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DIVISION OF RECLAMATION
MINING AND SAFETY

COLORADO MINED LAND RECLAMATION BOARD c/o Mr. Jeff Graves, Pre-Hearing Conference Officer 1313 Sherman Street, Room 215 Denver, CO 80203	
Applicant: TRANSIT MIX CONCRETE CO.	**DRMS File No. M-2016-010**
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APPLICANT'S PETITION FOR RECONSIDERATION OF THE MINED LAND RECLAMATION BOARD'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER

Transit Mix Concrete Co., a Colorado corporation ("Transit Mix"), by and through the undersigned counsel and pursuant to Rule 2.9 of the Colorado Mined Land Reclamation Board (the "Board") Mineral Rules and Regulations (the "Rules"), petitions the Board to reconsider the findings of fact, conclusions of law, and order (the "decision") issued on December 22, 2016. Pursuant to Rule 2.9.2, this Petition is timely as it was made within 20 calendar days of the effective date of the Board's written decision.

The Board's decision overruled the recommendation of the Division of Reclamation, Mining and Safety ("DRMS") based on information presented for the first time by the opponents at the hearing. This information was not disclosed by the objectors at the pre-hearing conference, in violation of Rule 2.6(2). Transit Mix argues that such evidence should not have been allowed to be presented at the Board hearing and thus Transit Mix deserves an opportunity to rebut that information on rehearing.

The Board also has not explained, with citations to the record, why the evidence presented by the objectors is considered adequate to rebut the significant technical information presented by Transit Mix in its application and accepted by the DRMS staff, and why the objector's evidence overcomes the deference that the Board owes to the DRMS staff under the Colorado Administrative Procedure Act.

Further, the existing evidence and the new evidence provided with this Petition meets the burden of proof that Transit Mix has to show a legal right of access, to minimize the effect on

groundwater, to list all the effects on wildlife, and to protect as much as possible against any damage to wildlife. The proposed mining operation has demonstrated no documented effect on groundwater, and the temporary effect on Wildlife—at less than one half of one percent of the regional sensitive Wildlife area—identified by the objectors does not justify overruling DRMS staff and denying the permit application. Although Transit Mix will attempt to restore all mined areas to provide Mexican Spotted Owl foraging habitat, even if the area of the mine is no longer foraging habitat, it is a miniscule and negligible area in comparison to the total habitat nearby.

Finally, Transit Mix also offers a compromise of first mining the South side of the quarry to resolve the issues raised by the Board.

I. Summary of the Board's Decision

The decision accepts that Transit Mix's application meets most of the requirements for a mine permit, except in three areas. The Board found that:

> 1. Transit Mix has not demonstrated that it has a legal right of entry on Little Turkey Creek Road because the Eagles Nest neighbors dispute whether their road easement allows the current Hitch Rack Ranch owner to grant Transit Mix access despite their easement over Little Turkey Creek Road. Order, ¶¶ 41, 43.
>
> 2. Transit Mix has not demonstrated that the effects of the quarry on groundwater would be minimized. Order, ¶ 46.
>
> 3. Transit Mix "failed to take into account, to the satisfaction of the Board, the safety and protection of wildlife at the proposed site. Order, ¶ 51.

II. Analysis

Transit Mix asserts that it is entitled to reconsideration because the Board relied on improperly introduced evidence to overrule the recommendation provided by DRMS. DRMS acted as advisory staff to the Board, issuing an approval recommendation based on its consideration of the extensive expert testimony offered by Transit Mix.

The Board's decision did not cite exhibit numbers or refer to pages from the transcript, but it appears that almost all of the evidence relied upon for the decision in the areas of groundwater and wildlife was presented by the project opponents for the first time at the hearing. Rule 2.6(2)(b) states that all parties must provide copies of any materials to be used as exhibits at the hearing "at or before the Pre-Hearing Conference." Numerous exhibits were not provided at the pre-hearing conference and were eventually offered only in the form of summary PowerPoint slides, which were not numbered as exhibits. Further, witness testimony was not transcribed and cited by page number. Given that this evidence should have been excluded by the Board because it violated Rule 2.6(2)(b), it was improper for the Board to overrule the recommendation of the DRMS based on improper evidence.

Under the principles of agency deference, the Board must defer to the recommendation of the DRMS staff unless the recommendation is shown to be unreasonable. The United States Supreme Court has recognized the importance of agency deference. In *Skidmore v. Swift & Co.*,

the Court stated that the rulings, interpretations, and the opinions of the agency "constitute a body of experience and informed judgment" that should be used for guidance. 323 U.S. 134, 140 (1944). The Court noted that the weight of the agency's decision "will depend upon the thoroughness evident in its consideration, the validity of its reasoning, [and] its consistency with earlier and later pronouncements." *Id.* In *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, the Court examined whether the agency had been delegated the power on which it issued the opinion that the court was deferring to. 467 U.S. 837, 843–44 (1984). Where the agency's authority had been delegated by Congress, "a court may not substitute its own conclusion . . . for a reasonable interpretation made by the administrator of an agency." *Id.* at 844.

Here, the DRMS Office has been delegated the responsibility of making recommendations on applications based off of the experience and knowledge that the office staff has. Rule 1.4.9 ("[T]he Office will issue a recommendation to the Board . . . ."). The Board sits as a judicial body in these contested proceedings, hearing evidence put on by adversarial parties. Under *Skidmore* and *Chevron*, the Board is required to consider the recommendation of the DRMS staff and if it decides to not accept the recommendation, must thoroughly explain why it deviated from the opinion of its delegated experts. If the Board could completely disregard the recommendation of the DRMS staff—not even addressing it in its decision—it would render the provision that requires the DRMS staff to issue a recommendation superfluous. For these reasons, the Board must consider the recommendation of the DRMS staff and defer to their technical expertise and judgment unless the Board can show that their conclusions are unreasonable.

Finally, irrespective of the procedural propriety of the introduction, discussion, and lack of citations of these exhibits, Transit Mix is surprised by some of the content and deserves an opportunity to respond to these new exhibits and testimony. *See* C.R.S. § 24-4-105 ("[E]very party to the [administrative] proceeding shall have the right . . . to submit rebuttal evidence . . . ."). Transit Mix accordingly requests that the Board grant this Petition for Reconsideration pursuant to Rule 2.9.1.

A. Legal Right of Entry Issues

Transit Mix will file a case in El Paso County Court to clarify the road easement issue, but even without the judicial determination, Transit Mix has certainly shown a legal right of entry. The State of Colorado Land Board has the right to grant access to its minerals which were reserved independent of any easements granted by the landowner to the neighbors. Further, when the land was sold to the predecessors in title to the current owner, the deed stated "Reserving, however, to the State of Colorado all rights to any and all minerals, ores and metals of every kind and character and all coal, asphalt, oil and other like substances in or under said land, and the right of ingress and egress for the purpose of mining together with enough of the surface of same as may be necessary for the proper and convenient working of such minerals and substances." The patent Number 2499 was signed May 15, 1909. . Patent 2499 is "Subject to any and all easement or rights of way heretofore legally obtained and now in full force and effect if any these be." No legally obtained easements or rights of way predating May 15, 1909 are believed to exist and rights claimed by the State of Colorado in 1909 are superior to any subsequent easements or rights of way in this case.

The "right-of-way" the neighbors base their claim on was confirmed 59 years after Patent 2499 went into effect by the 1968 El Paso County District Court decree. The right-of-way clearly postdates the ingress and egress rights reserved by the State of Colorado. This grant of access overrides the easement. *See* Ex. 1, State of Colorado, Department of Natural Resources, Mining Lease No. 109924, at 2 (granting the lessee "the right to use as much of the surface as may be reasonable required, including the right to reasonable ingress and egress . . . *subject to all existing easements and rights-of-way of third parties*, as detailed on Exhibit A to this agreement" (emphasis added)) and *id.* at Ex. A (showing no existing right-of-way agreements); *see also Gilpin Inv. Co. v. Perigo Mines Co.*, 421 P.2d 477, 480 (1966) ("It is apparent that Sleeping Giant Company is the owner of the mineral rights in and to its property above described, with the right to mine or placer and to build the necessary roads for ingress to or egress from its property, without interference with the buildings on the property." The Board should find that a legal right of entry exists based on that grant alone.

Further, Transit Mix contends that Little Turkey Creek Road is not "affected land" under C.R.S. §§ 34-32.5-103(1) and -112(1)(b)(IV). The Board cited an incomplete definition of "affected land," which focused on whether the "surface is disturbed as a result of an operation." The Board stated that Little Turkey Creek Road was "affected land" because "of the manner of use, and intended modification, of the road." Order, ¶ 42. However, the Board did not address the exception to "affected lands" contained in the statute. The exception in C.R.S. § 34-32.5-103(1) states that, "'Affected land' does not include . . . off-site roads that were constructed for purposes unrelated to the proposed operation, were in existence before a permit application was filed with the office, and will not be substantially upgraded to support the operation." Little Turkey Creek Road preexisted the permit application, was not constructed for mining activities, is not within the disturbance boundary, and Transit Mix is not proposing substantial upgrades to the road. Therefore, Little Turkey Creek Road is not "affected land" under the exceptions in the statutory definition of "affected land."

Regardless, the Board can grant the application pending the outcome of a case clarifying the easement and the State's right to grant an access easement regardless of the Eagle's Nest agreement. The Board Chair stated during the deliberation that it could make a conditional grant. After the court case is concluded the Board can then revisit the issue of the scope of the existing easement. During the pendency of the court case to clarify the scope of the easement, Transit Mix will agree to mine only the south side of the proposed quarry and will thus not impact the Eagle's Nest easement at all. Transit Mix can reach the south side via its own access road without ever crossing the easement and thus without straightening the road. If Transit Mix mines only on the south side then there will be no reason to stop traffic on Little Turkey Creek Road because impacts from blasting should not reach the road. As long as the Mine Safety and Health Administration ("MSHA") agrees, Transit Mix will simply wait until the road is clear before blasting. By the time Transit Mix is ready to mine the north side of the quarry—in more than ten years—the court case on access will be resolved. Once the proposed condition of showing a legal right of entry can be shown with a court order, Transit Mix will have shown a legal right to access the north side and only then will begin mining operations on the north side of Little Turkey Creek.

B. Transit Mix Has Minimized the Effects on Groundwater

The Board presented no factual justification for its decision that overruled DRMS's conclusion that Transit Mix had sufficiently minimized the effect on the groundwater. As noted by the Board, Transit Mix must show that it "minimized" the effect of the quarry on the hydrologic balance and groundwater. The Board's conclusion is insufficient to overcome the deference owed to the DRMS expert opinion on these technical issues.

The Board relied on the unqualified opinions of alleged experts to hold that Transit Mix had failed to demonstrate that the impact to the groundwater will be minimized. This conclusion directly contradicts the DRMS staff's conclusion that the "groundwater will not be adversely impacted." The Board considered testimony from four witnesses who raised concerns about the quarry's effect on groundwater. Two of these witnesses were Steve Mulliken and Ted Kerr. Neither of these witnesses can be considered expert witnesses: Mr. Mulliken was simply the lawyer for an objector who summarized other persons' testimony, and Mr. Kerr, who is also not a hydrologist, only testified about wells that were more than a mile away from the proposed quarry. Further, Mr. Kerr provided no explanation how the draining of the granitic cracks near the quarry might affect the water supply for a subdivision more than a mile away. Assuming he meant to refer to water supply from Little Turkey Creek, the only place for water drained from the granitic cracks to go is into Little Turkey Creek; so even if the "draining the bathtub" theory is correct, that water will drain into Little Turkey Creek.

The "experts" presented by the opponents, only one of whom was even a hydrologist,[1] simply testified that they believe the groundwater supply may be interrupted, but were unable to quantify these impacts. Transit Mix reiterates that the standard of review for the Board is to determine whether Transit Mix will *minimize* any disturbances to the groundwater, not to prevent them entirely. C.R.S. § 34-32.5-116(4)(h).

The Board and the opponents' "experts" improperly focused on the question of whether there will be any impact to groundwater, not whether that impact will be minimized. Neither the Board nor the opponents offer any quantifiable impacts to the groundwater to show that Transit Mix has failed to *minimize* those effects. Rather, they take the position that because there may be impacts, the application must be denied.

In its Rationale for Recommendation to Approve, the DRMS staff responded to fourteen concerns regarding surface and groundwater levied by the objectors. These objections included the same concerns raised by Messrs. Mulliken, Moore, and Norris. DRMS had the benefit of the testimony and substantial data of a well-qualified expert, Bishop-Brogden Associates. The DRMS staff determined that Transit Mix had "demonstrated that groundwater will not be adversely impacted" and that Transit Mix had an adequate plan to "minimize impacts to surface waters." DRMS Recommendation, Sept. 29, 2016, at 21–22, 16.

The DRMS staff considered Transit Mix's plans to minimize the potential impact on groundwater to be more than sufficient because they included a monitoring plan that Transit Mix included despite a showing that the groundwater will not be affected. *Id.* at 22. The Board

[1] Messrs. Kerr and Mulliken are not hydrologists, and Mr. Moore was presented by the opponents as a geologist that focused on oil and gas.

ignored these plans, disregarding the additional fact that Transit Mix offered to replace any well which failed within three-quarters of a mile of the affected area, to further minimize the effect on water. Even though this is more than sufficient, according to the DRMS staff, to constitute minimizing the impact on groundwater, Transit Mix will now offer specific, individual damage agreements to all well owners within the three-quarters of a mile radius which will further minimize the already unlikely possibility of damage resulting from impact to the groundwater. During the Board's deliberation, Board member Singletary said that some homeowners may not want alternate sources of water. However, homeowners do not have that right under the standards of the statute and the Board Rules, which provide only for "minimizing" the effect of any impact to the groundwater. C.R.S. § 34-32.5-116(4)(h); Rule 3.1.6.

Although Bishop-Brogden Associates, a fully qualified hydrology company, offered evidence to both the Board and DRMS that there is no danger to the groundwater—evidence that the DRMS concluded was sufficient—Transit Mix will accept a conditional grant of the application based on a requirement to drill more monitoring wells. Transit Mix will drill two more monitoring wells and test various existing neighborhood wells to provide continuing assurance that there is no, or minimized, effect on the groundwater. This enhanced groundwater monitoring plan will continue to "verify compliance" with the statute and Board Rules, as accepted by the DRMS staff. *See* DRMS Recommendation, Sept. 29, 2016, at 22.

In addition, Bishop-Brogden has also provided a summary of why if Transit Mix only mines on the south side, pending the resolution of the right of entry legal issues, the mining will not affect any resident's groundwater supply. Further, there are fewer wells on the south side to monitor. The summary also provides further evidence, in order to rebut the opponent's improperly admitted evidence, to prove that mining on the north side is not likely to affect the groundwater supply, as originally accepted by the DRMS staff.

Prior to mining the south side, Transit Mix will provide each well owner within 880 yards of the boundary of the south side, a cistern to be filled immediately if their well has any issues. This will ensure that there is never any interruption of water for these properties. Numerous other quarries and mines have solved groundwater concerns by providing cisterns or other alternative sources of water.

To further rebut the evidence improperly presented for the first time at the Board hearing, Transit Mix has included evidence with this Petition that there are no issues with groundwater at the Menzer and Red Canyon quarries which are in the same geologic formation. These two quarries are less than 3 and 4.5 miles respectively, as the crow flies, away from the proposed Transit Mix quarry and provide the only actual evidence of potential impacts (or lack thereof) to groundwater resources by quarry development. The attached report by Bishop-Brogden Associates demonstrates that that the Menzer and Red Canyon Quarries have not intercepted groundwater. Ex. 2, Memorandum from Bishop-Brogden Associates. This is a much better comparison than the NORAD example cited by the objectors because it is much farther away, sits in a different geologic formation, and was developed using different methods, i.e. a major excavation over a mile into the mountain, and for different purposes than the proposed quarry. *See* Ex. 2, at 1, 4.

The Board provided no explanation why it overruled the recommendation of the DRMS staff, which found that Transit Mix had met its burden on minimizing the effect on the groundwater. The Board must defer to the DRMS staff and its delegation of expertise unless it can show that the DRMS conclusion is unreasonable.

