United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
Western Region Office
1999 Broadway, Suite 3320
Denver, CO 80202-3050

November 7, 2019

CO-0106C

Mrs. Sarah Vance
Environmental Engineer
GCC Energy, LLC
11783 Highway 337 South
Tijeras, NM 87059

Re: Deficiencies for Low Cover Crossing Minor Permit Revision
OSMRE Project Tracking Code: UM.CO.0106.2946
King II Mine Federal Permit CO-0106C

Dear Mrs. Vance:

In correspondence on September 25, 2019, GCC Energy, LLC (GCCE) submitted to the Office of Surface Mining Reclamation and Enforcement (OSMRE) a minor permit revision to the approved King II Mine Permit Application Package (PAP) for Federal Permit CO-0106C. GCCE's September 25, 2019 revision was submitted to provide information on a proposed Low Cover Crossing in the existing permit area, and provide information on a permit area expansion.

Please be advised that OSMRE's review of the above cited GCCE submittal finds that there are deficiencies within the proposed revision that prevents OSMRE from accepting the application under the provisions of the implementing federal regulations applicable to the Surface Mining Control and Reclamation Act of 1977. Please refer to the attached OSMRE technical reports for a detailed listing and discussion of the deficiencies, and what additional information needs to be provided to satisfactorily address the items.

Should you have questions or need clarification regarding the contents of this letter or attachments, please contact me via phone (303-293-5065) or by e-mail at pclark@osmre.gov.

Sincerely,

Paul Clark, King II Mine Permit Coordinator
Indian Program Branch, Program Support Division
OSMRE-Western Region

Attachments: Technical Evaluations

cc: GCC Energy, Tom Bird
Ute Mountain Ute Tribe, Gordon Hammond
Ute Mountain Ute BIA, Dean Fox
Ute Mountain Ute BIA, Stephanie Tsosie
OSMRE, Elizabeth Shaeffer
BLM Tres Rios Field Office, Connie Clementson
CO-DRMS, Janet Binns

REVISION APPLICATION
TECHNICAL EVALUATION

1. **COMPANY:** **GCC Energy, LLC**

2. **MINE/OPERATION:** **King II Mine**

3. **TRACKING SYSTEM INFORMATION.**

   A. **OSMRE Project Number (CRSS):** **UM.CO.0106.2946**

   B. **Letterhead date of submittal:** **September 25, 2019**

4. **TYPE OF APPLICATION/DOCUMENT REVIEWED.**

   ☒ Permit revision application

5. **EVALUATION.**

   A. **Part of application/document reviewed:**
   Permit Application Package, Figures, and Appendices

   (1) Citation of applicable regulations:

   30 CFR Parts 750 through 785
   30 CFR Parts 815 through 817

   (2) Evaluation of compliance with the requirements of the applicable regulations:

   GCC Energy LLC (GCC) has submitted to the Office of Surface Mining Reclamation and Enforcement (OSMRE) a permit revision application to support construction of a low-cover crossing at the King 2 Mine as well as information associated with a permit expansion to include lease 78825.

   (a) Evaluation of compliance with the permit application requirements (30 CFR Parts 777 through 784):

   Page 2-3. Executive Summary. Third primary bullet. Revise to state, "....to include 590.55 acres beneath additional..."

   Page 2-3. Executive Summary. End of page. The LBA area consists of 2462 acres. The EA project area includes Ute-Mountain-Ute surface area above non-federal coal, or an additional 479 acres. Therefore, the total additional acreage is 2941 acres. Please modify section to reflect the permit expansion area of 2941 acres.

   Page 2-4. Executive Summary. Second bullet. Most of the bedrock monitoring wells were part of the last EA. However, there was the addition of 2 bedrock wells along with the 2 alluvial wells to support the new EA.

Page 5-2. Please add information to comply with the following regulations: 773.8, 773.9, 773.10, 774.11, and 774.12. If the regulations are not applicable to the King II Mine, please include in the PAP that the regulation is " Not Applicable".

Page 5-2. Please add information to comply with the following regulations: 761.12, 761.13, 761.14, 761.15, 761.16, 761.17, 762.11, 762.13, 762.14, and 762.15. If the regulations are not applicable to the King II Mine, please include in the PAP that the regulation is " Not Applicable".

Page 5-9. 778.13(b). Update to include owners in the LBA and permit expansion areas.

Page 5-11. 778.17. Update based on reserves in LBA area.

Page 5-18. 783.11. First Paragraph. Last Sentence. Update with recent exploration well surface disturbance and LLC disturbance.

Page 5-18. 783.11. Second Paragraph. First Sentence. Figure 9-4 doesn't show LLC surface disturbance.

Page 5-20. 783.12(a). Second Paragraph. The permit area expansion consists of the LBA area (2462 acres) plus non-federal coal area (479 acres), for a total permit expansion of 2941 acres. Please modify section to reflect the permit expansion area of 2941 acres.

Page 5-34. 784.13(b). Last Paragraph. Revise with statement that exploration drilling and implementation of the LLC are the planned surface disturbance activities, and reclamation will be consist with both the exploration drill sites and LLC as detailed below.

Page 5-43. 784.14(a). First Paragraph. Update to include new cluster well. Now 6 total clusters in monitoring program, excluding MW-5.

Page 5-43. 784.14(a). Bedrock Well Monitoring. First Sentence. Delete word "being".

Page 5-46. 784.14(b). Alluvial Groundwater. First Sentence. Update sentence: the permit is in both the Hay Gulch and Alkali Gulch catchments.

Page 5-79. 784.20. Subsidence Monitoring Program. Update statement related to SUA. It has since been updated.

Page 5-95. 784.29. Diversions. Add statement about LLC and reference appendix 10-15 related East Alkali diversion.

