipt indicating the date on which the revised application information required to address this adequacy letter was placed with the Weld County Clerk.

An updated affidavit is provided and attached as Exhibit R?

6.4.19 Exhibit S – Permanent Man-made Structures

57) The Division requires Raptor Materials LLC to demonstrate that they attempted

to obtain notarized structure agreements with all owners of the structures within 200 feet of the affected area of the proposed mine site, pursuant to Rule 6.4.19. This attempt must be made prior to the Division's consideration of a stability analysis. Please also indicate what agreements have been obtained.

This information was provided earlier via Susan Bergmaier submittal of Notifications, with the signed versions of an agreement sent to all owners of structures known to us.

6.5 Geotechnical Stability Exhibit

58) The Division has reviewed the Slope Stability Analyses (prepared by AWES, LLC), and our comments are provided as an enclosure with this letter. Please review this memorandum and provide responses.

Please refer to AWES Report dated August 10, 2022, now appended to the Application as an addendum to Exhibit S.

The Division is still reviewing two of the technical reports associated with this application: "Riverside Berm Failure Analysis and Flood Control Mitigation Plan" (Flow Technologies LLC, 2020) and "Dewatering Evaluation, Varra Two Rivers Mine" (AWES LLC, 2020). Division comments and questions related to these reports will be sent under separate cover.

August 05, 2022 – Additional reviews for preliminary adequacy

Flood Control Mitigation Plan

1) Hydrograph Development: Paragraph 3.2.3 indicates the 10-year flow was subtracted from the inflow hydrograph because "it is estimated the earthen berm will control a 10-yr flood event". This does not seem to be a straight forward assumption. If the entire site is to be flooded, it seems the water elevation of the flood above the berm elevation would be the controlling flow parameter, much as a hydrograph routed through a reservoir controls the depth of overflow in a dam overtopping failure analysis. Please provide some background on why this assumption is reasonable.

Please refer to Flow Technologies Report dated August 27, 2022, now appended to the Application as an addendum to Exhibit G.

2) Hydrograph proportionment: Paragraph 3.2.3 references FEMA, Flood Insurance Study, January 20, 2016 as validation for having two-thirds flow through the south side of the Site (Central Field) and the remaining one third flow through the north side of the site. Please:
   a) Elaborate on the purpose of splitting the flows,
   b) Explain if this is used directly in the WinDAM C berm failure analyses or n the hydrograph development for determining water elevation, or somewhere else,
   c) Explain how it impacts the approach and results (e.g., how sensitive is the analyses to this 2/3 ratio)

Please refer to Flow Technologies Report dated August 27, 2022, now appended to the Application as an addendum to Exhibit G.

3) Hard Armoring: Both paragraphs 3.2 and 4.2 reference Section V, Hard Armoring. Section V is labeled Mitigating Measures and does not discuss any hard armoring. Please provide some discussion on the anticipated hard armoring for reclamation/closure.

The Flow Technologies January 2020 report indicated both that the riverside berms under conservative assumptions should withstand breach due to head cutting in a 1

in 100 year flood event, however suggested that "the pit locations most susceptible to head cutting will be armored"(Section 3.2), or more specifically in Sections 3.6 and 4.2, hard armoring is discussed as a reclamation practice in the areas or locations (most) susceptible to head cutting.

It should be understood that the head cutting modelled did not result in breach of 100-feet berms although berms are assessed as varying in width from 100-150 feet. Additional conservatism included in the modeling included inundation from a storm event which would be worst case with little warning allowing pit dewatering to be temporarily halted and reducing pit fill time, assuming the event occurs when the pits are fully excavated, resulting in maximizing fill time, and that there is no vegetation with increases the rate of erosion.