C. Transit Mix Has Adequately Accounted For All Wildlife Issues

The Board found that Transit Mix did not properly account for the "safety and protection of wildlife at the proposed site, including without limitation, failing to take into account conservation of Mexican Spotted Owl foraging habitats and potential nesting habitats, and turkey production areas." Order, ¶ 51. The Board relied primarily on the testimony of Dr. John Sanderson. Transit Mix did not receive the testimony of Dr. Sanderson as summarized in PowerPoint slides until the second day of the Board hearing. Additionally, the Board's decision makes no reference to the pages of the PowerPoint or the transcript of his testimony, making it difficult to identify the precise statements which should be rebutted in a reconsideration petition.

The Board failed to recognize that Transit Mix consultant BIO-Logic identified the same general issues raised by Dr. Sanderson. The issues noted by Dr. Sanderson in the Board's findings of fact, including the presence of deer, elk, wild turkeys and the potential for Mexican Spotted Owl habitat were all addressed, surveyed, and analyzed by BIO-Logic in the preparation of the application and in working with DRMS staff. The DRMS recommendation notes that Transit Mix properly involved the U.S. Fish and Wildlife Service (USFWS) and the Colorado Division of Parks and Wildlife (CPW), who recommended additional surveys to study the effects of these very issues. CPW also provided additional recommendations regarding wildlife safety and protection, which Transit Mix incorporated into its application. The DRMS staff considered the recommendations of the government agencies who are tasked with protecting wildlife and concluded that Transit Mix had addressed all of the raised concerns and complied with the requirements of Rules 3.1.8 and 6.4.8, the very Rules the Board determines that Transit Mix violated. DRMS Recommendation, Sept. 29, 2016, at 23–24.

The Board has no power to overrule either the CPW or the USFWS with respect to Mexican Spotted Owls. Transit Mix will be required to secure an Army Corps of Engineers 404 wetlands permit, which will ensure that Transit Mix does not violate any federal rules regarding the spotted owls. The Board may condition the application on the successful completion of Endangered Species Act consultation by the Army Corps of Engineers. This consultation will use the impact analysis study by BIO-Logic, Ex. 3, to determine the regional effects on wildlife and the foraging territory habitat of the spotted owl and attempt to create an effective spotted owl nesting habitat in the reclamation plan. During the deliberation two Board members correctly noted that the standard does not require that there be no effect on wildlife or even the Mexican Spotted Owl. Indeed, the Endangered Species Act also allows impacts to the spotted owl with an approved plan. The Board cannot rely on interference with Mexican Spotted Owl critical habitat foraging territory by the quarry because private property is not covered by any Federal regulations or included in federally designated critical habitat for Mexican Spotted Owl. The determination of compliance with the Endangered Species Act is not a matter for the Board to consider, but should be left to the experts at the Army Corps of Engineers and USFWS by allowing the application to be conditionally approved.

The evidence presented previously and any new study will show that the area of Mexican Spotted Owl foraging habitat that would be affected by the quarry is less than 0.0205% of the estimated Mexican Spotted Owl foraging habitat available to the spotted owl population in the region. The existence of the quarry and the reclaimed area will not significantly affect wildlife populations in the region. Thus the Board cannot and should not base its decision to deny the application on these issues.

Although the current application sufficiently considers the safety and protection of wildlife, Transit Mix would be happy to consider an idea raised by Board member Singletary. Mr. Singletary suggested that perhaps Transit Mix should create or purchase offsetting conservation easements on other properties. If the Board might specify the amount of offsetting easements needed, Transit Mix would be able to consider accepting a conditional grant of approval. Transit Mix is also happy to assist in having a conservation easement placed on the rest of Hitch Rack Ranch and on the proposed quarry after it has been mined and reclaimed.

The attached new report from BIO-Logic also shows how Transit Mix can improve the North side as a wildlife migration corridor and habitat while it is not being mined and further reclaim the South side after mining so that it provides a migration corridor when Transit Mix moves operations over to the north side. Ex. 4. By staying on only one side of Little Turkey Creek at a time, Transit Mix can ensure that there is a wildlife migration corridor around the area being mined through Little Turkey Creek and the inactive side of the proposed quarry.

In addition, Transit Mix notes that a quarry does not rid lands entirely of wildlife. Exhibit 5 explains and shows with pictures how various types of wildlife already inhabit and migrate through its existing and previously reclaimed quarries and other similar lands disturbed by human development. Transit Mix plans to reclaim disturbed lands with groves of trees surrounded by shrubs, and these groves will be separated by grassland. Thus, food and shelter are provided for game and non-game species. This planting methodology provides a greater variety of habitat than the current conditions on the property, which allows for a greater variety of wildlife species. These details exceed the requirements of the rules and regulations and demonstrate that wildlife is protected during and following mining operations.

All this new evidence and the previously provided evidence on the wildlife issues shows that the Board has no factual justification for overruling the DRMS staff decision that Transit Mix did adequately take account of and protect the wildlife. Importantly, the Rules cited by the Board in its decision, ¶¶ 50, 52, and 53, do not ban any effect on wildlife they only require that Transit Mix should quantify the effect and protect the wildlife. Transit Mix has complied with this requirement, which is why the DRMS staff recommended the application for approval.

III. Conclusion

The only "evidence" offered by the objectors is that they simply do not want another quarry nearby, despite ample evidence in the application that the quarry will meet and exceed all statutory and regulatory requirements to minimize impact on the surrounding area. That is simply not the standard for the decision under the Mineral Resources statute which creates the Board as recognized by DRMS. The Board members more or less admitted during deliberation that Transit Mix met the wildlife standard in the statutes and Board rules, but then in contradiction to that

acknowledgment, voted to deny on the basis of those statutes and rules. There is simply no credible evidence of water issues, as also found by DRMS. The additional evidence supplied by Transit Mix further emphasizes the lack of risk to the water and wildlife areas. Transit Mix has also shown that, consistent with the 1909 patent, the Land Board granted it access to the quarry, which overrides any subsequent easement to the Eagles Nest residents.

Transit Mix is entitled to reconsideration based on the procedural deficiencies noted above and on the misapplication of the Board Rules. Transit Mix has demonstrated its willingness to work with the Board and DRMS to address any issues and the Board should reconsider Transit Mix's application accordingly.

Respectfully submitted this 11th day of January, 2017.

PERKINS COIE LLP

s/ Norton Cutler

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CERTIFICATE OF SERVICE

I hereby certify that I have on this 11th day of January, 2017, a true and correct copy of the foregoing **Applicant's Petition for Reconsideration of the Mined Land Reclamation Board's Findings of Fact, Conclusions of Law, and Order**, was served on the following via United States Mail or Email as indicated below:

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EXHIBIT 1

State of Colorado
Department of Natural Resources
STATE BOARD OF LAND COMMISSIONERS
1127 Sherman Street, #300
Denver, Colorado 80203

MINING LEASE NO. **109924**

This MINING Lease (the "Lease"), is made in duplicate and entered into this 14 day of April, 2016, by and between the State of Colorado, acting through its STATE BOARD OF LAND COMMISSIONERS, hereinafter referred to as, "Lessor", and TRANSIT MIX CONCRETE CO., 444 E. Costilla St., Colorado Springs, CO 80903, hereinafter referred to as "Lessee":

WITNESSETH: Lessor, for and in consideration of the sum of Three thousand ninety eight and no/100 Dollars ($3,098.00), receipt of which is hereby acknowledged as payment of the filing fee in the amount of $500.00, first year's rent in the amount of $2,598.00, and a bonus in the amount of $ -0-, and in further consideration of Lessee's agreement to pay Three and no/100 Dollars ($ 3.00) per acre or fraction thereof annually as rental in advance of the anniversary date of this lease so long as said lease shall remain in effect; and in further consideration of the terms, conditions and agreements herein and of the payment of royalties reserved herein, to be kept and performed by Lessee, its successors and assigns, does hereby lease to Lessee the right and privilege of exploring and prospecting for, developing, and mining of and taking of sand, gravel and crushed stone minerals (the "Minerals") from the lands herein described, situated in the County of El Paso, State of Colorado, to wit:

ACRES	SUBDIVISION	SEC-TWP-RGE	PATENTS
550	N2,N2S2, SESE,E2SWSE,E2W2SWSE	16-16S-67W	2499
150	E2NE, E2W2NE, N2NESE, SENESE	21-16S-67W	7931
160	W2W2	22-16S-67W	7931
5.97	FR. PT W2NW	23-16S-67W	7788

Except, mining of and taking of Minerals is not allowed from the following lands:

A. SESE, E2SWSE, E2W2SWSE Section 16, Township 16 South, Range 67 West, containing 70 acres, more or less; and

B. E2NE, E2W2NE, N2NESE, SENESE Section 21, Township 16 South, Range 67 West, containing 150 acres, more or less; and

C. W2W2 Section 22, Township 16 South, Range 67 West, containing 160 acres, more or less; and

D. FR. PT W2NW Section 23, Township 16 South, Range 67 West, containing 5.97 acres, more or less.

FUND: School

containing 865.97 acres, more or less, (the "Leased Premises") together with the right to use as much of the surface as may be reasonably required, including the right to reasonable ingress and egress; the right to make excavations, stockpiles, and other improvements as may be reasonably necessary in the mining and removal of said Minerals; subject, however, to all existing easements and rights-of-way of third parties, as detailed on Exhibit A to this agreement, and the rights of surface lessees and surface owners, and further subject to the terms, conditions and agreements set out in this Lease. The above-mentioned rights may be exercised in connection with mining on other or adjacent lands only when mining on such lands is carried on in conjunction with the actual mining on the Leased Premises. The benefits, terms, and obligations of this Lease shall extend to and be binding upon the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

RESERVING, however, to Lessor:

A. All rights and privileges of every kind and nature, except as are herein specifically granted.

B. The right to use or lease said premises or any part thereof at any time for any purpose, including the right to explore and prospect said premises, which use and leasing of said premises shall be for purposes other than and not inconsistent with the rights and privileges herein specifically granted.

C. The right at all reasonable times during the life of this lease to go upon said premises and every part thereof for the purpose of inspecting the Leased Premises, and the books of accounts and records of mineral workings therein, and of ascertaining whether or not said Lessee and those holding thereunder by and from it, are carrying out the terms, covenants and agreements in this lease contained.

TO HAVE AND TO HOLD the above described Leased Premises unto Lessee, its heirs, successors, assigns, or legal representatives for the primary term of 10 years, and until Twelve O'clock noon on the 13th day of April, 2026. The Lease may continue in effect for an additional 20 years to the 13th day of April, 2046 (the "Secondary Term") as long as Minerals are being produced in paying quantities from said Leased Premises and subject to the terms of paragraph 1 of this Lease, and the royalties and rentals provided for herein are being paid, subject to the following terms, conditions and agreements, to wit:

1. **ADVANCE MINIMUM ROYALTY** -- As minimum and advance royalty (the, "AMR"), without relation to the amount of Minerals mined from the Leased Premises, Lessee shall pay annually to Lessor, by the anniversary date of the Lease, the following amounts:

Lease Year	AMR	Lease Year	AMR
2016	$0.00	2021	See Subparagraph 1(b)
2017	$200,000.00	2022	See Subparagraph 1(b)
2018	$200,000.00	2023	See Subparagraph 1(b)
2019	$200,000.00	2024	See Subparagraph 1(b)
2020	$200,000.00	2025	See Subparagraph 1(b)

(a) If Lessee does not extract Minerals from the Leased Premises sufficient to return to the Lessor the minimum amounts above specified, it is nevertheless understood that the above sums of money are due and payable to Lessor whether or not Minerals are mined, but that such advance minimum royalty shall be credited upon the first royalties due as herein provided for Minerals actually produced from the Leased Premises. In the absence of production of Minerals in continuous paying quantities before the expiration date of the lease, all advance minimum royalties and all rentals shall be forfeited to Lessor.

(b) Acreage changes resulting from surrender or partial assignment do not reduce the advance minimum royalty proportionately. Further, at the end of each five-year period, commencing from the original lease date, the AMR may be increased or decreased to equal 30% of the average annual production for the previous five (5) years. In no case shall the AMR be less than $100,000. Failure to comply with any new advance minimum royalty rate set by Lessor may subject this lease to cancellation by thirty day written notice by Lessor.

(c) In case of assignment of this Lease, all advance minimum royalty paid to the state shall be carried forward and credited to the new assignee.

2. **PRODUCTION ROYALTY** -- Lessor reserves as royalty, and Lessee agrees to pay to Lessor on or before the last day of each calendar month following the month of production the following amounts:

- Any product with less than 35% passing the 1/4" sieve by specification will be classified as stone and paid at a royalty rate of $0.55/ton (2000 pounds) sold.
- Any product with 90% or greater passing the 1/4" sieve by specification will be classified as fines and paid at a royalty rate of $0.20/ton (2000 pounds) sold .
- The royalty rate shall be $0.40 per ton (2000 pounds) of Minerals that are a blend of the above two categories. This royalty rate applies to products that consist of 35% to 90% of Minerals passing the ¼" sieve by specification that are produced and sold from the Leased Premises.

All Sales tonnage will be reported monthly and royalty calculations shall be based on Specification Average and not the average of production of gradation tests. At the end of each five-year period, commencing from the original Lease date, for so long as this Lease remains in effect, Lessor may increase the rate or amount of production royalty to be paid by Lessee by a rate not to exceed the rate of increase of the average Producer's Price Index for Construction Sand, Gravel and Crushed Stone for the previous 5-year period, as published by the U.S. Department of Labor, Bureau of Labor Statistics. Failure to comply with any new royalty rate set by Lessor may subject this Lease to cancellation by thirty-day written notice by Lessor.

Reporting of production royalty that is credited against AMR is also due on or before the last day of each calendar month for mining during the preceding calendar month.

3. **EXTENSION** - The Life of the mine is expected to be more than fifty (50) years, but the Lease must be reviewed by the Lessor at the end of the Secondary Term. At that time, Lessee may have a preferential right to extend the Lease or to receive a new lease, whichever may be determined by Lessor to be in the best interest of the State, under the following conditions:

A. An AMR, the amount to be negotiated before expiration of the Lease, will be due and payable annually commencing on the date this Lease is extended or a new lease is executed and shall continue until the expiration of the new or extended lease. This amount may be adjusted by Lessor at the end of each five-year period of the extended or new lease.

B. Lessee shall furnish to Lessor satisfactory evidence of plans for mining during the term of the extended lease or during the term of a new lease.

C. Lessee shall furnish adequate geological evidence to Lessor that the acreage subject to the extended or new lease is in fact an integral part of and contains reserves in a logical mining unit. Whether the acreage is or is not a part of a logical mining unit will be determined by Lessor.

D. An extension of this Lease as determined by Lessor would be in the best interest of Lessor.

4. **EXTENSION BY PRODUCTION** - The Lease may continue in effect for a Secondary Term (as defined above) of 20 years to the 13th day of April, 2046 as long as sand and gravel are being produced in paying quantities from the Leased Premises. Paying quantities is defined as production and sales of a quantity sufficient to return to Lessor production royalty payments of a minimum of $100,000 per year.

5. **ANCILLARY USE** - This paragraph is deleted.

6. **REPORTS AND RECORDS** -- After mining operations begin on the Leased Premises, it is agreed that on or before the last day of each month during the Term of this Lease, Lessee shall submit a sworn, verified, written report to Lessor, in which report shall be entered and set down the exact amount in weight of all products and the assay thereof mined and removed from said Leased Premises during the preceding calendar month. Any products moved within or from the Leased Premises onto adjacent property owned by Lessee for the purpose of storage shall not be counted against this total.

Lessee agrees to keep and to have in possession complete and accurate books and records showing the production and disposition of any and all substances produced on the Leased Premises and to permit Lessor at all reasonable hours, to examine the same or to furnish copies of same to Lessor within 60 days following written request along with purchaser's support documentation. All said books and records shall be retained by Lessee and made available in Colorado to Lessor for a period of not less than 10 years. If any such examination shall reveal, or if either party shall discover any error or inaccuracy in its own or the other party's statement, payment, calculation, or determination, then proper adjustment or correction thereof shall be made as promptly as practicable thereafter, except that no adjustment or correction shall be made if more than 10 years have elapsed between the time the error or inaccuracy occurred and the discovery by either party of said error or inaccuracy.