(b) <u>Evaluation of compliance with the performance standards (30 CFR Parts 816 and 817)</u>:

Page 7-35. 822.13. Table 7-6. Update to reflect semi-annual monitoring for subsidence: Spring and Fall.

(c) Evaluation of Supporting Figures

Figure 9-1. For titles, use CO-106. For permit area, see EA Figure 1-2 Project Area. Exclude state piece to the south.

Figure 9-2. For titles, use CO-106. For permit area, see EA Figure 1-2 Project Area. Exclude state piece to the south.

Figure 9-3. For titles, use CO-106. For permit area, see EA Figure 1-2 Project Area. Exclude state piece to the south.

Figure 9-5c. For titles, use CO-106. For permit area, see EA Figure 1-2 Project Area. Exclude state piece to the south.

Figure 9-7a. For titles, use CO-106. For permit area, see EA Figure 1-2 Project Area. Exclude state piece to the south. Expand to include surface ownership in LBA area.

Figure 9-7b. For titles, use CO-106. For permit area, see EA Figure 1-2 Project Area. Exclude state piece to the south. Expand to include coal ownership in LBA area.

Figure 9-8. For titles, use CO-106. For permit area, see EA Figure 1-2 Project Area. Exclude state piece to the south.

(d) Appendices

The Certificate of Liability Insurance for the term September 1, 2019 to September 1, 2020 was approved on October 23, 2019. Please include the current certificate in Appendix 10-13.

B. On the basis of the preceding evaluation, I conclude that:

☒ This part of the application/document does not comply with the requirements of the applicable regulations.

6. PRIMARY REVIEWER.

Paul Clark

Paul Clark, Permit Coordinator
Program Support Division

11-7-19

Date

GCC King II Mine
Permit Revision Application
Technical Evaluation

1. **COMPANY:** GCC Energy, LLC (GCCE)

2. **MINE/OPERATION:** King II Mine

3. **TRACKING SYSTEM INFORMATION.**

   A. **OSMRE Project No. (CRSS):** UM.CO.0106C.2946

   B. **Letterhead date of submittal:** September 25, 2019

4. **TYPE OF APPLICATION/DOCUMENT REVIEWED.**

   ☐ New permit application
   ☒ Permit revision application
   ☐ Permit renewal application
   ☐ Permit transfer, assignment, or rights sale application
   ☐ Other:

5. **EVALUATION.**

Part of application/document reviewed:
Text Sections 5.5.4.1, 5.5.4.2, 5.5.4.5, 5.5.4.7, 7.3.5, and 7.4.3; Tables 7-1 and 7-2; Figures 9-11, 9-12a, 9-12b, 9-12c, 9-13a, 9-13b, 9-13c, 9-14a through 9-14e, 9-15, 9-16, 9-17, 9-18, and 9-19 through 9-24; Appendix 10.15; BLM Solid Minerals Inspection Report

(1) Citation of applicable regulations:

30 CFR 784.14	Hydrologic Information
30 CFR 817.41	Hydrologic Balance Protection
30 CFR 817.43	Diversions
30 CFR 817.57	Hydrologic Balance: Stream Buffer Zones

(2) Evaluation of compliance with the requirements of the applicable regulations:

GCCE submitted a proposed revision to the permit application package (PAP) which expands the permit area to encompass an additional 2,941 acres. Although a relatively large addition to the permit area, actual surface disturbance is proposed to be minimal. The primary surface disturbance will be a low cover crossing of East Alkali Gulch which will disturb approximately 10 acres. It will have associated construction of culverts and a road base which will be covered and contain underground mining infrastructure tying the existing underground workings at the King II mine to the proposed workings in federal coal lease COC-78825. The proposed revision also contains updates to the water monitoring program to collect baseline information and monitor for effects to the hydrologic balance.

The proposed low cover crossing will disturb the East Alkali Gulch alluvium. The trenching in the alluvium will not reach the depth of saturation at 36 feet below natural grade and will be kept as shallow as possible to allow maximum water table rise to accommodate wet years. East Alkali Gulch does not flow perennially. Geomorphic reclamation of the low cover crossing would occur to ensure that post-mining topography would match pre-disturbance conditions. The stream bed would be re-established as closely as possible to its original configuration. Construction and reclamation details are included along with general design specifications for the low cover crossing.

Access for construction of the low-cover crossing would be located on existing improved and unimproved roads overlying the permit area. The route would follow existing roads and no road improvements would be needed such as widening or other surface disturbance outside the existing disturbance anywhere along the entire construction access route.

BLM conducted an on-site visit of the proposed construction site for the East Alkali Gulch crossing on August 29, 2018. They noted that the main channel was grassy and approximately 75 feet wide and 15-20 feet deep and that there was a small incised pilot channel in the middle. The vegetation in the area consisted of willow brushes, juniper, sage, rabbit brush, and ash trees.

In quarter four of 2018 GCCE installed two alluvial monitoring wells (MW-7-EAA and MW-8-EAA) and two bedrock monitoring well clusters (MW-6-A, MW-6-C, MW-6-MI, MW-6-LM, MW-8-MI, MW-8-LM, and MW-8-PL) to establish baseline conditions for the proposed mine extension.

Alluvial well MW-7-EAA is located approximately 400 feet up East Alkali Gulch from the proposed low cover crossing and will serve as a baseline groundwater data collection point prior to mining in the Dunn Ranch LBA area. Data from this baseline well can then be compared with downgradient East Alkali Gulch alluvial well MW-8-EAA throughout life of the low cover crossing and King II mine to monitor for changes in the hydrologic balance.

The seven bedrock holes drilled in 2018 were all wet with the exception of MW-6-C, which is drilled in the Cliff House Sandstone.