The mitigating measures described in Section V state that "should a flood occur that results in head cutting/erosion of a riverside berm, Varra Companies, Inc. [now Raptor Materials] will immediately restore the damaged area to pre-flood conditions.". This is in effect, "reclamation" of the berms. This however does not preclude RM implementing measures to reduce the impacts of head cutting or likelihood of berm breach including establishing or maintaining vegetation, and hard armoring (riprap). Such measures, particularly hard armoring would be considered in the areas or locations most susceptible to head cutting, i.e. where berms are narrower. Should such measures be taken as preventative rather than restorative (reclamation), properly installed engineered riprap, (size and thickness calculated) would be assessed at the time.

4) Variable Water Surface Elevation: As expected for a river flood and depicted in Figure 8, the water surface elevation varies from the upstream to downstream segments of both rivers. The DRMS' understanding of WinDAM C is that it assumes a uniform flow elevation over the embankment being analyzed. How is the fact that the water elevation is not uniform in this scenario accounted for in the modeling?

Please refer to Flow Technologies Report dated August 27, 2022, now appended to the Application as an addendum to Exhibit G.

5) Fill Time Estimates – Central Pit: The fourth column in table on p. 30 suggests a nearly uniform incremental delta for every 10 feet of pit depth. This suggests the pit being analyzed for a depth/storage relationship has nearly vertical side walls. Are the pit walls in the berm failure scenarios being analyzed vertical and is this condition reflected in the WinDAM C analyses?

Please refer to Flow Technologies Report dated August 27, 2022, now appended to the Application as an addendum to Exhibit G.

6) Central Pit Groin Training Channels Calculations: On p. 41 is a Mannings normal depth flow calculator for a 25-foot bottom width with 1H:1V side slopes. It is unclear as to the purpose of this image. Based on the Mannings n = 0.025, it would appear this is likely an earth-lined channel. As such, a 1H:1V slope is not likely to be stable for long. Please indicate the purpose of this image and justify the channel geometry depicted in it.

Please refer to Flow Technologies Report dated August 27, 2022, now appended to the Application as a supplement an addendum G.

7) HEC-RAS Output: Several of the HEC-RAS cross section output results indicate additional cross-sections may be warranted:
   a) The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
   b) Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

   Please provide rationale for not including additional cross sections.

Please refer to Flow Technologies Report dated August 27, 2022, now appended to the Application as an addendum to Exhibit G.

Additional Comments on Groundwater (AWES Dewatering Evaluation)

Exhibit G General

1) The proposed text of Section 6.4.7, Exhibit G, allows for the post-mining lining of the pits but does not commit to it. It is not appropriate for the Division to approve a contingent reclamation plan; the approved text should describe a single reclamation plan. If the decision is made at a later date to change the plan then an amendment application should be submitted at that time.

   Please revise the text of Exhibit G to describe the post-mining plan for the lining or otherwise of the excavated pits.

Please refer to Flow Technologies Report dated August 27, 2022, now appended to the Application as an addendum to Exhibit G.

2) The text also refers to "OMLR" in places, which presumably stands for "Office of Mined Land Reclamation". This office does not exist in Colorado.
Please replace any reference to "OMLR" in the text with "DRMS".

Acknowledged. Please see Prologue.

3) Water level data from piezometers P124-1 through P124-12 has been given in the text of Exhibit G but the locations of the piezometers are not shown on Exhibit G: Water Information Map (or Exhibit C-1: Existing Conditions Map).
Please add the piezometer locations to Exhibit G: Water Information Map.

Please see revised Exhibit G Map. Please note there is considerable detail presented on the map and it may be necessary to either print at scale or zoom to see the information.

4) The key of Exhibit G: Water Information Map shows a symbol for wells, but no wells are identifiable on the map. It's not clear whether they were omitted or are not legible.
Please identify all registered wells on Exhibit G: Water Information Map. Please also add a table to section 6.4.7 with details of these wells including their permit IDs, owners, date of construction and registered use.

Please see revised Exhibit G Map. Please note there is considerable detail presented on the map and it may be necessary to either print at scale or zoom to see the information.