Further, Lessee shall furnish annually a complete operations report to Lessor disclosing the number of tons and the assay thereof of all Minerals and other materials mined from the premises during the preceding year. Lessee shall also furnish in said report geologic interpretations and recoverable reserve calculations, and maps and cross sections showing location of any mineral-bearing outcrops, drill holes, trenches, ore bodies and other prospecting and exploration activities, along with assays showing the amount of mineral contained in the ore. The records required to be maintained by Lessee and provided to Lessor upon request include logs of all strata penetrated and all geologic and

hydrologic conditions encountered, and copies of in-hole surveys; this information to be collected and prepared under the supervision of a qualified geologist, geological engineer or mining engineer. Other qualified persons may collect and prepare this data, if agreed to in writing between Lessee and Lessor. Any request to keep certain information confidential should be in writing to Lessor at the time such information is submitted to Lessor, and such data may be kept confidential as consistent with state law. The existence and terms of this Agreement may be a public record and subject to the Colorado Open Records Act ("CORA"), C.R.S. § 24-72-200.1, et. seq. Data, maps, surveys, and other information prepared by or furnished to the Board pursuant to this Agreement are subject to the confidentiality provisions of C.R.S. § 36-1-138(2).

Lessee shall submit, if requested by Lessor, such additional reports, records or documents regarding Lessee's operation on the Leased Premises as necessary for the compliance with Lease provisions.

7. **OVERRIDING ROYALTY LIMITATIONS** -- The parties agree that this Lease or any subsequent assignment hereof shall not be burdened with overriding royalties the aggregate of which exceeds two percent (2%) of the gross value of the Minerals at the first point of sale. Lessor must be notified of all overriding royalties accruing to this Lease.

8. **DEVELOPMENT** -- Lessee will diligently explore and develop the Leased Premises by utilizing methods of exploration commonly used in the industry, such as mapping, sampling, drilling, trenching, geophysical exploration, and laboratory analysis.

Indirectly related exploration and development work such as work done on adjacent properties, or design or construction of a mill will not be considered as diligent development of the Leased Premises unless approved by Lessor.

9. **PENALTIES** -- A penalty shall be imposed for, but not limited to, late payments, improper payments, operational deficiencies of any kind whatsoever, violations of any covenants of this Lease, or any false statements made to Lessor. Penalties shall be determined by Lessor unless otherwise provided for by law and may be in the form of, but not limited to, interest, fees, fines, and/or lease cancellation. Such penalties shall be taken from the State Land Board's published fee schedules, as they may be amended by the Board from time to time (the "Fee and Penalty Schedule") For any non-monetary deficiencies, Lessor shall grant to Lessee sixty (60) days to cure such deficiencies after written notice to Lessee without incurring a penalty. Should a non-monetary default be such that cure is not possible within sixty (60) days, Lessor shall allow Lessee such additional time as is reasonable to cure the default, so long as (i) there is no monetary default under the Lease; and (ii) Lessee is working in good faith to cure the default.

10. **ASSIGNMENT** - Lessee shall have the right to assign or transfer its interests in and to the Lease, in whole or in part, to an affiliated entity (an entity that is owned, controlled by or under common control with Lessee) without written consent of Lessor, but with written notice to Lessor. Such transfer shall be without fee or penalty to Lessee, except for the payment of the Lease Assignment Application Fee, as set forth in the Fee and Penalty Schedule. Notwithstanding the foregoing, Lessee, only with

written consent of Lessor, may otherwise assign this Lease as to the leasehold interest of such Lessee in all or part of the lands covered hereby so long as the assignment is not less than tracts of approximately forty (40) acres or governmental lots corresponding to a quarter-quarter section for any partial assignment.

No assignment of undivided interests or retention or reservation of overriding royalties will be recognized or approved by Lessor, and the effect, if any, of any such assignments or reservations will be strictly and only as between the parties thereto and outside the terms of this Lease. No dispute between parties to any assignment or reservation shall operate to relieve Lessee from performance of any terms or conditions hereof or to postpone the time therefor. Lessor will at all times be entitled to look solely to Lessee or his assignee shown on Lessor's books as being sole owner hereof, and for the sending of all notices required by this Lease, for the performance of all terms and conditions hereof.

If an assignment of a part of this Lease is approved, a new lease designated as an assignment lease will be issued to the assignee covering the lands assigned for the balance of the Term of the base Lease on the mining lease form in use at the time of assignment and limited as to term as said Lease is limited. The assignor will be released and discharged from all further obligations for such lands assigned, as if the same had never been a part of this Lease.

11. **ASSIGNMENT CONSIDERATION** -- The consideration for approval of assignment by Lessor, unless such assignment is from Lessor to an affiliated entity, as described in Paragraph 10, shall be 10% of the value of any consideration tendered to Assignor by Assignee for the assignment. Divulgence of the value of these considerations shall be mandatory, in affidavit form, which form shall be presented to Lessor along with the other assignment instruments in order to obtain Lessor's approval for the assignment. An assignment does not constitute a new lease but is a continuation of the base Lease. Any attempt to withhold this information shall be construed as an attempt to defraud the State of Colorado and shall render this Lease null, void and nonexistent, and all moneys paid to Lessor shall be forfeited to Lessor. In addition, the current statutory fees will be paid at the time the assignment record form is submitted.

12. **WEIGHTS** -- The parties agree that all Minerals and other materials mined and taken from the Leased Premises shall be weighed and the weight thereof shall be entered in due form in weight and assay records kept for such purposes by Lessee.

Ton means 2000 pounds. Ton shall be determined by Colorado State certified scales or other methods approved by Lessor.

13. **STEWARDSHIP TRUST STIPULATION**—This paragraph is deleted.

14. **MINING METHODS** -- Lessee shall use commercially reasonable mining methods that will insure the extraction of the greatest possible amount of Minerals consistent within the laws and with prevailing good mining practices.

15. **OPERATION PLAN** -- All plans for exploration and mining shall be submitted to Lessor for approval by Lessor before such operations begin. These plans will include, but not be limited to, location of additional roads, location of access points to the Leased Premises, and location of any cattle guards or

gates. These plans shall include provisions for control of noxious weeds on all lands disturbed by the Lessee, and along all transportation corridors used by the Lessee within the Leased Premises.

16. ENVIRONMENTAL ANALYSIS -- Lessee shall comply with all applicable federal, state, and local laws, rules, regulations, permits, codes and ordinances, including the rules, regulations and requirements of the Colorado Division of Reclamation, Mining and Safety ("DRMS") to identify and reduce adverse impacts to the environment, and the public health, safety and welfare. Prior to any surface occupancy on the Leased Premises, Lessee must perform environmental analyses that are required by any local, state or federal agency or regulation, including, but not limited to, the study of the impacts of the mining operation on wildlife, air, water, soil, or other biological resources. Lessor may require that Lessee submit the environmental analysis, including proposed mitigation plans, for review by Lessor before any exploration or mining begins.

17. RECLAMATION -- Lessee shall submit all plans for restoration and reclamation of Leased Premises to Lessor for Lessor's approval before submitting the appropriate permit or permits pursuant to the Colorado Mined Land Reclamation Act 34-32-101 ET SEQ., C.R.S. 1973 as amended. Rules and regulations as set forth by the DRMS for recovery and restoration of mined land will apply where applicable to the Leased Premises. Variations from the reclamation plan as originally submitted to the Board for approval may be granted only with the written approval of Lessor.

18. LESSOR'S APPROVAL -- Whenever approval by Lessor is required or contemplated by Lessee, approval must be in writing and shall be optional and shall be within the sole and absolute discretion of Lessor.

19. OTHER STATE AGENCIES -- Lessor may determine that instruments and documents required by other State agencies satisfy certain requirements of this Lease. In the event that Lessee is required to file instruments and documents with other State agencies, including DRMS, Lessee shall notify Lessor of said filing and Lessor reserves the right to request and obtain copies of such instruments and documents from the agency or from Lessee.

20. INSPECTION -- It is agreed that during all proper hours and at all times during the Term of this Lease, Lessor or Lessor's duly authorized agent, is authorized to check assays and scales as to their accuracy, to go through or on any part or all of the Leased Premises to examine, inspect, survey and take measurements of the same and to take samples of any kind and to examine and make extracts from or copies of all books and weight sheets and records which show in any way the ore output, ore values, payments and royalties from and of the Leased Premises. All reasonable conveniences necessary for such inspection, survey, or examination shall be furnished to Lessor. Lessor may require Lessee to provide all instruments and documents which affect Lessor's interests that are required by any local, state, or federal agency, or that are reasonably within Lessee's custody or control.

21. NOTICES -- Any notice required to be given to Lessee under the provisions of this Lease shall be sent by certified mail to the address set forth at the beginning of this Lease or to such other address as Lessee may indicate in writing to Lessor, and such service by mail shall be deemed sufficient and in full

compliance with the terms of the Lease as of the date it is postmarked. Notice to Lessor shall be given in like manner, addressed to the State Board of Land Commissioners' Denver, Colorado address.

22. NOTIFICATION OF MINING OPERATIONS--It is understood that Lessor may not own or control the surface estate of Leased Premises, or Lessor may have issued a surface use lease to another lessee. Lessee shall be responsible for identifying such ownership or determining the surface lessee or lessees, and shall notify all such parties in advance of any on-site activity. Notification will be given at least thirty (30) days in advance for untilled or grazing acreage and at least sixty (60) days in advance for tilled farm ground prior to any on site activity. Lessee shall closely coordinate any on-site activity with the surface owner or lessee, and make a reasonable effort to protect the integrity of surface owner's or surface lessee's fences, gates, cattleguards, and other property.

23. PROTECTION AGAINST SURFACE DAMAGE - This paragraph is deleted.

24. HOLD HARMLESS -- The Lessee shall indemnify and hold the Lessor, including without limitation all Lessor's officers, agents, employees and board members (collectively "Board Indemnitees") harmless from any and all liability, liens, demands, judgments, suits, and claims of any kind or character arising out of, in connection with, or relating to the Lessee's Operations on the Leased Premises including, but not limited to, environmental issues, erosion, sedimentation, surface and sub-surface damage, claims for injury to or death of any persons, or damage, loss or destruction of any property, real or personal, under any theory of tort, contract, strict liability, or statutory liability ("**Claims**"), except to the extent such Claims arise from the Board Indemnitees' gross negligence or willful misconduct. The Lessee further covenants and agrees to defend any suits brought against the Lessor on any Claims, and to pay any judgment against the Lessor resulting from any suit or suits, together with all costs and expenses relating to any claims, including reasonable attorney's and expert fees, arising from the Lessee's Operations on the Leased Premises, or other land owned by the Lessor, except to the extent such Claims arise from the Lessor's gross negligence or willful misconduct. The Lessor, if it so elects, shall have the right to participate in its defense in any suit or suits in which it may be a party, inclusive of using separate counsel without relieving the Lessee of the obligation to defend the Lessor. The Lessor shall have the right to employ separate counsel in any action, suit or proceeding if, in accord with applicable codes or rules of attorney conduct, there would be an unwaivable or unwaived conflict of interest between the Lessee and the Lessor so that they cannot be represented by the same counsel and, under such circumstances, the fees and expenses of such separate counsel shall be paid solely by the Lessee.

25. LIENS AND CLAIMS -- Lessee shall not suffer or permit to be enforced against the Leased Premises, or any part thereof, or any improvements thereon, any liens arising from, or any claim for damage growing out of any actions by Lessee upon the Leased Premises. Should such claims occur, Lessee shall pay or cause to be paid all of said liens, claims, or demands before any action is brought to enforce the same against the Leased Premises or improvements. Lessee agrees to defend, indemnify and hold Lessor and the Leased Premises free and harmless from all liability for any and all such liens, claims, demands, and actions together with reasonable attorney fees and all costs and expenses in connection therewith.

Lessee shall, upon execution of this Lease, at its cost, prepare a Notice, pursuant to C.R.S. 1973, § 38-22-105 and cause the same to be posted for the purpose of protecting Lessor against any liens or encumbrances upon the Leased Premises by reason of work, labor, services or materials contracted for or supplied to Lessee.

26. BOND -- It is agreed that no operations are to be commenced on the lands herein described unless and until Lessee or Lessee's agent has filed a good and sufficient bond with Lessor in an amount fixed by Lessor, to secure the payment for damages caused by Lessee's or Lessee's agent's operations on said lands. Lessor reserves the right to grant relief from the foregoing bond requirements. Lessor may require such bond to be held in full force and effect for one year after cessation of operations for which the bond was intended. This requirement may be waived in favor of the requirements of the DRMS.

27. WATER -- If Lessee initiates or establishes any water rights for which the point of surface diversion or ground water withdrawal is on the Leased Premises, title to such water rights shall, upon termination of the Lease, become the property of the surface owner without cost, and title to the water rights shall be conveyed to the surface owner immediately upon termination, except that if Lessor is the surface owner the water right shall be taken in the name of Lessor in the first instance and shall be the property of Lessor without cost.

28. SURRENDER AND RELINQUISHMENT -- Lessee may, at any time, by paying to Lessor all amounts then due as provided herein, surrender and cancel this Lease insofar as the same covers all or any portion of the Leased Premises and be relieved from further obligations or liability hereunder with respect to the lands so surrendered; provided that no partial surrender or cancellation of this Lease shall be for less than tracts of approximately forty (40) acres or governmental lot corresponding to a quarter-quarter section, the rental being reduced proportionately.

This surrender clause and option herein reserved to Lessee shall cease and become absolutely inoperative immediately and concurrently with the institution of any suit in any court of law by Lessee, Lessor or any assignee of either to enforce this Lease, or any of its terms, express or implied, but in no case shall surrender be effective until Lessee shall have made full provision for conservation of the Minerals and protection of the surface rights of the Leased Premises as may be determined by Lessor.

Notwithstanding the foregoing, no surrender and relinquishment of this Lease shall be effective unless and until all reports, documents and information of any kind required to be submitted to Lessor under this Lease, or to such state agencies as provided in this Lease have been submitted to Lessor or such state agency.

29. RIGHT OF REMOVAL -- In the event this Lease is terminated by surrender, or the expiration of its term, and all obligations of Lessee under this Lease are satisfied, all Lessee's improvements, equipment, man-made objects of any type, including stockpiles and dumps except as these stock piles and dumps may be disposed of pursuant to the reclamation plan, shall be removed from the Leased Premises within six months from the date of such termination at Lessee's expense. Such removal is to be accomplished without unnecessary waste or damage to the premises and Lessee shall restore the

surface of the Leased Premises to the same condition as immediately prior to the execution of this Lease as it pertains to such removal.

30. CONDEMNATION -- If the Leased Premises shall be taken in any condemnation proceeding, this Lease shall automatically terminate as of the date of taking. The award for such condemnation shall be paid to Lessor, except for any specific award(s) paid to Lessee for severed minerals reserves, in which event a percent of such specific award(s) equal to royalty shall be paid to Lessor in lieu of royalty lost by virtue of the condemnation. Improvements shall be removed by Lessee per terms in the RIGHT OF REMOVAL paragraph herein. If only a portion of the leased land is taken by condemnation, Lessor may, at its option, terminate this Lease or terminate only that portion of the Lease so taken.

31. COMPLIANCE WITH LAW --Lessee shall comply fully with all the provisions, terms, conditions of all laws, whether state or federal, and orders issued thereunder, which may be in effect during the continuance hereof, which in any manner affect or control mining or other operations of Lessee, and Lessee further agrees that good mining methods shall be used at all times of active mining so long as said methods are consistent within the law.

Lessee shall comply with all applicable federal, state and local environmental, wetlands protection, health and hazardous waste laws, ordinances and regulations. In addition to the foregoing, and not in limitation thereof, Lessee shall not cause or permit any Hazardous Material to be brought upon, kept or used in or about the Leased Premises by Lessee or Lessee's agents, employees, contractors or invitees, without the prior written consent of Lessor. Notwithstanding the foregoing, Lessee shall have the right, without written permission from Lessor, to bring onto the Leased Premises such Hazardous Material as is necessary and is in compliance with all applicable federal, state and local laws for the safe and effective operation of a mining operation of this type and size. Such Hazardous Material shall only be in quantities commercially reasonable for a mining operation of this type and size, and Lessee shall store such Hazardous Materials in accordance with the Law. If Lessee breaches the obligations herein, or if the presence of Hazardous Material on the Leased Premises caused or permitted by Lessee results in contamination of the Leased Premises, or if contamination of the Leased Premises by Hazardous Material otherwise occurs for which Lessee is legally liable, then Lessee shall indemnify, defend and hold Lessor harmless from any and all claims, judgments, damages, penalties, fines, costs, liabilities or losses (including, without limitation, diminution in value of the Leased Premises, damages for the loss or restriction on use of the Leased Premises, damages arising from any adverse impact on future leasing of the Leased Premises, and sums paid in settlement of claims, attorney fees, consultant fees and expert fees) which arise during or after the lease term as a result of such contamination. This indemnification of Lessor by Lessee includes, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal, or restoration work required by any federal, state, or local governmental agency or political subdivision because of Hazardous Material present in the soil or ground water on or under the Leased Premises. Without limiting the foregoing, if the presence of any Hazardous Material on the Leased Premises caused or permitted by Lessee results in any contamination of the Leased Premises, Lessee shall promptly take all actions at Lessee's sole expense as are necessary to return the Leased Premises to the condition existing prior to the introduction of any such Hazardous Material to the Leased Premises; provided that Lessor's approval of

such actions shall first be obtained. As used herein, the term "Hazardous Material" means any hazardous or toxic substance, material or waste which is or becomes regulated by any local governmental authority, the State of Colorado or the United States Government. The term "Hazardous Material" includes, without limitation, any material or substance that is (i) defined or designated as a "hazardous substance", "hazardous waste" or a "regulated substance" under appropriate state or federal law.