The target geologic intervals for the 2018 monitoring wells were expanded to document groundwater conditions in deeper strata to ensure that monitoring would include geologic units associated with domestic water wells located downgradient within the Vista de Oro subdivision which is west-southwest and adjacent to the King II mine. The MW-8 cluster, in order of completion depth, includes monitoring wells spaced approximately 25 feet apart in the direction of formation dip in the East Alkali Alluvium (EAA), the Menefee Interburden (MI), the Lower Menefee (LM) and the Point Lookout Sandstone (PL).

Potentiometric maps were prepared for each of the target hydrostratigraphic intervals using August 2019 measured depths to water for all bedrock wells. These are illustrated in figures included as part of this revision.

The Cliff House sandstone, which overlies the mine workings, is unsaturated and where groundwater has been detected in monitoring wells has been from minor fracture seeps into the borehole. The underground workings of the King Mine II are consequently dry, and the "A" seam has also not ever been found to be saturated in the project area.

Saturation of the bedrock formation does exist to the west and southwest of the current King II mine, with groundwater recharge primarily occurring from saturated alluvium in the areas where the bedrock has been incised by erosion. This is documented primarily at the MW-8 well cluster and associated with alluvial water in East Alkali Gulch. The bedrock water-bearing intervals in this area which are mostly utilized by wells in the Vista de Oro subdivision are the mined "A" coal seam, the lower minor coal seams, and fractures of the lower Menefee Formation.

The alluvium composition in East Alkali Gulch is very similar to what was documented in Hay Gulch as unconsolidated bedrock detritus consisting of coal, sandstone, and shale in the conductive intervals, and silt and clay deposits as aquitards. Bedrock was documented at approximately 70 feet below ground surface at the wells in East Alkali Gulch. The observed groundwater depth in the alluvium is approximately 36 to 40 feet below ground surface.

Baseline water quality data collected in the new monitoring wells was also analyzed. Wells completed in the Lower Menefee Formation exhibit quite different water quality in the two locations, MW-6-LM and MW-8-LM. The first shows declining salinity in the four samples with mixed Na-Ca-Mg and declining sulfate. MW-6-LM is in on a ridge and should be more isolated from East Alkali Gulch alluvium, but its water quality appears to reflect alluvial water type. In contrast, MW-8-LM is in the gulch but appears to be isolated from the alluvium, as it exhibits a sodium bicarbonate water more like wells southwest of King II. The single Point Lookout monitoring well (MW-8-PL) shows water composition similar to the MW-6-LM well, specifically a mixed Na-Ca-Mg sulfate type. Alluvial groundwater chemistry in East Alkali Gulch is similar between the two new alluvial wells MW-7-EAA and MW-8-EAA. Both wells have calcium-magnesium, sulfate type water with neutral pH, total dissolved solids (TDS) between 1200 and 1500 mg/L, and low alkalinity.

Potential hydrologic impacts of coal mining are diminution of groundwater resources by diversion, damage to existing water wells, or contamination through either mine discharge or leachates from waste. GCCE concluded the following in their updated PHC in their permit revision application:

- There is small likelihood of diminution of groundwater. The overburden is essentially dry, and there are no mine inflows to date other than transient roof drips.
- The upper Menefee containing the target coal is an aquitard, the coal itself is dry and there are no floor or wall seeps. Existing domestic wells source aquifers below the mine interval, and with water levels below the mined seam.
- The proposed low cover crossing will require construction trenching through the East Alkali Gulch alluvium; however, trenching will not reach the depth of saturation at 36

feet below natural grade and will be kept as shallow as possible to allow maximum water table rise to accommodate wet years. East Alkali Gulch does not convey surface water flow with exception of during active snowmelt and storm flash-flooding.

A summary of the modification to Figures the proposed revision will affect is as follows:

- Figure 9-11 Alluvial Groundwater Contour Map was updated to reflect contours from newly installed wells
- Figure 9-12a New Hydrologic Monitoring Locations was updated to show the news installed wells
- Figure 9-12b Water Supply Well Locations was updated to show wells in the proposed development
- Figure 9-12c Domestic Wells within 1 mile of King II Permit Area was updated to show wells adjacent to the proposed development
- Figure 9-13a Geologic Cross-Section was updated to incorporate data from newly installed wells
- Figure 9-13b NE/SW Hydrostratigraphic Cross-Section was updated to incorporate data from newly installed wells
- Figure 9-13c King II Geologic Cross-Section A-A' was updated to incorporate data from newly installed wells
- Figure 9-13d King II Geologic Cross-Section B-B' was updated to incorporate data from newly installed wells
- Figure 9-14a Cliff House Groundwater Potentiometric Map was updated to reflect contours from newly installed wells
- Figure 9-14b "A" Coal Seam Groundwater Potentiometric Map was updated to reflect contours from newly installed wells
- Figure 9-14c Menefee Interburden ("A" Seam Underburden) Groundwater Potentiometric Map was updated to reflect contours from newly installed wells
- Figure 9-14d Lower Menefee Groundwater Potentiometric Map was updated to reflect contours from newly installed wells
- Figure 9-14e Point Lookout Groundwater Potentiometric Map was updated to reflect contours from newly installed wells
- Figure 9-15 Comparison of major ion concentrations (milli-equivalents/Liter) in water analyses in Hay Gulch Ditch samples collected upstream and downstream of King I & II Mines 2016 through 2018
- Figure 9-16 Comparison of major ion concentrations (milli-equivalents/Liter) in water analyses of alluvial monitoring wells in Hay Gulch
- Figure 9-17 Trilinear plot of major ion concentrations in alluvial monitoring wells in Hay Gulch
- Figure 9-18 Hay Gulch Alluvial Groundwater Hydrograph
- Figures 9-19 through 9-24 illustrate water quality data and concentrations using bar graphs and trilinear plots for the water resources monitored through the approved water monitoring program

a) Evaluation of compliance with the permit application requirements (30 CFR Parts 777 through 784):

30 CFR 784.14(e) requires the permit applicant to submit a probable hydrologic consequences (PHC) demonstration that analyzes the likely effects of the proposed mining operation on surface and groundwater quantity and quality in the project area. GCCE has met this requirement.