5) Exhibit G: Water Information Map shows several symbols that are not included in the map key, and the text in many of the labels on the map is illegible (including what are presumably stream stage elevations).
Please revise Exhibit G: Water Information Map to improve its legibility and to provide a complete key for map symbols (it may be helpful to remove the aerial imagery base-map). The revised map should be prepared and signed by a registered land surveyor, professional engineer, or other qualified person, as is required by Rule 6.2.1(2)(b).

Please see revised Exhibit G Map. Please note there is considerable detail presented on the map and it may be necessary to either print at scale or zoom to see the information. We have found either provides legible information.

Exhibit G – AWES Dewatering Evaluation

6) Key assumptions of the model are that the aquifer is unconfined, homogenous and anisotropic, with a horizontal hydraulic conductivity (Kh) of 125 ft/day and a vertical hydraulic conductivity (Kv) of 12.5 ft/day. The K values are at the lower end of the expected range of 2000-100 ft/day (Robson, 1989).
Please justify the assumption of anisotropy and the chosen K values for the sand and gravel aquifer.

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

7) The piezometers referred to in (3) are described as monitoring wells in AWES 2020.
Please describe how these wells were used for pre-mining aquifer characterization (besides the collection of water level data).

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

8) No information is presented about the vertical extent of the model.
How many vertical layers are used in the model? What are the layer thicknesses?

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

9) No information is presented about recharge from precipitation.
Is recharge from precipitation accounted for in the model, or is its impact assumed to be negligible?

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

10) The Mine Area Map presented as Figure 2 shows a different pit configuration from that presented elsewhere in the permit application packet (PAP) – it shows three pits, whereas Exhibit G: Water Information Map, for example, shows just two. The Model Boundary Conditions presented as Plate 1 reflect the configuration shown in Figure 2.
Please discuss the validity of the model boundary conditions in the light of the final pit configuration (which is assumed to be that shown on maps in the PAP).

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now

appended to the Application as an addendum to Exhibit G.

11) According to the literature, water table gradients in the alluvial aquifers of the region are typically in the range 0.002 to 0.007 (Arnold, Langer & Paschke, 2003). The water table contour map presented as Plate 3 shows a generally easterly gradient of 0.002 across the center of the proposed permit area. A single data point (MW-1, which is presumably the same as P124-1) exists north of the Big Thompson River, with a significantly higher water level. This distorts the water level contours in the north of the study area, suggesting a far steeper gradient (0.01) and a south-easterly flow direction.
Please discuss the characterization of the pre-mining water table. How reliable is the data from MW-1? How do you account for the steeper gradient? Are there any other data points in the north of the study area to improve the characterization?

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

12) The model was calibrated using model-assigned observation wells outside of the proposed excavations, (presumably the points shown with green and white symbols on Plates 6 and 7). The first two sentences of the final paragraph on Page 3 of the AWES 2020 report suggest that water levels were measured at these locations, but I think that these are simulated wells.
Plates 5 and 5A show the calibration results. They appear to show identical data.
Water level contours showing initial conditions in the calibrated model are presented as Plate 4. The contours suggest a gradient of 0.06 to the SSE in the north of the study area.
Please clarify the initial calibration process. Please discuss the validity of the model in the north of the study area.

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

13) The results of the dewatering simulation are presented as Plate 6. This is presumably a steady state simulation. It simulates dewatering of the central and north-west pits only.
Please simulate the dewatering of the full extent of the mined area. Please estimate the time to achieve steady state conditions.

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

14) Table 1 presents the predicted water levels at the 4 simulated wells before mining and following the lining of the mined pits.
Please add a column to Table 1 showing the predicted water levels under the pit de-watering scenario. The table should show the fullest extent of the potential drawdown caused by the mine operation.

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

15) In the conclusions section on Page 4 of the report, the statement is made that "The results of analytical and numerical solutions indicate…" however no analytical solutions are presented.
Please update the report to present any relevant analytical solutions that support the conclusion.

Please refer to AWES Report, #2022-RM-P124 dated August 31, 2022, now appended to the Application as an addendum to Exhibit G.

RAPTOR MATERIALS LLC

Garrett C. Varra, General Manager