32. ARCHAEOLOGY -- It is contrary to State law to excavate, appropriate or disturb any historical, prehistoric or archaeological site or resource on any lands administered by Lessor. Discovery of a suspected site or resource shall be immediately brought to the attention of Lessor and the State Archaeologist or Lessee shall provide evidence that no significant archaeological sites exist on the Leased Premises which could be destroyed by Lessee's operations.

33. DEFAULT AND FORFEITURE -- If for any reason Lessee fails to keep each and every one of the covenants and conditions herein, and if such default continues for a period of thirty (30) days after service of written notice thereof by certified mail upon Lessee, Lessor shall have the right to declare this Lease forfeited, and to enter onto the Leased Premises either with or without process of law, and to expel, remove and put out Lessee or any person occupying the premises, using such force as may be necessary to do so.

In the event of the termination of the Lease by reason of breach of the covenants herein contained, Lessee shall surrender and peaceably deliver to Lessor the above-described premises, and such premises shall be in good mining condition. If, upon termination of this Lease for any reason, whether by surrender, forfeiture or expiration of term or otherwise, Lessee shall not have fully complied with the terms of the Lease, Lessor shall hold and retain possession of the property, improvements, and equipment of Lessee as security unto Lessor for the payment of rents and royalties due Lessor, or to protect Lessor against liens, or to indemnify Lessor against any loss or damage sustained by Lessor by reason of the default of Lessee, for which purpose Lessor is hereby given a lien upon all such property, improvements, and equipment, which lien shall attach as the same are placed upon the premises. In the event Lessor shall foreclose the lien in this article given to Lessor by Lessee, Lessor may itself be a purchaser at any sale thereof under such foreclosure. Upon the termination of this Lease for any cause, if Lessee shall remain in possession of said premises, Lessee shall be guilty of an unlawful detainer under the statutes in such case made and provided, and shall be subject to all the conditions and provisions thereof and to eviction and removal, forcibly or otherwise, with or without process of law, as above provided.

34. TAXES -- Lessee shall be liable for all taxes lawfully assessed on property of Lessee located on the Leased Premises.

35. INSURANCE --The Lessee shall maintain a liability insurance policy with the Board as co-insured in the amount of not less than one million dollars ($1,000,000.00). This amount may be adjusted by the Board to comply with the Colorado Governmental Immunity Act, C.R.S. 24-10-114.

36. REASONABLE COOPERATION --Lessor shall reasonably cooperate with Lessee efforts to obtain permits, complete applications, and obtain all such approvals as are necessary to commence mining operations on the Leased Premises. Such cooperation shall not impose costs or expenses upon Lessor, nor an unreasonable burden on State resources.

37. RECORDING. Lessor shall reasonably cooperate with Lessee to draft and execute a Memorandum of Lease that shall be recorded in the property records for El Paso County, Colorado. Such cooperation shall not result in (i) costs or expenses for Lessor, (ii) an unreasonable burden upon State resources, or (iii) any violation of CORA.

38. MISCELLANEOUS PROVISIONS -

A. Waiver. The waiver of any breach of any provision of this Lease by any party hereto shall not constitute a continuing waver of any subsequent breach of said party, for any breach of the same or any other provision of the Lease.

B. Heading for Convenience Only. Paragraph headings and titles contained herein are intended for convenience and reference only and are not intended to define, limit or describe the scope or intent of any provisions of this Lease.

C. Non-Severability. If any term or provision of this Lease proves to be invalid, unenforceable, void, or illegal, the remainder of this Lease will not be affected thereby, and will be valid and be enforced as written.

D. Effect of Invalidity. If any provision or portion of this Lease or the application thereof to any person or circumstance shall, at any time or to any extent, be invalid or unenforceable for any reason by a Court of competent jurisdiction, and the basis of the bargain between the parties hereto is not destroyed or rendered ineffective thereby, the remainder of this Lease, or the application of such provisions to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby.

E. Binding Effect. This Lease and the rights and obligations created hereby shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns, including but not limited to Lessee's employees and officers, agents, affiliates, contractors, subcontractors and/or purchasers.

F. Amendment. Except as specifically provided in Paragraph 2, this Lease may be modified, amended or changed only by an agreement in writing duly authorized and executed by the signers hereof or of persons acting in the same capacity for such party.

G. Governing Law and Venue. This Lease and its application shall be construed in accordance with the laws of the State of Colorado. The parties agree that venue for any litigated disputes regarding this Lease shall be City and County of Denver.

H. Counterparts; Electronic Execution. This Lease may be executed in pdf or counterpart signatures, each of which shall be considered an original and upon execution of all Parties shall be deemed binding upon the parties hereto.

I. No Third-Party Beneficiaries. This Lease is intended to describe the rights and responsibilities of and between the parties hereto and is not intended to, and shall not be deemed to, confer rights upon any persons or entities not signatories hereto, nor to limit, impair, or enlarge in any way the powers, regulatory authority and responsibilities of either party or any other governmental entity not a party hereto.

J. Non-Business Days. If the date of any action under this Lease falls on Saturday, Sunday or a day recognized as a "holiday" by the State of Colorado, then the relevant date shall be extended automatically until the next day that is not Saturday, Sunday or a "holiday."

IN WITNESS WHEREOF, Lessor has caused these presents to be executed in duplicate by the State Board of Land Commissioners and sealed with the official seal of said Board, and Lessee has hereunto set his hand and seal, all on the day and year first above written.

Recommended:

Phillip J. Courtney, Solid Minerals Leasing Manager

LESSOR:
STATE BOARD OF LAND COMMISSIONERS

Pete Milonas, Minerals Director

LESSEE:
Transit Mix Concrete Company

By: Jerald Schnabel, President

ATTEST

State of _____

County of _____

The foregoing instrument was acknowledged before me this 16 day of June, 2016, by Jerald Schnabel as being authorized to execute same.

(SEAL)

Notary Public Carole A. Riese

CAROLE A. RIESE
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20094031187
My Commission Expires 09-25-2017

My Commission Expires 09-25-2017

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1352470.2

EXHIBIT A
MINING LEASE 109924
dated
April 13, 2016
between
State of Colorado, acting through the State Board of Land Commissioners, Lessor
and
Transit Mix Concrete Company, Lessee

Existing leases, right-of ways, and agreements:

Legal Description Lease #	Lessee	Lease Type
None		

Total Lease Acreage: *****

EXHIBIT 2

MEMORANDUM

BBA water consultants

BISHOP-BROGDEN ASSOCIATES, INC.

To: Jerry Schnabel, File 9107.11
From: Christopher J. Sanchez and Timothy A. Crawford
Subject: Transit Mix – Hitch Rack Ranch – Regional Hard Rock Mining Condition Investigation
Job: 9107.11
Date: January 10, 2017

This memorandum provides supplemental information regarding ground water conditions and the potential to encounter ground water at the proposed Hitch Rack Ranch quarry based on (1) conditions at neighboring similar hard rock quarries, (2) planned monitoring wells to be installed at the proposed quarry, and (3) differences in hydrologic conditions at NORAD / Cheyenne Mountain. This effort benefitted from information available from the Division of Water Resources, documents available from the Department of Reclamation, Mining and Safety (DRMS), available geologic mapping, interviews with neighboring mine operators and news reports. In addition, we have provided comment regarding proposed updates to the mine plan sequencing, including limiting the initial mining area to the south side of Little Turkey Creek. This change will provide further protections to wells, streams, and the local hydrologic system.

The supplemental information is being provided at this time in support of the Motion for Reconsideration and includes both new information and information that is being restated or reiterated from previous testimony and work products. Specifically, the comparison of the quarry to existing nearby quarries is new and was not included as part of previous submittals because we felt that the information submitted prior to the hearing was adequate to address concerns related to impacts to the hydrologic balance. That conclusion was in part based on input received from DRMS staff. The topic was included in materials prepared for testimony at the Mined Land Reclamation Board (MLRB) hearing. The updated mine sequencing plan is new, and comment is provided at this time because the updated mining plan has only recently been presented to us. The information related to NORAD has been discussed previously, but is being reiterated for clarity. Similarly, monitoring wells have been discussed previously but are now proposed in support of the application to confirm our opinions that the quarry will not intercept ground water.

Executive Summary

- Existing quarries located close to the proposed Hitch Rack Ranch Quarry and in similar geologic and hydrologic settings, do not intercept ground water. This finding is based on review of files and records from well permitting, DRMS, and water rights data sources. Geologic mapping and aerial photography were also reviewed and support this finding.
- The best way to resolve any uncertainty about whether or not the quarry will intercept ground water is to install monitoring wells in the material that is proposed to be mined. Transit Mix agrees to install at least two monitoring wells in addition to the monitoring wells to be constructed as part of the baseline monitoring program along Turkey Creek and Deadman Creek. These wells should resolve any uncertainty about the presence or absence of ground water within the material to be mined.
- Opposers have called attention to historical ground water problems that allegedly occurred at or near NORAD and suggested that similar problems will occur adjacent to the Hitch Rack Ranch Quarry. NORAD is a very different type of excavation than the Hitch Rack Ranch Quarry in that it penetrates deeper and more extensive portions of mountainous terrain where ground water is present. NORAD very likely penetrated deep into the water table. In contrast, the HRR quarry will

excavate only a relatively shallow veneer of bedrock material above the water table.

- Transit Mix proposes to limit the mine permit boundary during the initial mining phase to the south side of Little Turkey Creek. This change will limit potential ground and surface water impacts to the south side of Little Turkey Creek during the initial mining phase. Because wells located south of Little Turkey Creek are located very close to Little Turkey Creek, water level impacts to wells on the south side of the creek will not occur. Any potential impacts to these wells can be assessed prior to mining on the north side of Little Turkey Creek, which is protective of wells north of Little Turkey Creek.

Hydraulic Conditions at Neighboring Quarries

The investigation focused on two nearby gravel pit operations; the Red Canyon Quarry and the Menzer Quarry located approximately 4.5 miles and 3.0 miles, respectively, to the south/southwest of the proposed Hitch Rack Ranch Quarry location, as presented in Figure 1. These quarries are the closest quarries to the proposed Hitch Rach Ranch Quarry and encountered similar geologic and hydrologic conditions as expected at the proposed Hitch Rack Ranch Quarry. The Hitch Rack Ranch Quarry will be situated in grandodiorite with neighboring quartz monzonite. The Red Canyon Quarry and Menzer Quarry are situated in quartz monzonite with neighboring granodiorite. These quarries are also immediately adjacent to Red Creek and Turkey Creek, respectively, thus the hydrologic conditions at these quarries are essentially identical to those at the proposed Hitch Rack Ranch Quarry.

Well Permits

Available well permitting information from the State of Colorado indicates that ground water has not been encountered at the Red Canyon Quarry or the Menzer Quarry.

The Division of Water Resources (DWR) requires that mines that intercept ground water obtain a well permit for the mine, and a water rights augmentation plan and / or a substitute water supply plan (SWSP) if the interception of ground water creates out-of-priority depletions to surface water systems. Review of the State's well permit database indicates there are no well permits that correspond to the mining operations at the neighboring quarries. The only water well permits in the vicinity of the Red Canyon Quarry are for domestic and monitoring wells. The nearest well permit to the Menzer site is a domestic well approximately 2000 feet north of the mine. This well and a neighboring well have shallow water levels associated with Turkey Creek, producing water from a shallow system, similar to the wells neighboring the proposed Hitch Rach Ranch Quarry in the Little Turkey Creek drainage.

Additionally, a review of SWSP and water right information available on the DWR database indicates that neither of the neighboring quarries have SWSP's or augmentation plans associated with the mining operations.

The lack of well permits, SWSP's and augmentation plans for the neighboring quarries confirms that the mines did not encounter or expose ground water based on determinations by the DWR and DRMS. Because of the similarities in geology and mine plan, the proposed Hitch Rack Ranch Quarry is also not expected to encounter ground water.

Department of Reclamation, Mining and Safety Information Investigation

A review of Department of Reclamation, Mining and Safety information for the Red Canyon Quarry and the Menzer Quarry indicate that ground water has not been encountered at either of the existing quarries.

Both of the quarry operations were provided with correspondence from the DRMS regarding "Mining Operations with Exposed Ground Water" on April 30, 2010. The purpose of this correspondence was to provide information regarding updates to the guidelines associated with depletions resulting from sand and gravel pit mining. The correspondence references State statute indicating that "any person exposing ground water must obtain a well permit from the SEO", and "operations which expose ground water must also eventually obtain a water-court approved augmentation plan." Our research indicates that this notice went to many operators and these two operations were not singled out because of any particular concern. Our research further indicates that both operations were determined to not intercept ground water and no further action was required to maintain compliance with State regulations related to ground water and water rights.

We further note that:

- One of the conditions of approval for the Menzer Quarry, as confirmed in a Response to Reclamation Permit Amendment Request from Caleb Foy of the Division of Water Resources to Berhan M. Keffelew of the DRMS dated December 8, 2011, was that it must not expose ground water during or after mining operations.

- A field investigation by DRMS staff of the Red Canyon Quarry completed on January 15, 2014 did not identify any ground water exposed by the quarry operations at that time.

The files for both quarries do identify that storm water detention ponds retain storm water at the operations, which accounts for the presence of small amounts of exposed surface water that have been observed in the floors of those pits.

Aerial Photography Investigation

Available aerial photography of the Red Canyon Quarry and the Menzer Quarry do not indicate the interception of ground water.

The general location of the proposed Hitch Rack Ranch Quarry, the existing Red Canyon Quarry and Menzer Quarry are presented in Figure 1. Figures 2 and 3 present aerial photography specific to the Red Canyon and Menzer quarries, respectively. The aerial photography does not indicate any seeps, springs or other ground water discharge from the walls of the quarries indicating that the quarries did not encounter ground water during mining. The only surface water observed in the aerial photography is at the floor of the mines and in storm water detention ponds at the down-gradient portions of the mine. Verbal correspondence with the operator of the Red Canyon Quarry indicates that the water on the floor areas of the mine and in the storm water detention ponds is derived from storm runoff only and not from ground water discharge.

The conditions at these quarries are the best and only examples of the conditions expected at the proposed Hitch Rack Ranch Quarry, and confirm the ground water findings and interpretation previously provided by Transit Mix and BBA. More specifically, conditions at these quarries support the conclusion that the proposed mine will not intercept ground water and there will be not impacts to ground water resources by the proposed Hitch Rack Ranch Quarry.

Planned Monitoring Wells

The primary water-related concern identified at the MLRB hearing for the Hitch Rack Ranch quarry related to whether or not ground water would be encountered at the proposed mine. BBA provided testimony and evidence indicating that saturated ground water conditions would not be encountered at the mine, and additional proof of this interpretation is included in this document. Objectors presented opinions to the contrary. In order to eliminate any uncertainty about whether or not ground water will be encountered at the mine site, Transit Mix has agreed to construct at least two new monitoring wells within the mine site specifically to determine whether or not the mine will intercept ground water. These proposed wells are in addition to the planned monitoring wells to be constructed as part of the baseline monitoring program along Turkey Creek and Deadman Creek. These wells will provide clarity about whether or not the mine will intercept ground water. As BBA testified at the hearing, if saturated ground water conditions are not encountered in the mine then there is little to no potential for ground water impacts outside of the mine site. Monitoring wells are the best way to confirm the presence / absence of saturated ground water conditions and Transit Mix is willing to construct the wells for this purpose.