30 CFR 784.14(h) and 784.14(i) require a permit applicant to submit groundwater and surface water monitoring plans, respectively, which provide baseline data to compare PHC predictions and downstream/downgradient water data to monitor parameters relevant to the post-mining land use and applicable water quality standards, and capture downstream/downgradient water data of potentially impacted streams and strata. The groundwater monitoring includes 9 new wells and captures baseline conditions and information on all applicable hydrologic units which could be affected by mining operations, upgradient and downgradient. **However, GCCE has not provided any information on springs and seeps in the revised permit area. A spring and seep survey must be conducted on the proposed expansion to the permit area and all springs and seeps must be accounted for and incorporated into the water monitoring plan in accordance with 30 CFR 784.14(h).**

There is no proposed mining underneath East Alkali Gulch which could result in a loss of that water resource nor is there sufficient mining related surface disturbance in the watershed which could cause a water quality effect. Consequently, because there are no potential impacts to surface water quantity and quality from surface mining and reclamation operations at King II Mine, surface water monitoring in East Alkali Gulch has not been proposed in the permit revision.

b) Evaluation of compliance with the performance standards (30 CFR Parts 800 through 823):

Performance standards at 30 CFR 817.41(c)(1) and (d)(1) state that surface and groundwater monitoring data, respectively, shall be submitted no less than every three months to the regulatory authority. GCCE's PAP meets the requirements of these rules.

30 CFR 817.43(a)(3) specifies that temporary diversions shall be removed when no longer needed and the land disturbed by removal shall be reclaimed in accordance with the applicable performance standards. GCCE demonstrates in their Appendix 10.15 reclamation plan that a temporary diversion will be utilized while the low cover crossing is being constructed and that the temporary diversion will be removed when no longer necessary. GCCE has met the requirements of this rule.

30 CFR 817.43(b)(3) requires channels which drain 640 acres or more to be designed to safely pass the peak flow from a 100-year 6-hour storm event for a permanent channel or a 10-year 6-hour storm for a temporary channel. 30 CFR 817.151 (d)(1) requires that a primary road have a drainage control system that can safely pass the peak runoff from a 10-year 6-hour storm event. **The low cover crossing should be able to pass the peak flow from a 10-year 6-hour storm event and GCCE must demonstrate this in their permit revision application.**

30 CFR 817.57 specifies that land within 100 feet of a perennial or intermittent stream may only be disturbed by underground mining activities when specifically authorized by the regulatory authority. Such disturbance may only be authorized based on a finding that it will not cause or contribute to the violation of applicable State or Federal water quality standards and that the water quality and quantity of the stream will not be affected. GCCE has proposed to construct a crossing over East Alkali Gulch and has also proposed to implement sufficient design criteria to protect the quality and quantity of water there. GCCE has met the requirements of this rule.

(3) On the basis of the preceding evaluation, I conclude that:

☐ This part of the application/document complies with the requirements of the applicable regulations.

☒ This part of the application/document does <u>not</u> comply with the requirements of the applicable regulations. The aforementioned issues that do not satisfy the conditions of the Federal regulations are in **bold**.

☐ The above evaluation may concern a proposed revision of the reclamation plan that affects reclamation costs. Mine team leader/mine permit coordinator, please make the team bond cost estimator aware of this revision so that he or she can determine whether the bond amount needs to be adjusted.

6. <u>PRIMARY AND PEER REVIEWERS</u>.

A. Primary reviewer:

Flynn Dickinson

Flynn Dickinson, Hydrologist

11-7-19

Date

B. Peer reviewer:

Paul Clark, Hydrologist

11-7-19

Date

TECHNICAL EVALUATION OF
KING II MINE (CO-0106C)
LOW-COVER CROSSING RECLAMATION PLAN

1. **COMPANY:** GCC Energy, LLC

2. **MINE/OPERATION:** King II Mine

3. **TRACKING SYSTEM INFORMATION.**

   A. **OSMRE Project Number:** UM.CO.0106C.2946

   B. **Letterhead date of submittal:** September 25, 2019

4. **TYPE OF APPLICATION/DOCUMENT REVIEWED.**
   - ☐ New permit application
   - ☒ Minor permit revision application
   - ☐ Permit renewal application
   - ☐ Permit transfer, assignment, or rights sale application

5. **EVALUATION.**

GCC Energy, LLC (GCC) submitted a minor permit revision to the Permit Application Package (PAP) for King II Federal Permit CO-0106C to update and include activities associated with the Dunn Ranch - Lease By Application (LBA) submitted to the Office of Surface Mining Reclamation and Enforcement (OSMRE). In addition, updates to the associated revegetation plan within the PAP were evaluated. The purpose of this Technical Evaluation (TE) is to: (1) evaluate Appendix 10-15: The Low-Cover Crossing Reclamation Plan; and (2) evaluate GCC's revisions to the associated reclamation plan within the currently approved PAP as it relates to the intended post-mine land use.