Comparison of Conditions at NORAD / Cheyenne Mountain

The NORAD complex has been discussed by objectors as a corollary to the mining at the proposed Hitch Rack Ranch Quarry, but is a very different type of excavation than the proposed quarry. As-built information on NORAD is difficult to find in the public record because of the informational sensitivity and security associated with the facility. However, a May 16, 2016 news story[1] indicates the following:

- There are 15 buildings inside the mountain – 1 mile inside from the opening and 2,000 feet down from the top of the mountain. Workers can't just walk inside to their offices, they have to take a bus.

The news report indicates that the excavation extends to depths of 2000 feet. At depths of 2000 feet, NORAD very likely intercepts the water table, and as a result, very likely interacts with and depletes the local ground water system. In contrast, the HRR quarry will be only 400 feet deep at its deepest depths of excavation, and will be significantly shallower at most quarry locations. The Hitch Rack Ranch quarry is specifically designed to not intercept ground water.

For these reasons, we do not believe that NORAD is a similar excavation to or a reasonable corollary to the Hitch Rack Ranch quarry. Any interaction with the local ground and surface water systems that may have occurred at NORAD are not representative of what will occur at the Hitch Rack Ranch quarry.

Mining Plan Sequence

Transit Mix has agreed to limit its initial mining area to the south side of Little Turkey Creek. This change will limit the number of potentially impacted wells during the initial phase of the mining plan. Potential impacts to wells resulting from mining on the south side of Little Turkey Creek can be assessed prior to mining on the north side of Little Turkey Creek.

[1] http://www.thedenverchannel.com/lifestyle/discover-colorado/secrets-of-colorado/13-secrets-of-norad-combat-operations-center-and-cheyenne-mountain-air-force-station

- Little Turkey Creek functions as a hydrologic buffer between areas north and south of the creek. Should an aquifer stress occur on one side of creek, it will not result in any water level change on the other side of the creek. This is because the creek is a perennial stream through the mine area and is in hydraulic connection with the local ground water system. The creek controls the water level in the aquifer at the location of the creek, thereby limiting water level changes across the creek.

- Wells located on the north side of the creek will not be impacted by any mining activities on the south side of the creek. This statement is not intended to imply that activities on the south side of the creek will impact wells on the south side of the creek. As stated in testimony and previous work products, impacts are not expected to occur to wells on the south side of the creek either, because the mine will not intercept ground water.

- The existing wells located on the south side of the creek (with one exception discussed below) are located very close to Little Turkey Creek. Little Turkey Creek controls the ground water elevation adjacent to the creek and will buffer any potential impacts to these wells. This concept was discussed at length in BBA's testimony at the MLRB hearing.

- One well, permit No. 34643, is allegedly located west of the proposed southern mining area. Our research indicates that this well does not exist at this reported location. The actual location of the well is not known.

By initially limiting the mining area to lands south of Little Turkey Creek, the potential for impacts to any nearby wells or stream systems is significantly reduced during the initial mining phase. Potential impacts to wells can be assessed prior to mining north of Little Turkey Creek based on the information gained during the initial mining phase on the south side of the creek. We further note that mining at the quarry will proceed in phases with minimal open excavations at any point in time. If any hydrologic impacts occur, the monitoring program will detect those impacts and Transit Mix can then work with the DRMS and neighboring well and landowners to address those impacts. As previously stated, it is the opinion of BBA that impacts to nearby wells and stream systems will not result from the proposed Hitch Rack Ranch Quarry.

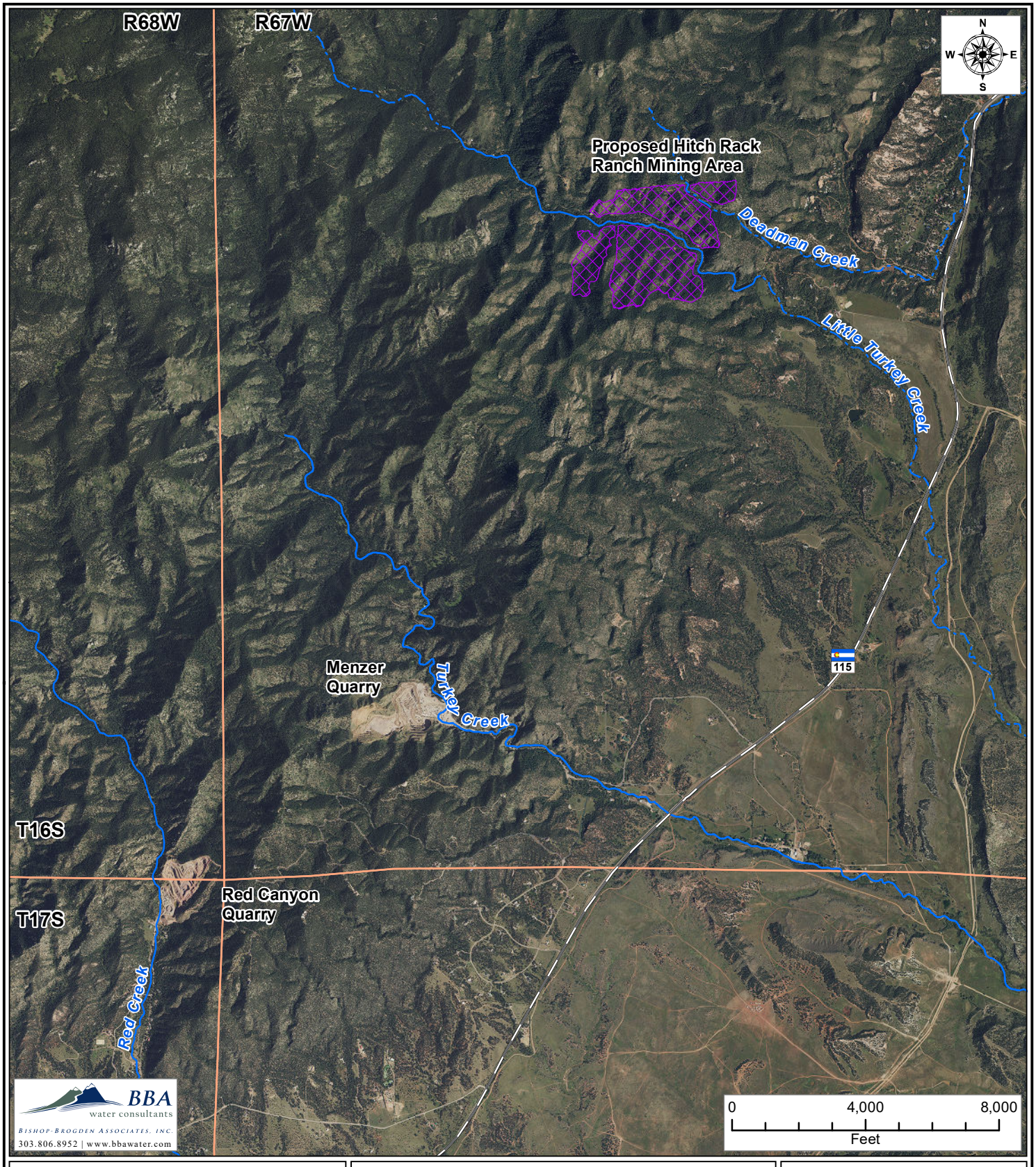


FIGURE 1
Transit Mix
Hitch Rack Ranch
General Location Map

Date: 1/6/2017 | Job No. 9107.11

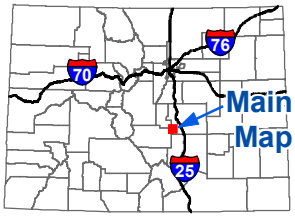
Legend

Proposed Mining Area

PLSS Township

Aerial Photo Date: 9/9/2015
Data Source: Transit Mix, CDOT, USGS, BLM

Colorado



BBA water consultants
Bishop-Brogden Associates, Inc.
303.806.8952 | www.bbawater.com

FIGURE 2
Transit Mix
Red Canyon Quarry
General Location Map

Date: 1/6/2017 | Job No. 9107.11

Legend

PLSS Township

Aerial Photo Date: 9/9/2015
Data Source: Transit Mix, CDOT, USGS, BLM

Colorado

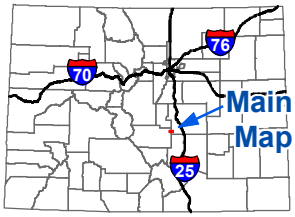


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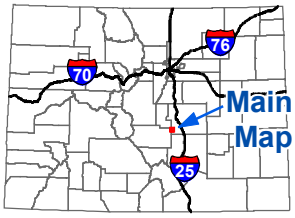
FIGURE 3
Transit Mix
Menzer Quarry
General Location Map

Date: 1/6/2017 | Job No. 9107.11

Aerial Photo Date: 9/9/2015
Data Source: Transit Mix, CDOT, USGS, BLM

Colorado



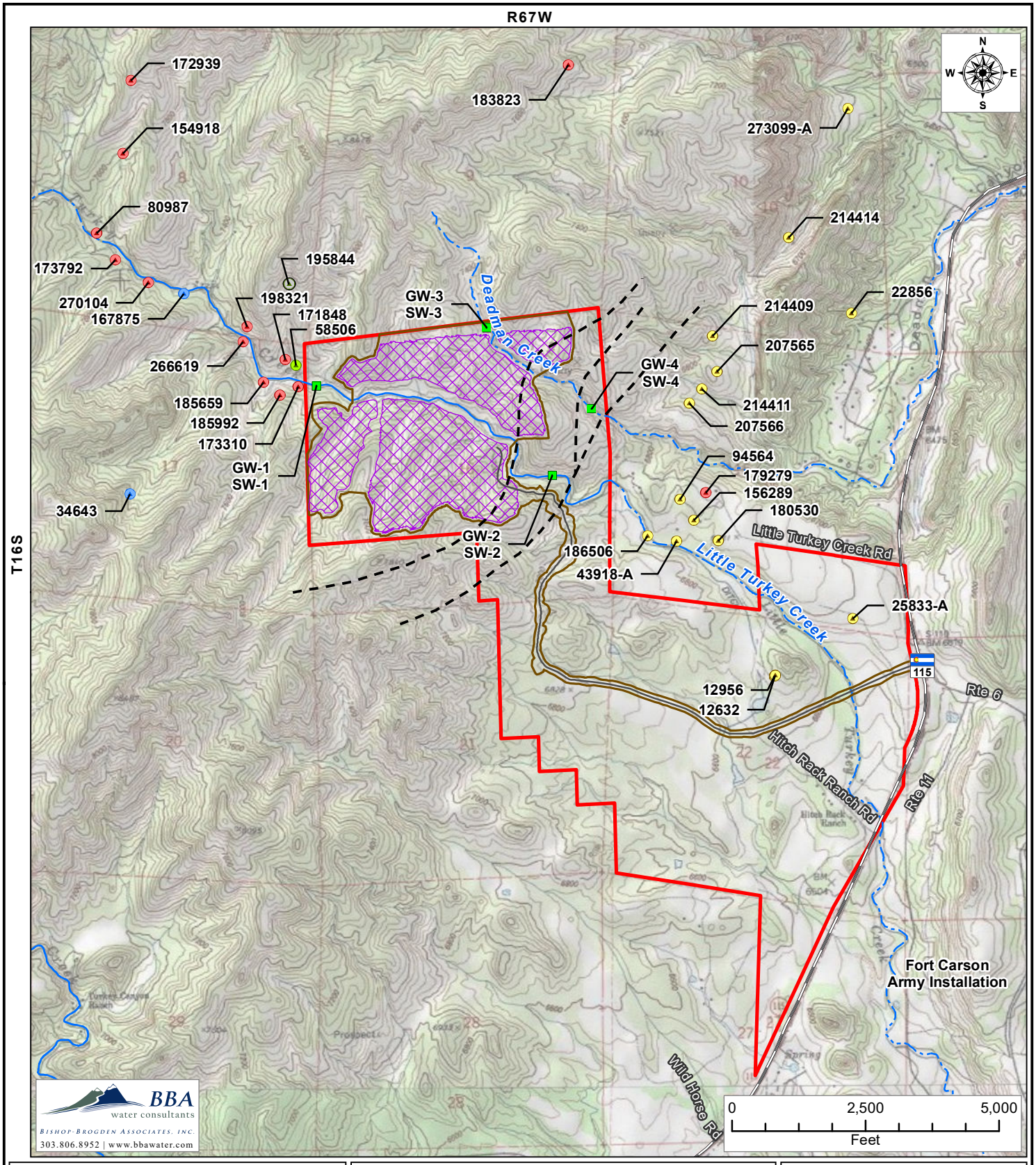


FIGURE 4
Transit Mix
Hitch Rack Ranch
Water Well
Location Map

Date: 1/9/2017 | Job No. 9107.11

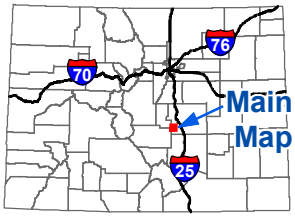
Legend

Water Supply Wells
- Granite
- Sandstone
- Unconsolidated
- Expired (Permit No. 58506)
- Previously Canceled (Permit No. 195844)

- Proposed Ground and Surface Water Monitoring Location (Approx.)
- Fault - Aerial Photo Interp.
- Ephemeral Stream
- Perennial Stream
- Proposed Access Road
- Mining Area
- CDRMS Permit Boundary
- Hitch Rack Ranch Property Boundary (Approx.)

Data Source: Transit Mix, CDSS, CDOT, USGS, BLM

Colorado



Mexican Spotted Owl Conservation Assessment

Hitch Rack Ranch Quarry

El Paso County, Colorado

January 5, 2017

Submitted to:
Transit Mix Concrete Co.
Colorado Springs, CO

Prepared by:
Steve Boyle
BIO-Logic, Inc.
125 Colorado Avenue, Suite B
Montrose, CO 81401

TABLE OF CONTENTS

List of Figures

SUMMARY

Transit Mix Concrete Co. proposes to develop a stone aggregate quarry on the privately owned Hitch Rack Ranch southwest of Colorado Springs in El Paso County, Colorado. Federally listed and proposed species were evaluated, and potential effects to Mexican spotted owl (MSO) and its federally designated critical habitat were identified and analyzed. The project site contains suitable foraging habitat for MSO, with little nesting or roosting habitat, and surveys in 2015 and 2016 did not detect MSO. The apparently unoccupied Little Fountain Creek Protected Activity Center (PAC) begins 1.6 miles north of the project site, and the nearest apparently occupied PACs are about 8 and 11 miles southwest. MSO critical habitat occurs on 2 adjacent parcels of federal lands administered by the Bureau of Land Management (BLM), and suitable MSO foraging habitat is present on the parcels. The project is not likely to directly affect MSO because MSO are not resident at or near the site. The project will remove about 275 acres of foraging habitat at the site over about 50 years, and revegetation over several subsequent decades will restore some, but likely not all, MSO habitat effectiveness. A regional habitat analysis determined that the project would affect about 0.25% of all potential MSO foraging habitat available to the known MSO breeding population in the region, and <0.5% of potential MSO foraging habitat on federally protected BLM and Forest Service lands in the region. Because the project is not likely to affect MSO individuals or significant breeding habitat, and the affected foraging habitat is a small fraction of what is regionally available, it is determined that the project may affect but is not likely to adversely affect MSO because of insignificant effects. Indirect effects to adjacent MSO critical habitat on BLM managed public lands may occur, and the project may modify, but is not likely to adversely modify, MSO critical habitat because of insignificant effects.

1. 0 INTRODUCTION

Transit Mix Concrete Co. proposes to construct and operate a construction materials aggregate quarry and processing operation on the privately owned Hitch Rack Ranch in El Paso County, Colorado. The Mexican spotted owl (MSO) is a federal and state-listed threatened species that occurs in the region, and habitat for MSO has been identified at the Hitch Rack Ranch Quarry site (the Site). This conservation assessment documents field studies conducted at the Site and other research by BIO-Logic, Inc. biologists, and describes MSO potential presence, presence and quality of MSO habitat at the Site, and potential effects of the project on MSO.

2. 0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Purpose and Need, Location, and Land Ownership

Transit Mix Concrete Co., a subsidiary of Continental Materials Corporation, is pursuing development of a new construction aggregate quarry on the privately owned Hitch Rack Ranch property located in the southwestern corner of El Paso County, fifteen miles southwest of downtown Colorado Springs, Colorado (Figure 1). The quarry and processing facility will be located entirely within Section 16, Township 16 S, Range 67 W of the 6th Principal Meridian. The quarry and access road will be developed entirely on private land on 393 acres of the 1,522-acre Hitch Rack Ranch property (Figure 2).

Transit Mix Concrete Co. was founded in 1945 and the current owners have operated the business since 1955. The company supplies crushed stone and sand and gravel aggregate to consumers from operations in El Paso, Fremont and Pueblo counties. The vast majority of aggregate produced from the new Hitch Rack Ranch quarry will be consumed in El Paso County and the Colorado Springs metropolitan market.

The proposed Hitch Rack Ranch quarry will replace Transit Mix's existing Pikeview quarry located on the northwest side of Colorado Springs. The Pikeview quarry began operation in 1903 and has continuously supplied construction aggregate. It is now approaching completion due to depletion of the stone resource on the property.

The Hitch Rack Ranch quarry site, located in the Rocky Mountain foothills, comprises relatively steep ridges and valleys formed in the underlying Precambrian granitic rock. Little Turkey Creek and an ephemeral stream in Deadman's Gulch cross the site from northwest to southeast. The site is described in detail in Section 6.0, Ecological Setting.

2.2 Project Design and Operation

The operation has an expected life of approximately 50 years. When it has achieved full capacity, the proposed quarry will produce an average 1.5 million tons of granite aggregate annually. Development of the quarry will be done incrementally in six distinct phases with reclamation accomplished concurrently with mining as portions of the quarry are completed (see Section 2.3, Reclamation and Revegetation).

A new access road 2.9 miles long will be constructed on the Hitch Rack Ranch from Colorado State Highway 115 to provide access to the quarry (Figure 2). A small office and weigh scale will be located along the access road where the road turns to the north approximately 1.5 miles from the highway. This access road will cross Little Turkey Creek in the lower ranch; this crossing will be constructed with a double metal culvert.

In the quarry site, internal mine roads that provide access to the active mine workings will also be constructed, and one road crossing will be constructed across Little Turkey Creek and another crossing will be constructed across the intermittent drainage in Deadman's Gulch. The crossing of Little Turkey Creek will remain throughout the proposed permit while the crossing of Deadman's Gulch will be active for a few years during the mining and reclamation of the northeast extension of the north quarry pit.

The quarry and associated mining activity will cause surface disturbance to about 293 acres (Table 1). Affected areas will include quarry pits, storage piles (for salvaged topsoil, overburden rock, rock fines left over from rock processing operations), and a processing plant consisting of a few buildings and machinery to be located within the quarry.

Development of the operation will begin with construction of the access road, excavation of a 10-acre site for the processing plant, establishment of storage areas for topsoil and excess fine material south of Little Turkey Creek, and initial mining in the north-central portion of the site north of Little Turkey Creek (Figure 3). The first four phases of mining will be accomplished over a 24-year period by expanding the quarry north of Little Turkey Creek. Phases five and six are comprised of the continuation of mining south of Little Turkey Creek until the planned development is completed.

Processing of the mined stone into aggregate products consists of several stages of crushing to achieve required product size and screening to blend the aggregate into various engineered products. No chemicals other than water are used in processing. Finished products will be placed in stockpiles at the plant location until loaded onto customer trucks for delivery into the market.

The quarry and associated activity will be conducted from Monday through Saturday during the hours of 7:00 am to 7:00 pm during the entire year. Activity will be greatest during the summer months comprising the primary construction season.

Mining for the production of aggregate will require blasting to fracture and loosen the granite deposit. Blasting frequency will depend on market demand, operating requirements and weather conditions, among other factors; however, Transit Mix Concrete Co. will limit blasting to a maximum of three times per week during daylight hours from 10:00 am to 4:00 pm. Blasting will be accomplished by a third party vendor licensed by federal and state regulatory agencies. All blasts will be designed and conducted to control noise and vibration within regulatory limits. Each blast will be monitored by an independent third party vendor to ensure that these limits are achieved. Although the potential for fly-rock is possible in the blasting process, current technology and blasting practice greatly reduce the chance of this occurring. Transit Mix Concrete Co. will employ available best practices to minimize the possibility of fly rock from blasting.

A Noise Impact Review (EDI 2016) was conducted for the proposed project by Engineering Dynamics, Inc. The review determined predicted noise impacts from project operations at various distances from the ranch property boundary, to assess compliance with Colorado noise law, the El Paso County noise ordinance, and FWS recommendations for avoiding noise impacts to Mexican spotted owls. Noise sources in the project would be from mobile equipment and occasional blasting in the pit and stockpile areas, fixed equipment in the plant/processing area, and vehicle noise on the future access road. The Review states that "the mobile equipment generates the loudest noise and is closest to the property boundary and therefore poses the greatest noise impact potential. The plant/processing equipment is not as loud as mobile equipment and is located at the lowest and a central portion of the quarry, which makes

any noise impact from plant/ processing equipment much less than from mobile equipment." The Review concluded that:

1. Current background noise at the north and south property boundaries is in the 35±5 dBA range nearly all the time. The entire property is fairly quiet, typical of this type of location.

2. At property boundaries around the quarry area, worst-case maximum noise levels from project operations are predicted to not exceed 55 dBA, and normally will be less. At ¼ mile beyond property boundaries, worst case noise is predicted to be 45 dBA or less, at ½ mile 30 dBA or less, and at 1 mile 20 dBA or less.

3. At the south boundary of the Little Fountain Creek PAC, about 1.6 miles north of the closest approach of mining activity to the PAC, worst-case maximum noise from project operations is predicted to be less than 10 dBA, a level that will not be audible to humans or owls.

2.3 Reclamation and Revegetation

Reclamation will be completed under a Reclamation Plan approved by the Colorado Division of Reclamation Mining and Safety (CDRMS). The post-mining land use will be wildlife habitat. The goals of reclamation are to provide a safe and stable landscape, minimize soil erosion and adverse effects to water quality or riparian structure and function in the drainages in the area, reestablish the pre-existing vegetation communities to the extent possible, and maximize the value of the reclaimed site to wildlife.

Reclamation will be undertaken following the completion of each mining phase. Reclamation work will begin as soon as operations allow work to safely begin; in most cases this will be immediately following completion of a mining phase, but in a few cases the start of reclamation work will need to wait for related operations to be completed. Table 1 shows the acres of activity areas and the proportions that will be revegetated to each broad vegetation type. Figure 4 shows the post-reclamation topography, which can be compared with Figure 2 for the differences in topography that will result. Overall, mining will result in removal of portions of the slopes bordering the existing drainages of Little Turkey Creek and Deadman's Gulch, with the final landscape consisting of broad basins with about 33% slopes with highwalls behind. The highwalls, covering about 16.5 acres, will consist of a series of wall slopes and benches (see inset diagram in Figure 4). The slopes will be unvegetated bare rock, slope angle 63 degrees and height about 40 feet. The benches will have a gentle slope and a berm at the downslope margin to control runoff and erosion. The benches will receive 1 foot of loose overburden and fines (small rock particles left from aggregate processing), then 6 inches of topsoil. The benches will be revegetated according to specifications in the Reclamation Plan, with combinations of plant species chosen to reestablish the pre-existing vegetation communities, also considering the new slope angles and aspects resulting from the recontouring. At their ends the benches will be constructed to tie into the existing hill slopes, to allow reclamation access and to enable access to the benches for terrestrial wildlife. Pit floors, stockpile areas, the processing plant, and roads will similarly receive a layer of overburden and fines, followed by 6 inches of topsoil, then revegetated as shown in Figure 5.

Table 1. Reclamation areas and acreages of generalized vegetation types to be established by revegetation.

	Pit Floor (acres)	Highwall Bench (acres)	Highwall Slope (acres)	**Total Mining Area (acres)**	Plant (acres)	Roads (acres)	Topsoil Stockpile (acres)	Overburden/Fines Stockpile (acres)	Mining Related Area (acres)	**Total Area (acres)**
Grass Seed and Mixed Conifer	78.79	18.67	0	**97.46**	15.01	20.90	0	30.97	15.65	**179.98**
Grass Seed and Mountain Shrubland	0	12.94	39.94	**52.88**	0	21.69	3.83	0	14.25	**92.66**
Grassland	0	0	0	**0**	0	18.66	0	0	0	**18.66**
Riparian		0	0	**0**	0	1.78	0	0	0	**1.78**
Total	**78.79**	**31.61**	**39.94**	**150.34**	**15.01**	**63.03**	**3.83**	**30.97**	**29.90**	**293.08**

Revegetation will consist of a series of plantings and seedings, depending on the site. Herbaceous vegetation will be seeded using a seed mix recommended by the Natural Resources Conservation Service (NRCS) and consisting of native species. Trees and shrubs will be planted as plugs or saplings. Supplemental water will be applied as needed, and control of noxious weeds will be conducted as needed. CDRMS will specify revegetation standards necessary for bond release; these are likely to include percent cover of herbaceous vegetation and stems/acre of trees and shrubs. Table 2 shows the anticipated plant species and amounts in each of the 3 vegetation communities defined for reclamation purposes; these are subject to final approval by CDRMS.

Table 2. Vegetation Communities to be Re-established during Reclamation

Plant Species		**Proportion of each Species in the Mix***	**Overall Planting Rate**
Common Name	**Scientific Name**		
Mixed Conifer			
Douglas fir	*Pseudotsuga menziesii*	20% to 85%	43 stems/acre
Ponderosa pine	*Pinus ponderosa*	15% to 70%	
Gambel oak	*Quercus gambelii*	5%	
Three-leaf sumac	*Rhus trilobata*	5%	
Mountain Shrubland			
Juniper	*Juniperus monosperma*	5%	336 stems/acre
Pinyon pine	*Pinus edulis*	5%	
Gambel oak	*Quercus gambelii*	75% to 80%	
Mountain mahogany	*Cercocarpus montanus*	10% to 15%	
Three-leaf sumac	*Rhus trilobata*	5%	
Riparian			
Narrow-leaf cottonwood	*Populus angustifolia*	10% to 40%	350 stems/acre
Douglas fir	*Pseudotsuga menziesii*	20% to 50%	
Ponderosa pine	*Pinus ponderosa*	20% to 30%	
Bluestem willow	*Salix irrorata*	15% to 25%	
Coyote willow	*Salix exigua*	5% to 15%	
Wood's rose	*Rosa woodsii*	5% to 65%	
Grassland			
Blue grama	*Bouteloua gracilis*	5 lbs./acre	51 lbs./acre
Western wheatgrass	*Pascopyrum smithii*	5 lbs./acre	
Sideoats grama	*Bouteloua curtipendula*	5 lbs./acre	
Little bluestem	*Schizachyrium scoparium*	5 lbs./acre	
Thickspike wheatgrass	*Elymus lanceolatus*	5 lbs./acre	
Indian ricegrass	*Achnatherum hymenoides*	5 lbs./acre	
Slender wheatgrass	*Elymus trachycaulus*	5 lbs./acre	
Big bluestem	*Andropogon gerardii*	5 lbs./acre	
Sheep fescue	*Festuca ovina*	5 lbs./acre	
Bluebunch wheatgrass	*Pseudoroegnaria spicata*	5 lbs./acre	
Rocky Mountain penstemon	*Penstemon strictus*	1 lbs./acre	
* The proportion of each species planted will vary depending on elevation, slope, aspect, and existing conditions.			

2.4 Committed Conservation Actions

Transit Mix has conducted extensive due diligence during the planning and design process and will gain regulatory consents from numerous county, state and federal agencies prior to commencement of development. The permitting process is comprehensive and rigorous. All aspects of the proposed operation will be reviewed in detail to ensure that the operation and activity will meet established requirements.

To protect existing streams and their adjacent riparian areas, no mining activity or surface disturbance (other than constructed road crossings) will occur within 100 feet of Little Turkey Creek and Deadman's Gulch. The floor of the quarry will always be maintained at least 10 feet above Little Turkey Creek and Deadman's Gulch, providing an additional elevational separation from mining activity and buffer areas along the drainages.

Blasting will only be scheduled between the hours of 10:00 am to 4:00 pm. This will help reduce vibration, noise, and dust impacts to nearby wildlife by limiting blasting to the times of day when most species of wildlife are less active.

A state-approved Stormwater Plan will be implemented to control erosion and minimize potential degradation of water quality in the area streams.

3. 0 CONSULTATION WITH SATTE AND FEDERAL AGENCIES

December 3, 2015: Steve Boyle (BIO-Logic) met with Leslie Ellwood (FWS) at the Denver FWS office, also with Paul Kos (Norwest Corporation), Bob Stabo (CMR Advisors), Leif Bang (CORE Consultants), and Cody Wigner (Colorado Parks and Wildlife, CPW). Mr. Stabo and Mr. Kos presented plans and maps of the proposed quarry development and operation, and all discussed permitting requirements and schedules. Mr. Wigner discussed CPW concerns for wildlife and fish, and Ms. Ellwood discussed FWS concerns for threatened and endangered species and compliance with the Endangered Species Act. Mr. Boyle discussed work done to date on MSO on the Site including year 1 of the MSO survey and an MSO habitat assessment (copies of the MSO Year 1 Survey Report and the MSO Habitat Assessment Report were provided). An emphasis of the meeting was MSO, but Ute ladies' tresses and Preble's meadow jumping mouse were also discussed. We discussed consultation options and timing.

April 14, 2016: Steve Boyle and Alison Graff (BIO-Logic) toured the Hitch Rack ranch proposed quarry site with Leslie Ellwood (FWS), Paul Kos (Norwest Corporation), Bob Stabo (CMR Advisors), and Matt Stratton (son of Hitch Rack Ranch owner). Mr. Stabo and Mr. Kos explained the proposed project, and BIO-Logic and FWS staff viewed MSO habitat, discussed Mexican spotted owl potential occupancy, the MSO surveys underway, potential impacts to MSO, potential mitigation, and the consultation process including the nature and timing of the BA. We also toured the site of the proposed access road crossing of Little Turkey Creek west of the highway, viewed habitat for Ute Ladies' tresses, and discussed the potential for Ute ladies' tresses to occur.

April-May 2016: Steve Boyle (BIO-Logic) and Leslie Ellwood (FWS) exchanged additional data on MSO and informally discussed details of the consultation process.

4. 0 ECOLOGICAL SETTING

The Hitch Rack Ranch is privately owned and encompasses about 1,522 acres. Elevation ranges from about 6,520 to 7,480 feet in the action area (Figure 2). The quarry site and processing area are in the foothills in terrain characterized by steep slopes and ridges, and occasional granite outcrops. Little Turkey Creek flows through the quarry site, a small perennial stream in this reach. Another intermittent stream, tributary to Little Fountain Creek, also exists in the quarry area. Several short, steep drainages in the site lead into Little Turkey Creek; these drainages are ephemeral, with occasional intermittent seeps depending on local groundwater dynamics. Vegetation communities in the foothills are dominated by mixed conifer forest composed of Douglas fir, ponderosa pine, and white fir. Small areas are dominated by ponderosa pine with an understory of Gambel oak. Mountain shrub and pinyon-juniper woodland communities are present primarily on east and southeast-facing slopes to the north of Little Turkey Creek. Narrow-leaf cottonwood and aspen (*Populus tremuloides*) occur in small numbers along Little Turkey Creek.

The proposed access road to the quarry begins in the foothills area, then crosses a long piedmont slope. Little Turkey Creek in this part of the permit area is lower-gradient and the flow becomes intermittent during the growing season, due in part to an irrigation diversion on the ranch. A few other intermittent drainages cross the access road permit area; these drainages are ephemeral and lack riparian vegetation. In the piedmont area, grasslands occur in the flat areas and pinyon-juniper woodland and mountain shrubland often dominated by Gambel oak occur on the hills. A number of small ponds have been constructed along intermittent drainages, with the largest pond fed by an irrigation ditch that flows from Little Turkey Creek. The streams and ponds support mostly mature cottonwood and ponderosa pine with an understory of red-osier dogwood (*Cornus sericea*), willow(*Salix* spp.), alder (*Alnus* sp.) and a variety of grass and forb species.