A. **Part of application/document reviewed:**

Revised Permit Application Package

Section 5.4.4; 783.19	– Vegetation Information
Section 5.4.4.1; 783.19(a)	– Vegetation Community Description
Section 5.5.3; 784.13	– Reclamation Plan: General Requirements
Section 5.5.5; 784.15(a-c)	– Reclamation Plan: Land Use Information
Section 5.5.11; 784.21	– Fish and Wildlife Information
Section 7.3.31; 817.97	– Protection of Fish, Wildlife, and Related Environmental Values
Section 7.3.37; 817.111(a-d)	– Revegetation: General Requirements
Section 7.3.38; 817.113	– Revegetation: Timing
Section 7.3.39; 817.114	– Revegetation: Mulching and Other Soil Stabilizing Practices
Section 7.3.40; 817.116	– Revegetation: Standards for Success
Section 7.3.45; 817.133	– Post-mine Land Use

Table 5-9 784.13(b)(5)(ii)-1	– Revegetation Seed Mix: Rangeland Areas
Table 5-10 784.13(b)(5)(ii)-2	– Revegetation Seed Mix: Additional Species for Pinyon-Juniper Areas
Table 5-12 784.21(a)(2)(i)	– USFWS Birds of Conservation Concern-Region 16
Table 5-13 784.21(a)(2)(i)	– Federally-listed Species Considered
Figure 9.8	– Soils, Vegetation, and Land Use
Appendix 10.5	- Low Cover Reclamation Plan

B. Citation of applicable regulations:

30 CFR 783.19	Vegetation Information
30 CFR 784.11	Operation Plan: General Requirements
30 CFR 784.13	Reclamation Plan: General Requirements
30 CFR 784.15(a-c)	Reclamation Plan: Land Use Information
30 CFR 784.21	Fish and Wildlife Information
30 CFR 817.97	Protection of Fish, Wildlife, and Related Environmental Values
30 CFR 817.111	Revegetation: General Requirements
30 CFR 817.113	Revegetation: Timing
30 CFR 817.114	Revegetation: Mulching and Other Soil Stabilizing Practices
30 CFR 817.116	Revegetation: Standards for Success
30 CFR 817.133	Post-mine Land Use
30 CFR part 822	Special Permanent Program Performance Standards for Operations in Alluvial Valley Floors

C. Evaluation of compliance with the requirements of the applicable regulations:

OSMRE completed a Technical Evaluation of GCC Energy, LLC King II Coal Mine – Dunn Area Low-Cover Crossing Reclamation Plan (LCCRP) and revised Permit Application Package (PAP). GCC's LCCRP and revised PAP are presented in a clear and concise manner.

OSMRE NOVEMBER 2019 FINDINGS

The proposed post-mining land uses of the proposed project area are rangeland, wildlife habitat, and undeveloped land. The Project Area contains rolling piñon-juniper woodlands along the edges of East Alkali Gulch with small areas (less than 0.25 acre) of riparian vegetation. SME Environmental Consultants conducted a site inspection of the Low-Cover Crossing site in Alkali Gulch and the proposed route to access the site on October 22, 2018.
SME consultants determined the southwestern willow flycatcher (*Empidonax traillii extimus*) and New Mexico meadow jumping mouse (*Zapus hudsonius luteus)* are unlikely to occur in the immediate project area, access route, or surrounding areas. In addition, SME consultants did not observe any suitable habitat for other federally listed species that occur in southwest Colorado.

Furthermore, James Blair (Geologist) with the Bureau of Land Management conducted a site inspection of the Low-Cover Crossing area on August 29, 2019 with Tom Bird, a representative

of GCC. Mr. Blair states in his inspection report "*The low pass crossing was deeper than I expected it. There was bench on either side of the valley bottom with made of reddish Aeolian soil, into which East Alkali Gulch had eroded. The eroded portion was approximately 75 feet wide and 15-20 feet deep, with a small, incised channel in the middle that was about 3 feet wide and 2 feet deep. The bottom of the channel was grassy with soil, not rounded stones. The central portion of the crossing area was a thicket of willow brushes, and also contained juniper, sage, rabbit brush, and ash trees. Strangely, there were no cottonwoods. It looks like East Alkali gulch probably flows during storm events and spring runoff, but the summer of 2018 has been an historic drought in SW Colorado, so it is difficult to estimate what a "normal' level of wetness would be.*"

I. Appendix 10-15: Low-Cover Crossing Reclamation Plan

a. **Section 2.1 Construction Sequence.** GCC states topsoil would first be removed over the new low-cover crossing area and stored in a topsoil stockpile for reuse in reclamation.

Deficiency. Assuming pre-disturbance topsoil depth at the project site is greater than 6 inches depth, **GCC must clarify if all slopes no steeper than 2:1 proposed to be plated with 4" of topsoil, as described Section 5.2, will be a portion of the initial topsoil removed from the site.** Therefore, GCC would be stockpiling the remainder of topsoil until closure of the mine and final reclamation. **GCC must show on a map the anticipated location of where the topsoil stockpile is to be located and describe in detail how the topsoil pile will be revegetated (i.e., cover crop/rangeland seed mixture) and stabilized/protected during the life of the mine per 30 CFR 817.22(a-e), particularly during storm events.**

b. **Section 5.1 Geomorphic Grading and Backfilling.** GCC states that upon closure of the mine, the low-cover crossing site will be excavated and the tunnel components removed whereby the stockpiled material would be used to fill the tunnels. The topsoil will be spread over the disturbed area up to the original depth and surface elevation, and the stream bed will be re-established as closely as possible to its original configuration.

c. **Section 5.2 Surface Water Runoff and Erosion Control.** As a diversion when excavating, GCC proposes to install a reinforced HDPE rigid pipe sized for a 5-year storm water run-off event with a compacted berm constructed on the upstream side to funnel the channel towards the pipe inlet above the excavation. GCC states all slopes no steeper than 2:1 will be plated with 4" topsoil and reseeded. The reestablished stream will be lined with HDPE liner to limit water infiltration, and the liner would be covered with a bedding layer overlain with riprap to prevent erosion of the channel.

Deficiency. **Because Section 5.2 is under "Reclamation", GCC must clarify activities to control surface water runoff and erosion control during the construction phase versus reclamation upon closure of the mine. For example, GCC must clarify if the reestablished**

stream to be lined with HDPE liner and covered with a bedding overlain with riprap is referencing final reclamation.

d. **Section 5.3.2. Revegetation Seed Mixture.** Table 5-1 below shows the proposed reclamation seed mixture for rangelands and the Low-Cover Crossing revegetation final reclamation. GCC includes 6 grass species, two of which are warm-season species. Two forb species are also included in the seed mixture.

Table 5.1. GCC's proposed Low-Cover Crossing proposed reclamation seed mixture. Species highlighted in yellow are warm-season grass species.

Species	Common Name	Seeds per pound	Seeds per square foot	Seeding rate – pounds of pure live seed per acre
Grasses				
Pascopyrum smithii	Western wheatgrass	120,000	12	4.36
Agropyron trachycaulum	Slender wheatgrass	140,000	8	2.48
Bouteloua curtipendula	Sideoats grama	175,000	8	2.00
Bouteloua gracilis	Blue grama	725,000	20	1.20
Bromus marginatus	Mountain brome	75,000	6	3.48
Oryzopsis hymenoides	Indian ricegrass	150,000	10	2.90
Forbs				
Sphaeralcea coccinea	Copper globemallow	500,000	10	0.88
Sanguisorba minor	Small burnet	45,000	6	5.8
	Seed Mixture Total		80	23.12

Deficiency. The Project Area contains rolling piñon-juniper woodlands along the edges of East Alkali Gulch with small areas (less than 0.25 acre) of riparian vegetation. The central portion of the crossing area appears to be a thicket of willow brushes with some juniper, sagebrush, rabbit brush, and ash trees per the Bureau of Land Management field report for East Alkali Gulch dated August 29, 2018. GCC states in Section 5.3.2 (page 9) of the LCCRP that "*Graminoids, forbs, and shrubs to be seeded provide a mix of plant morphologies and structure.*" However, there are

no shrubs included in the proposed seed mixture (Table 5-1, page 9). *Sphaeralcea coccinea* may be considered a half-shrub/forb and *Sanguisorba minor* is a perennial forb. **Because the acreage of potential disturbance is approximately 3-10 acres, GCC should include willow plantings along with shrubs in the seed/planting mixture within the central portion of the crossing area (final reclamation).**

e. **Section 5.3.3 Methods to be used in Planting and Seeding.** GCC proposes to broadcast seed all areas impacted by construction of the low-cover crossing. Where wind and water erosion are of significant concern, GCC will utilize hay and/or straw mulch and may include channel bottoms and hillside slopes.

   Note: GCC should be cognizant that broadcast seeding typically requires twice the normal seeding rate compared to using rangeland drills.

f. **Section 5.34 Noxious Weed Monitoring.** GCC proposes to conduct management measures where a single or combination of noxious weed species or plant pests comprises or shows a deleterious effect to more than ten (10) percent of the live vegetation. Further, where noxious weed species or plant pests constitute more than 25 percent relative vegetation cover in an area of 500 square feet or such area shows depredation or plant impacts of the same magnitude, such area will be identified as a patch, and subject to management measures, irrespective of the percentage of overall noxious weed cover in the mitigation area.

Recommendation. Because of the amount of traffic during construction for the low-cover crossing area, GCC should focus weed management on invasive plant prevention. Ecologically-based invasive weed management (EBIPM) should focus on species availability, species performance, and site availability of both un-desirable and desirable species.

g. **5.3.5 Monitoring.** Monitoring will consist of qualitative and quantitative estimation of vegetation cover, species diversity, and the survival of plant species within the revegetated areas. An appropriate measure of revegetation success would be the reestablishment of 70% of the pre-disturbance vegetative cover, excluding invasive weeds.

Deficiency. GCC must clarify in detail how or if reference areas will be utilized for statistical comparisons to demonstrate reclamation success (i.e., vegetative cover/production) as stated in the proposed revised PAP (e.g., Sections 5.4.6.4, 5.5.5, and 7.3.45). Furthermore, GCC must clarify in detail the vegetation sampling protocol to be used for measuring success to achieve a 90% statistical confidence interval (e.g., sample adequacy) [30 CFR 817.116(a)]. If reference area(s) are not to be used to determine "pre-disturbance" vegetative cover/production, GCC must clarify in detail how the average (mean) pre-disturbance vegetation cover/production (excluding invasive weeds) standard will be determined for a one-sample, one-sided statistical test per 30 CFR 817.116(a).

II. Revised Permit Application Package

a. Section 3.1.1.10 750.12(d)(2)(ix) Threatened and Endangered Wildlife Species
No suitable or critical habitat for federal listed threatened and endangered species has been identified within the permit boundary from previous biological investigations completed in the area as stated in the PAP. OSMRE previously determined there would be "no effect" on the continued existence to any listed species, with the exception of the Colorado pike minnow and the razorback sucker, who had a determination of "likely to adversely affect" the continued existence of those species (Caveny 2015).