5. 0 FEDERALLY LISTED SPECIES CONSIDERED

Table 3 shows the federally listed species that were identified as potentially occurring or potentially affected by the project, based on FWS data and consultation. Of these, further field studies and research found that only the MSO has potential to occur or be affected by the project.

6. 0 MEXICAN SPOTTED OWL BIOLOGY

The Mexican spotted owl is a medium-sized forest owl that occurs discontinuously from central Colorado to northern Mexico. MSO was listed as threatened in 1993 (FWS 1993), and critical habitat was most recently designated in 2004 (FWS 2004).

Table 3. Federally Listed and Proposed Species Having Potential to Occur in the Project Area

Species	Status	Habitat	Colorado Distribution	Potential to Occur Within the Action Area
Birds				
Least tern *(Sterna antillarum)*	E	Nest on sandy or pebbly beaches, well above the water line, around lakes and reservoirs or on sandy soil sandbars in river channels.	Eastern plains.	No, suitable habitat is not present.
Mexican spotted owl *(Strix occidentalis lucida)*	T, CH	Breeds in conifer forest or rocky canyons, and mixed-age, multi-storied mature or old-growth stands with high canopy closure. In Colorado, most nests are in caves or on cliff ledges in steep-walled canyons. A wider variety of forest conditions are used for foraging.	Occurs locally from southern Utah and southern Colorado south into central Mexico. In Colorado, rare but regular in the Front Range and Wet Mountains from Jefferson County south to Huerfano County.	Yes. Suitable habitat is present. Known occurrences about 2 miles north, in mid 1990s.
Piping plover *(Charadrius melodus circumcinctus)*	T	In Colorado, breeds on sparsely vegetated sandy lakeshore beaches, sandbars within riverbeds, or sandy wetland pastures.	Eastern plains; nearest known populations east of Pueblo along the Arkansas River and Adobe Creek Reservoir.	No, suitable habitat is not present.
Whooping crane *(Grus americana)*	E	Forages on mudflats around reservoirs and in agricultural areas; breeds in wetlands dominated by bulrush; overwinters on salt flats.	Extremely rare migrant in Colorado.	No, suitable habitat is not present.
Fish				
Arkansas darter *(Etheostoma cragini)*	C	Shallow, clear, cool water, sand or silt bottom streams with spring-fed pools and abundant rooted aquatic vegetation.	Known from Upper Arkansas, Fountain Creek, Horse Creek, Big Sandy Creek, Rush Creek, Black Squirrel Creek, and Chico Creek drainages.	No. Little Turkey Creek, the only potential habitat on the site, has intermittent flow in summer on the lower reaches of the site.
Greenback cutthroat trout (Colorado River lineage green fish) (*Oncorhynchus clarkii stomias*)	T	Cold water streams and lakes with adequate spawning habitat (riffles), often with shading cover; young shelter in shallow backwaters.	Occurs in 15 counties in Colorado, known in Bear Creek in El Paso County.	No, suitable habitat is not present.
Pallid sturgeon *(Scaphirhynchus albus)*	E	Large rivers of the Great Plains	Occurs in Nebraska, in rivers that originate in Colorado.	No, suitable habitat is not present. Water-related activities or use in the North Platte, South Platte, or Laramie River Basins may affect the species in Nebraska; the project will not affect those river basins.

Species	Status	Habitat	Colorado Distribution	Potential to Occur Within the Action Area
Plants				
Ute ladies'-tresses *(Spiranthes diluvialis)*	T	Seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated floodplains, in Colorado up to 6,500 ft. elevation. Prefers open areas lacking dense overstory vegetation.	Jefferson and Boulder Counties (Clear and St. Vrain watersheds), Larimer County (Cache La Poudre watershed), Moffat County (Upper Green-Flaming Gorge Reservoir watershed), with historical records from El Paso County (Fountain watershed) and Weld County (Middle South Platte-Cherry Creek watershed).	No. Potential habitat along Little Turkey Creek and intermittent drainages and near lake and ponds was assessed in the field and found not suitable.
Western prairie fringed orchid *(Platanthera praeclara)*	T	Tall-grass prairie on calcareous silt loam, sub-irrigated sand prairies, and irrigated hay meadows.	Not known from Colorado. Water-related activities/use in Colorado in the North Platte, South Platte, and Laramie River Basins may affect the species in Nebraska.	No. The project will not affect the North Platte, South Platte, or Laramie River Basins.
Mammals				
North American wolverine	PT	Boreal forests, tundra, large contiguous natural areas.	Extirpated from the state; rare visitors documented.	No, suitable habitat is not present.
Preble's meadow jumping mouse (*Zapus hudsonius preblei*)	T CH	Well-developed riparian habitat with adjacent, relatively undisturbed grassland communities and a nearby water source. Well-developed riparian habitat includes a dense combination of grasses, forbs and shrubs; a taller shrub and tree canopy may be present.	Front Range counties from Larimer south to Colorado Springs.	No, although suitable habitat appears present along Little Turkey Creek at the access road crossing, the site is outside of known range.

E = Endangered; T = Threatened; PT = Proposed Threatened; C = Candidate; CH = Critical Habitat

6.1 Colorado Distribution and Abundance

MSO are extremely rare in Colorado, with less than 10 breeding pairs known over the past few decades. One or 2 pairs have been resident in Mesa Verde in Montezuma County for many years, and a few solitary owls have been documented for short periods of time in Archuleta County southwest of Pagosa Springs and in Moffat County, in Dinosaur National Monument; otherwise, known breeding pairs are confined to south-central Colorado in the Front Range and Wet Mountains (Wickersham 2016, BLM and U.S. Forest Service unpublished survey data). Annual surveys of known nesting sites and other suitable habitat over the past 20 years suggests the population in Colorado remains stable but critically small (BLM and U.S. Forest Service, unpublished MSO survey data, 1990-2015). Total number of MSO documented in south-central Colorado in recent years are 6 in 2013 (including 1 adult pair and 1 juvenile); 11 in 2014 (including 3 adult pairs and 3 juveniles); and 4 in 2015 (including 2 adult pairs). In 2015 the survey effort was significantly limited by lack of access to canyons because of high precipitation and flooding.

6.2 Habitat

A large number of scientific studies have been published on MSO habitat characteristics and seasonal use patterns; these are extensively evaluated and summarized in the FWS rules detailing the MSO listing (FWS 1993) and Critical Habitat designation (FWS 2004) for MSO. MSO inhabit a broad range of landscapes from northern Mexico to central Colorado, and as a result specific characteristics of occupied habitats are varied. Two main habitat types are recognized throughout their range: mixed conifer forests at middle elevations, and sandstone canyons, often with riparian deciduous forest or little forest vegetation, occupied by MSO in southern Utah and northern Arizona. Canyon habitat does not exist at the Hitch Rack Ranch, and is not discussed further in this assessment.

Territorial adult MSO inhabit a breeding home range of a few to several square miles throughout the year. Most radio-marked MSO have been found to be non-migratory, remaining in or near their breeding territories year round. However, some migrate in winter; typical movements occur from about November through March to lower elevations, with movements usually from 3 to 31 miles (FWS 2012a). For breeding they require relatively large, contiguous forest stands with some large trees, standing dead trees (snags), and abundant dead and down woody debris, all characteristics that tend to be best developed in older forest stands. MSO habitat needs vary with the seasons and breeding cycle. Nests are typically placed in large, old trees high above the ground, in live or dead trees, or (most commonly in Colorado) in shallow caves or deep crevices on rock faces within mixed-conifer forests. As a result, nesting habitat requires the presence of large trees or suitable cliff-nesting sites, surrounded by good quality foraging habitat.

MSO forage in a variety of habitats including managed and unmanaged forests, pinyon-juniper woodlands, mixed-conifer and ponderosa pine forests, cliff faces and terraces between cliffs, and riparian zones (FWS 2012a). However, relatively little is known about specific habitat characteristics associated with foraging habitat, particularly in winter (Torretta et al. 2016, FWS 2012a).

The FWS Critical Habitat designation (FWS 2004) identifies the following primary constituent elements for MSO forest habitats:

> "The primary constituent elements which occur for the owl within mixed conifer, pine-oak, and riparian forest types that provide for one or more of the owl's habitat needs for nesting, roosting, foraging, and dispersing are in areas defined by:

A. Primary constituent elements related to forest structure:

(1) A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with a trunk diameter of 12 inches or more;

(2) A shade canopy created by the tree branches covering 40 percent or more of the ground; and

(3) Large dead trees (snags) with a trunk diameter of at least 12 inches.

B. Primary constituent elements related to maintenance of adequate prey species:

(1) High volumes of fallen trees and other woody debris;

(2) A wide range of tree and plant species, including hardwoods; and

(3) Adequate levels of residual plant cover to maintain fruits, seeds, and allow plant regeneration.

The forest habitat attributes listed above usually are present with increasing forest age, but their occurrence may vary by location, past forest management practices or natural disturbance events, forest type, productivity, and plant succession. These characteristics may also be observed in younger stands, especially when the stands contain remnant large trees or patches of large trees from earlier stands. Certain forest management practices may also enhance tree growth and mature stand characteristics where the older, larger trees are allowed to persist."

The MSO Recovery Plan (FWS 2012a) includes recommendations on forest conservation and management to protect and recover MSO populations. Appendix C, Table C.3 of the Recovery Plan offers the following minimum characteristics for mixed conifer and pine/oak forests, in order to meet MSO habitat needs for breeding and foraging. The Forest Type in the table below applicable to the Hitch Rack Ranch is SRM (Southern Rocky Mountains), mixed conifer; BA refers to basal area of trees, measured as ft^2/acre; and dbh is tree diameter at breast height.

Table C.3. Minimum desired conditions for mixed-conifer and pine-oak forest areas managed for Recovery nesting/roosting habitat. Forest types are defined in Appendix C, above. Parameter values are based on averages among plots sampled within forest stands. Numbers of stands included in analysis: 74 for Basin and Range-East (BRE), 27 for mixed-conifer forest in other EMUs, and 47 for pine-oak forest.

EMU(s) Forest Type	% of area[1]	% BA by size class		Minimum tree BA[2]	Minimum density of large trees[3]
		30-46 cm dbh (12-18 in)	>46 cm dbh (>18 in)		
BRE Mixed-conifer	20	>30	>30	33.3 (145)	37 (15)
CP, UGM, SRM, BRW Mixed-conifer	25	>30	>30	27.5 (120)	30 (12)
CP[4], UGM, BRW Pine-oak	10	>30	>30	25.3 (110)	30 (12)

[1] % of area pertains to the percent of the planning area, subregion, and/or region in the specified forest type that should be managed for threshold conditions.

[2]BAs in m^2/ha (ft^2/acre), and include all trees >1 inch dbh (i.e., any species). We emphasize that values shown are **minimums**, not targets.

[3]Trees > 46 cm (18 inches) dbh. Density is tree/ha (trees/acre). Again, values shown are minimums rather than targets. We encourage retention of large trees.

[4]Pine-oak forest type: ≥10% of the stand BA or 4.6 m^2/ha (20 ft^2/ac) of BA consist of Gambel oak ≥ 13 cm (5 in) drc.

[5]Pine-oak recommendations apply only to the Mount Taylor and/or Zuni Mountains regions within the CP EMU.

7. 0 MEXICAN SPOTTED OWL STATUS IN THE PROJECT AREA

This section reviews the status of the MSO and critical habitat in the project area.

7.1 Mexican Spotted Owl

The quarry site was surveyed for MSO in 2015 and 2016 by BIO-Logic biologists following the FWS survey protocol (FWS 2012b). The entire quarry area was presumed to be within potential habitat for MSO, and the survey included all areas of the project that included mixed conifer forest or rock cliffs. Surveys were designed to provide complete coverage of all MSO potential habitat that could be affected by the project and in 2016 we modified the survey calling points to extend the survey to the property boundary, achieving additional survey coverage out to about ½ mile in suitable habitat on adjacent properties. No MSO were detected during any of the surveys (BIO-Logic 2016a). No previous surveys for MSO have been conducted on the Hitch Rack Ranch. While the negative survey results do not prove that MSO are absent from the site, it is unlikely that breeding MSO were present during 2015 or 2016.

The nearest known record of MSO to the project site is the breeding pair of MSO recorded in Little Fountain Creek in the mid-1990s (Johnson 1997). The Little Fountain Creek site was surveyed for MSO from 1993 through 2003, after which surveys were discontinued because of lack of MSO detections after about 1997 and difficult access. The Little Fountain Creek Protected Activity Center (PAC) remains in

existence to provide protection for MSO breeding habitat in that area, and the southern boundary of the PAC is about 1.6 miles north of the project permit area (Figure 6). The nearest sites known to be occupied by breeding MSO in 2015 are Wet Mill Creek, about 7.8 miles southwest of the project site, and Phantom Canyon, about 11.2 miles southwest (Figure 6).

In 2015, BIO-Logic biologists conducted a MSO Habitat Assessment on the Hitch Rack Ranch. The assessment included a visual assessment of terrain, rock outcrops and cliffs, surface water, and quantitative measurement of forest stand characteristics in 10 randomly selected plots in mixed conifer and ponderosa pine-oak forest stands in the quarry site (BIO-Logic 2016b). The assessment concluded that forest stand characteristics were generally deficient for breeding habitat as defined by the MSO Recovery Plan (FWS 2012a). The forest stands in the quarry site, mostly mixed conifer dominated by Douglas fir, are consistently young age classes, roughly 70 to 80 years old, with adequate stocking rate but very few trees exceeding 12 inches in diameter and no trees exceeding 18 inches in diameter. Dead and down trees and woody debris are similarly sparse. A small area of potential cliff nesting habitat exists on a short vertical cliff along the north side of Little Turkey Creek, in an area that will not be altered by mining because of its close proximity to the Creek. Otherwise, nesting habitat is generally lacking in the project area. Based on the MSO Habitat Assessment, and conversations with FWS staff on site during a site inspection, it is believed that the primary value of the habitat at the project site is foraging habitat.

7.2 Mexican Spotted Owl Critical Habitat

The project site is not within critical habitat, which applies only to federally owned and managed lands (FWS 2004). However, the portion of the Hitch Rack Ranch that contains the quarry site partially borders BLM lands on the west and north, and these federally owned and managed lands are within critical habitat (Figure 7). The BLM parcels bordering the Ranch generally contain suitable foraging habitat for MSO including rugged ridges and slopes covered with mixed confer or pine/oak forest.

8.0 EFFECTS ANALYSIS

This section analyzes the project potential effects to MSO and to federally designated MSO critical Habitat.

8.1 Mexican Spotted Owl

8.1.1 Effects to MSO

Because the MSO survey failed to detect MSO during the 2015 and 2016 breeding seasons, it is unlikely that breeding MSO currently occur in or near the project area. While negative survey results for MSO are never conclusive, the poor quality of MSO breeding habitat in or near (within ½ mile) the project area also suggests that the presence of breeding MSO is very unlikely. However, foraging MSO, particularly unmated or dispersing owls or owls in winter, could occasionally be present on the site. As operations at the site proceed incrementally, it will become less likely that MSO occupy portions of the site as habitat is increasingly altered and operations expand.

If MSO are present on the site in the future, direct impacts leading to mortality are very unlikely. Project operations will occur in daylight hours, and the project is not likely to cause bird collisions with vehicles or equipment, exposure to toxic materials, or exposure to electrocution hazard. Indirect effects could include disturbance of birds, leading to displacement to other habitats. Effects to breeding birds are not

likely, because it is not likely that MSO would attempt to breed in the area due to poor existing habitat conditions and the disturbance effects of normal mining operations. Overall, direct effects to MSO are not likely, and indirect effects to MSO other than habitat loss are not likely to be significant.

8.1.1 Effects to MSO Habitat

Up to 275 acres of MSO habitat will be directly affected, including about 180 acres of mixed conifer forest, 93 acres of mountain shrubland, and 2 acres of riparian (Figure 5 and Table 1). All of the mixed conifer forest and riparian vegetation is probably suitable foraging habitat for MSO. Some of the mountain shrubland contains scattered ponderosa pine or significant pinyon pine and juniper inclusions, and these areas probably also provide suitable foraging habitat for MSO, particularly in winter. Other areas of the mountain shrubland type contain only Gambel oak, mountain mahogany, and other low shrubs, and may be less suitable as foraging habitat. However, the entire area is assumed to be potential foraging habitat for this assessment.