GCC included a statement on page 5-84 (PAP) "Consultation with the USFWS initiated on February 23, 2019 resulted in the determination that the Dunn Ranch LBA would not adversely affect federally listed species; USFWS provided concurrence on April 29, 2019 (BLM 2019)."

b. 5.4.4 783.19 Vegetation Information
No revisions have been made to this section. The two dominant vegetation communities are located within the permit boundary and lease expansion area: Southern Rocky Mountain ponderosa pine woodland and Rocky Mountain Gambel oak-mixed montane shrubland (BLM 2015).

c. 5.4.6 783.24 Maps
GCC revised section 5.4.6.5 (water supply intakes) to include the statement "*The Dunn Ranch LBA area contains a windmill and associated stock pond that is abandoned and not currently in use. This site will be avoided and will not be impacted by activities associated with the Dunn Ranch LBA.*"

Deficiency. Section 5.4.6.4 states "*The location and boundaries of proposed reference areas for determining the success of revegetation are illustrated in Figure 9-8.*" Figure 9-8 appears to show soils, vegetation, and post-mine land use and does not appear to show designated reference area polygon(s). **GCC must clarify if reference areas are to be used to demonstrate reclamation success, and if so, show on a map where these are located.**

d. 5.5.3 784.13 Reclamation Plan: General Requirements
No revisions are proposed for this section of the PAP. Included in this section are tables listed below:

- Table 5-8. 784.13(b)(1). Reclamation timetable
- Table 5-9. 784.13(b)(5)(ii) – 1. Revegetation Seed Mix: Rangeland Areas
- Table 5-10. 784.13(b)(5)(ii) – 2. Revegetation Seed Mix: Additional Species for Pinyon-Juniper Areas

e. 5.5.5 784.15 (a-c) Reclamation Plan: Land Use Information

The proposed post-mining land uses of the proposed permit expansion area are the same as the pre-mining land uses; rangeland, wildlife habitat, and undeveloped land. No revisions are proposed for this section. GCC states the reclamation plan is consistent with the requirements of the landowner lease.

f. 5.5.11 784.21 Fish and Wildlife Information

GCC included a statement on page 5-84 stating "*Consultation with the USFWS initiated on February 23, 2019 resulted in the determination that the Dunn Ranch LBA would not adversely affect federally listed species; USFWS provided concurrence on April 29, 2019 (BLM 2019).*" GCC includes the following tables in this section.

- Table 5-12. 784.21(a)(2)(i) USFWS Birds of Conservation Concern – Region 16 (Southern Rockies/Colorado Plateau) and Colorado Partners in Flight Priority Species – Physiographic Area 87 (Colorado Plateau)
- Table 5-13. 784.21(a)(2)(i) Federally-listed species considered

g. 7.3.37 817.111(a-d) — Revegetation: General requirements

GCC does not propose any revisions to this section.

GCCE commits to establishing vegetative cover on King II Mine in all disturbed areas that is diverse, effective, and permanent; comprise species native to the area, or of introduced species where desirable and necessary to achieve the approved post-mining land use and approved by the regulatory authority; at least equal in extent of cover to the natural vegetation of the area; and capable of stabilizing the soil surface from erosion.

h. 7.3.38 817.113 — Revegetation: Timing.

A spring seeding window would take advantage of increased mid-late summer precipitation, encouraging summer growth and allowing plants to add sufficient biomass prior to winter. A second autumn seeding window allows seeding into relatively moist ground, but prevents significant seedling growth prior to freezing, allowing seeds to remain dormant over the winter with adequate moisture for early germination in the spring.

Note: A Spring seeding should be early enough to take advantage of the previous late-fall/winter moisture.

i. 7.3.39 817.114 — Revegetation: Mulching and other soil stabilizing practices

GCC does not propose any revisions to this section. GCC will utilize mulch to minimize loss of seed and sediment; in addition, to provide additional moisture retention.

j. 7.3.40 817.116 — Revegetation: Standards for success.

Section 5.4.6.4 783.24(f) states "*The location and boundaries of proposed reference areas for determining the success of revegetation are illustrated in Figure 9-8*" (PAP,

page 5-27). However, Figure 9-8 appears to only show soils, vegetation, and land use. Specific reference areas do not appear to be shown on Figure 9-8.

Section 5.5.5 784.15(a-c) Reclamation Plan: Land Use Information (PAP, page 5-76) states "*Verification of the utility and capacity of the post-mining land use to support equivalent uses will be undertaken through comparison with the reference area, established to represent the pre-mining condition and utility of the site.*"

Section 7.3.40 817.116 – Revegetation: Standards for success states "*Surface disturbances associated with the OSMRE SMCRA permit consist of periodic construction of exploration drill sites and temporary access routes across the surface* (PAP, page 7-18). *For these very small (typically less than 0.1 acre) surface impacts, an appropriate measure of revegetation success would be the reestablishment of 70% of the pre-disturbance vegetative cover, excluding invasive weeds." "Pre-disturbance vegetation cover within the two dominant land cover types at the King II Mine ranges from 50 to 85 percent (SWCA 2014).*"

Deficiency. The post-mine land use is rangeland (grazing), wildlife habitat, and undeveloped land. The 30 CFR 817.116(a)(2) regulation states ground cover, production, or stocking shall be considered equal to the approved success standard when they are not less than 90% of the success standard. The 30 CFR 817.116(b)(1) regulation states for areas developed for use as grazing land or pasture land, the ground cover and production of living plants on the revegetated area shall be at least equal to that of a reference area or such other standards approved by the regulatory authority. Because the "pre-disturbance vegetative cover" within the two dominant land cover types appears to range between 50-85 percent, reestablishment of 70% of the "pre-disturbance vegetative cover" as stated is imprecise to be used as a success standard.

GCC must clarify and describe in detail how reference areas will be utilized for statistical comparisons to demonstrate reclamation success (i.e., vegetative cover) as stated in the currently approved PAP (e.g., Sections 5.5.5, 5.4.6.4, and 7.3.45). For example, will the success standard for cover/production be a weighted average (based on total acreages) of the two reference area(s) plant community types? If reference areas are not to be used for comparison, GCC must clarify in detail how the success standard for cover/production will be determined and make appropriate revisions to the PAP. Furthermore, GCC must clarify in detail the vegetation sampling protocol to be used for measuring success to achieve a 90% statistical confidence interval (e.g., sample adequacy) [30 CFR 817.116(a)].

D. On the basis of the preceding evaluation, I conclude that:

☒ This part of the application/document does not comply with the requirements of the applicable regulations. To bring the document into compliance, GCC needs to address the deficiencies identified above in **bold text.**

6. PRIMARY AND PEER REVIEWERS

A. Primary reviewer:

Ed Vasquez, Ph.D., Ecologist
Program Support Division,
Indians Program Branch

November 5, 2019
[Date]

B. Peer reviewer:

Paul Clark, Hydrologist
King II Mine Permit Coordinator
Indian Program Branch
Program Support Division

November 5, 2019
[Date]

REVISION APPLICATION TECHNICAL EVALUATION

1. **COMPANY:** GCC Energy, LLC

2. **MINE/OPERATION:** King II Mine

3. **TRACKING SYSTEM INFORMATION.**

   A. **OSMRE Project Number (CRSS):** UM.CO.0106.2946

   B. **Letterhead date of submittal:** September 25, 2019

4. **TYPE OF APPLICATION/DOCUMENT REVIEWED.**

   ☐ New permit application
   ☒ Permit revision application
   ☐ Permit renewal application
   ☐ Permit transfer, assignment, or rights sale application
   ☐ Other:

5. **EVALUATION.**

   A. **Part of application/document reviewed:** Reclamation Cost Estimate information in Appendix 10-13.

   (1) Citation of applicable regulations:

30 CFR 784.23	Operation Plan: Maps and Plans
30 CFR 784.13	Reclamation Plan: General Requirements
30 CFR 800.14	Determination of Bond Amount
30 CFR 800.15	Adjustment of Amount

   (2) Evaluation of compliance with the requirements of the applicable regulations:

GCC Energy LLC (GCC) has submitted to the Office of Surface Mining Reclamation and Enforcement (OSMRE) a permit revision application to support construction of a low-cover crossing at the King 2 Mine. GCC has included a reclamation cost estimate in its permit revision.

(a) Evaluation of compliance with the permit application requirements (30 CFR Parts 777 through 784 and Part 800):

GCC has provided a brief description, including maps and plans of the proposed construction and reclamation actions to support the low-cover crossing structure under Appendix 10-15. GCC's proposed low-cover crossing includes the following general construction/reclamation activities:

- 25,000 cubic yards of excavation and stockpiling.
- Construction and removal of a stream by-pass culvert and low-cover crossing structure.
- Reclamation, grading and revegetation of surface disturbance associated with construction.
- Reestablishment of East Alkali Gulch streambed.

- Topsoil recovery and replacement.
- Revegetation and mulching.

GCC has provided a reclamation cost estimate to support its proposed reclamation plan under Appendix 10-13. OSMRE notes that, while GCC has provided a reclamation cost estimate, the reclamation cost estimate does not provide a source for the construction unit costs, nor does it actually indicate the unit of measure of each reclamation activity or unit cost.

Furthermore, GCC's reclamation cost estimate is overly general in its presentation of reclamation action costs. OSMRE finds that GCC's proposed low-cover crossing reclamation cost estimate lacks sufficient detail for OSMRE to make a finding of adequacy. OSMRE finds that GCC's reclamation cost estimate contained in Appendix 10-13 does not comply with 30 CFR 784.13(b)(2).

OSMRE has reviewed the low-cover crossing reclamation plan information contained in Appendix 10-15 and notes that reclamation of the low-cover crossing would appear to include certain specialized actions that should be described in more detail. Specialized reclamation activities may include, but are not limited to: stream channel reconstruction; tunnel plugging and backfilling, esp. where tunnels would be backfilled from native/reclaimed ground, among other possible actions.

Additionally, OSMRE notes that it is unclear if sufficient fill is available in-situ (fill placed around and over the culvert and low-cover crossing arches) or if fill will be imported. If imported fill is required for either construction of the low-cover crossing, or for reclamation, then this material must accounted for in the cost estimate.

OSMRE also notes that Section 5.5.17 of the King 2 PAP needs to be revised to mention the low-water crossing as it is a diversion of stream flows in East Alkali Wash from the natural channel.

OSMRE does not have sufficient information to make a finding concerning the adequacy of GCC's low-cover crossing reclamation cost estimate given the information provided. OSMRE will not make a finding or determination concerning the reclamation performance bond amount in accordance with 30 CFR 800.14 and 30 CFR 800.15 until the deficiencies identified under this evaluation are corrected.

(b) Evaluation of compliance with the performance standards (30 CFR Parts 816 and 817):

There are no evaluations under 30 CFR 816 or 817.

(3) On the basis of the preceding evaluation, I conclude that:

☒ This part of the application/document does not comply with the requirements of the applicable regulations. GCC will need to revise the following materials:

- Provide references for unit costs and the actual unit of measure for reclamation costs.
- Provide more detail and elaboration on proposed low-cover crossing reclamation cost actions.
- Revise Section 5.5.17 of the King 2 Permit Application Package to describe the creek diversion.

☒ The above evaluation concerns a proposed revision of the reclamation plan that affects reclamation costs.

6. <u>PRIMARY AND PEER REVIEWERS</u>.

A. Primary reviewer:

Matthew Hulbert, Civil Engineer
Program Support Division

10/23/19
Date

B. Peer reviewer:

Paul Clark, Permit Coordinator
Program Support Division

10/23/19
Date