The existing MSO habitat will be affected in two ways, by alteration of terrain and by removal of vegetation. The terrain alteration will be mostly permanent. Stockpiles of product, rock fines, and topsoil will be temporary and will be removed or moved to final grading by the end of the project. The quarry pit excavations, however, will result in removal of areas of ridges and slopes, and the final terrain will consist of pits with moderate slope bottoms (about 2% slope), bounded on the upslope sides by stepped highwalls with alternating 63% bare rock slopes and revegetated terraces (Figure 4). The access roads will be removed and regraded to the original contours. The access road crossings at Deadman's Creek and Little Turkey Creek will be reclaimed and restored to original conditions.

Existing vegetation in the disturbed areas will be removed. Revegetation will be accomplished during incremental reclamation, so that the entire area will not be disturbed at the beginning, and as operations proceed some previously disturbed areas will be in various stages of revegetation.

The revegetation goal is to restore the preexisting vegetation communities, and this will be possible in some areas. The highwall rock slopes created by mining will not be revegetated, and these will result in permanent loss of existing forest cover on about 16 acres total. Also, in some cases the altered slope and aspect of the final topography may result in a different species composition, for example some areas that formerly supported mixed conifer forest dominated by Douglas fir may be dominated more by ponderosa pine or Gambel oak following reclamation. It will take a significant amount of time for pre-existing forest stand conditions to develop. The existing forest age is roughly 70 to 80 years. Pit operations will last up to about 50 years. Although some pit areas will be reclaimed sooner, the worst case is for reclamation to begin at completion of pit operations in about 50 years, with another 70 or 80 years required for the replanted forest to reach the pre-disturbance age. Therefore, most of the existing MSO foraging habitat in the project area will be of limited use to MSO or will not exist for about 50 years, then will be of limited use for several decades after that until forest stands attain sufficient size and structural diversity to provide suitable foraging habitat again. Some, but probably not all, of the MSO habitat value will eventually return, but this will require at least a century from the beginning of project operations.

To evaluate the effects of the loss of MSO foraging habitat on the known population of MSO in the region, a regional habitat analysis was conducted. The MSO population of interest was defined as the MSO known breeding occurrences since 1990 in the Front Range north of the Arkansas River, as represented by the eight PACs shown in Figure 8. The area of potential MSO foraging habitat available to this population was calculated in two defined areas: first within the FWS-designated Critical Habitat Unit SRM C-1a that encloses the population, then within an area empirically defined as the apparent breeding range. The apparent breeding range was drawn as a single polygon around the 8 PACs, large enough to encompass all of the rugged canyon terrain in the surrounding area. This polygon is an

approximation of the breeding habitat available to the known MSO breeding population. This apparent breeding range was then expanded by 4 miles, to include adjacent foraging habitat and allow for downslope movements in winter to lower elevation foraging areas (Figure 8). The two analysis areas are roughly similar in size, and each include roughly half federally managed lands (BLM and Forest Service) (Table 4). Within each analysis area, the area of potential MSO foraging habitat was calculated as the sum of four land cover types representing mixed conifer forest, ponderosa pine woodland, and pinyon-juniper woodland, using land cover digital data from the Southwest Regional Gap Analysis Land Cover dataset (USGS 2004). Area of potential MSO foraging habitat was calculated in each analysis area for the total area, and also only for BLM and Forest Service lands.

For each analysis method, Critical Habitat Unit or the more empirical buffered apparent breeding range, results were similar (Table 4). The analysis areas contained about 126,000 and 137,000 acres of potential foraging habitat, respectively, representing about 73% and 60% of the total areas. Potential foraging habitat on federally managed lands was about 79,000 acres (80%) and 73,000 acres (76%). By either analysis method, the potential foraging habitat that will be directly affected by the project (within the project footprint) and could be indirectly affected (on adjacent BLM land) comprises about a quarter of a percent of all potential foraging habitat for the regional MSO population, and less than half of a percent of potential foraging habitat on BLM and Forest Service lands.

Table 4. Affected Potential MSO Foraging Habitat as Percent of All Habitat in the Region.

	Critical Habitat Unit SRM C-1a		**Area within 4 Miles of Apparent Breeding Range**	
	All Lands (acres)	**BLM and USFS Lands (acres)**	**All Lands (acres)**	**BLM and USFS Lands (acres)**
Total Area	172,839	98,641	229,727	95,666
Potential MSO Foraging Habitat:				
Dry-Mesic Mixed Conifer Forest	12,150	8,808	10,740	7,562
Mesic Mixed Conifer Forest	21,233	14,774	15,400	10,925
Ponderosa Pine Woodland	76,612	49,240	65,737	38,240
Pinyon-Juniper Woodland	16,015	6,156	45,381	16,282
Total, all Potential MSO Foraging Habitat	126,010	78,978	137,258	73,009
Percent of Al Potential MSO Foraging Habitat in the Analysis Area:				
275 Acres Directly Affected	0.22%	0.35%	0.20%	0.38%
275 Acres Directly Affected + 50 Adjacent Acres Indirectly Affected, Total 325 Acres	0.26%	0.41%	0.24%	0.45%

8.1.3 Cumulative Effects

This BA is required to consider cumulative effects of future state, tribal, or private actions that are reasonably certain to occur in the analysis area. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

Reasonably foreseeable non-federal activities in the area include continued residential development on private parcels within or near suitable MSO habitat. Several small and large-acre parcels in the vicinity contain similar habitat to the MSO habitat that will be affected by the mining operation. No new proposals for commercial developments in the action area were identified. Development in the area may result in indirect effects to MSO from removal of habitat, or reduced effectiveness of remaining habitat. The effects of the Hitch Rack Ranch Quarry on MSO habitat in the area would be cumulative to other development of private lands; however, cumulative effects to breeding habitat would be relatively minor and mostly foraging habitat would be affected. Foraging habitat remains widespread in the region, and is not likely to be a limiting factor for MSO populations.

8.2 Mexican Spotted Owl Critical Habitat

8.2.1 Direct and Indirect Effects

No direct effects to MSO critical habitat on adjacent BLM lands will occur. However, indirect effects could occur as a result of proximity to the project site. Project operations could reduce habitat effectiveness from human presence, noise, and the removal of the existing vegetation and alteration of topography at the project site. The noise effect is not likely to be significant over about ¼ mile from the Ranch boundary, based on the noise analysis study. Similarly, the visual impact of removed vegetation, altered terrain, and human presence at the site is not likely to reduce habitat effectiveness in critical habitat more than about ¼ mile from the project boundary. Consequently, a small area of BLM critical habitat, up to about 50 acres, could be indirectly affected, and within this area MSO habitat suitability could be reduced. The effects would likely be temporary during the mine operational life, and after reclamation the indirect effects are expected to cease and MSO habitat effectiveness in BLM critical habitat would return to pre-project conditions.

8.2.2 Cumulative Effects

Because critical habitat is only designated on federally owned or managed lands, no non-federally authorized actions are foreseeable in critical habitat in the action area that would adversely modify critical habitat. Because some private parcels adjoin the BLM critical habitat in the action area, it is possible that residential development could indirectly affect critical habitat by the edge effects discussed above. The edge effects or the Hitch Rack Ranch Quarry project on critical habitat would be cumulative to the indirect effects of adjacent private land residential development. Such cumulative effects overall would not affect a substantial area, would not be likely to significantly reduce the quality or availability of breeding habitat, and would likely affect only foraging habitat.

9.0 EFFECT DETERMINATION

9.1 Mexican Spotted Owl

The project is not likely to cause direct effects to MSO because MSO do not appear to inhabit the site, and are not likely to breed at or near the site. The project will incrementally remove up to 275 acres of

MSO foraging habitat and make a small area of potential breeding habitat unavailable during project operations, expected to last 50 years. Incremental reclamation and revegetation will restore vegetation, although terrain will be permanently altered, some highwall areas will not be available for revegetation, and revegetation may not fully restore all of the current forest stand characteristics. An additional area of potential MSO foraging habitat up to about 50 acres adjacent to the project may be indirectly affected by visual and noise impacts. The resulting loss of habitat will not occur all at once, some will be permanent, and some will be temporary due to reclamation, although habitat recovery will take more than a century. The area of affected habitat is over 7 miles from the nearest known breeding occurrence of MSO as of 2015, and will affect less than half of a percent of all estimated potential foraging habitat on federally protected lands available to the known MSO population in the region.

Because the project is not likely to directly affect MSO individuals, will not affect substantial breeding habitat, will affect a very small fraction of the regionally available foraging habitat, and some of the affected habitat will recover, it is determined that the project **may affect but is not likely to adversely affect Mexican spotted owl because of insignificant effects**.

9. 2 Mexican Spotted Owl Critical Habitat

The project will not directly modify critical habitat. Indirect effects to critical habitat on two adjacent BLM parcels may occur as reduced MSO habitat effectiveness due to project noise, vegetation removal, terrain modification, and human presence in daytime. Such effects are likely to attenuate quickly beyond the project boundary, and are likely to become negligible at ¼ mile from the project boundary, affecting up to about 50 acres of BLM critical habitat. The critical habitat that may be affected appears to be suitable mainly as foraging habitat and is not likely to contain substantial MSO breeding habitat, based on the fact that BLM biologists have not identified these areas for MSO breeding surveys. Foraging habitat remains widespread in the region. As a consequence, the project **may modify but is not likely to adversely modify MSO critical habitat, because of insignificant effects.**

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APPENDIX A. MAP FIGURES

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Hitch Rack Ranch Quarry

Wildlife Protection and Mitigation Plan: Outline

Prepared for:

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Colorado Springs, Colorado

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January 5, 2017

1. INTRODUCTION

Transit Mix Concrete Company (Transit Mix) is proposing to construct and operate the Hitch Rack Ranch Quarry on the Hitch Rack Ranch in rural El Paso County, Colorado. The purpose of the quarry is to mine and process granite rock for construction aggregate.

In support of an application to the State of Colorado for a 112 reclamation permit, this Wildlife Protection and Mitigation Plan provides additional information on the proposed project's expected impacts to wildlife, and actions proposed by the applicant to provide additional wildlife protection and offset mitigation.

This outline provides the conceptual framework for the Wildlife Protection and Mitigation Plan. Specific actions will be determined in the next 2 to 4 months, after needed consultation with wildlife management agencies including Colorado Parks and Wildlife (CPW), the U.S. Fish and Wildlife Service (USFWS), and other interested parties.

2. AFFECTED SPECIES AND POTENTIAL IMPACTS

Through field studies in 2015 and 2016, research of existing data, and consultation with wildlife experts in CPW and USFWS, BIO-Logic, Inc. (BIO-Logic) has determined that the following species of concern may be affected by the project. The information that will be presented in this Plan provides additional and detailed accounts of the species of concern that may be affected, including their known distribution,

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abundance, population tend, and use of the Site and surrounding region. This Plan will also provide a more detailed analysis of the potential impacts to these species of concern.

2.1 Mexican Spotted Owl

The Mexican spotted owl is listed as a federal and state threatened species. USFWS is the lead agency working for the species' conservation and recovery, and is responsible for ensuring compliance with the U.S. Endangered Species Act (ESA). Early in development of this project Transit Mix recognized that habitat for Mexican spotted owl may exist at the Site, and Transit Mix and its consultants have been engaged since 2015 in standard compliance activities including early discussions with CPW and USFWS and conducting requested studies. Under the terms of the ESA the U.S. Army Corps of Engineers (USACE) is required to consult USFWS regarding impacts to Mexican spotted owl because of the nexus incurred by USACE issuance of a Clean Water Act Section 404 permit for the project. Transit Mix is funding the studies, impact analysis, and documentation needed for USACE to compete ESA consultation. The consultation is in progress, and when complete, officials at USACE and USFWS must document that the project is in compliance with the ESA, and will not jeopardize the continued existence of the species.

To date we have completed a Mexican Spotted Owl Conservation Assessment, Hitch Rack Ranch Quarry Site, attached as Appendix A to this report. The assessment documents the field studies, data and literature review, and impact analysis that have been completed to begin consultation with USFWS.

In summary, the findings of the assessment include:

A. The Mexican spotted owl occupies western conifer forests, preferring old-growth trees for nesting and roosting throughout most of their range, and in Colorado nesting exclusively as far as known in rock cliffs and canyons. The species is extremely rare in Colorado with less than 10 breeding pairs known, mostly from the southern Front Range and the Site is considered within the overall range of the species.

B. At the Site, suitable foraging habitat was identified in mixed conifer and pine-oak forest in the upper Ranch, including most of the proposed mine area. Very limited roosting or nesting habitat is present because of lack of suitable rock cliffs and lack of old-growth conifer stands. Two years of USFWS protocol surveys were conducted throughout suitable habitat, and no Mexican spotted owls were detected.

C. Potential impacts: no direct impacts to Mexican spotted owls are expected because of absence at the Site and no known occurrences within several miles. Negligible impacts would occur from loss of nesting or roosting habitat, the most critical habitat elements, because the Site generally lacks these habitat features. Up to 325 acres of foraging habitat would be removed by mining or affected by human disturbance, and most of the habitat would be reclaimed in a forest-grassland patch matrix vegetation community. The principal effect to Mexican spotted owl would be the temporary loss of this foraging habitat, and some reduction in foraging habitat quality could remain after reclamation because of retained rock highwalls and other non-suitable habitat

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features. The foraging habitat affected is estimated to comprise less than 1% of the foraging habitat available to the several known nesting pairs of Mexican spotted owl in the region.

D. Conservation measures will be discussed with USFWS later in the consultation process, and Transit Mix is committed to full compliance with the ESA. Further measures may include operational actions, modification of the Reclamation Plan, or off-site offsetting mitigation.

2.2 Mule Deer and Elk

This Plan will provide details of the following, additional to the information provided to CDRMS with the original permit application and adequacy supplements:

A. Summary of biology, conservation status in the region, population trends, CPW conservation concerns.

B. Presence at the Site: summer use, winter use, seasonal movements, regional context of Site to landscape-scale habitat conservation. Maps will be provided of key wildlife habitats.

C. Potential impacts: no direct mortality expected. Habitat loss during mining operation; reclamation expected to restore and enhance habitat. Disturbance during mining operation, concern of impairment of movement between seasonal ranges.

2.3 Wild Turkey

A. Summary of biology, conservation status in the region, population trends, CPW conservation concerns.

B. Presence at the Site: Summer use for production area, winter use, importance of roost sites, regional context of the Site to landscape-scale conservation. Maps will be provided of key habitats.

C. Potential impacts: no direct mortality expected. Habitat loss during mining operation, reclamation expected to restore and enhance foraging habitat, roost sites in mature trees along Little Turkey Creek not expected to be affected by mining due to riparian protection buffer. Disturbance during mining operation, concern of impairment of movement.

2.4 Other Species and Biodiversity

A. As many as 150 species of wildlife are expected to occur at the Site. The mine area has moderate species diversity for wildlife, typical of dry montane forests in the foothills of the Front Range. Lower elevations of the Hitch Rack Ranch that would not be mined, but would contain a new access road, provide additional grassland and shrubland habitats and increase the biodiversity of the permit area overall.

D. Potential impacts: no direct mortality of wildlife is expected. Habitat loss will occur during mining operation. Reclamation is expected to restore and enhance habitat for most species,

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although habitat conditions for forest interior species and species requiring older age forests will be reduced in extent or quality until revegetation is well advanced. Biodiversity in the surrounding region is already affected by a large number of human land uses including forest and rangeland management, recreation, and residential development. Overall, no expected loss of biodiversity at a biologically meaningful scale.

3. WILDLIFE CONSERVATION MEASURES

This outline identifies the following possible conservation measures to protect wildlife and ensure compliance with pertinent state agency rules for mine reclamation permits. The conservation measures will be explored, selected, and developed over the next 2 to 4 months following additional research and wildlife agency consultations.

3.1 Reclamation Plan Modifications

Reclamation actions could be modified to improve wildlife habitat on post-mined lands. Modifications to the Reclamation Plan may include:

A. Changes in surface topography to create less even slopes, providing topographic variation that can enhance security cover for large animals and promote moisture pockets for more diversity in vegetation at small scales.

B. Additions to seed mixes to add more herbaceous or shrub species of high value to mule deer, elk, and wild turkeys.

C. Reclamation design to include planning for tree plantings in clumps to maximize security cover for large animals and create ideal forest patch geometries to maximize habitat effectiveness.

D. Review plans for post-mine highwalls and modify highwall geometry if needed to promote large animal movement along and across highwall terraces.

E. Consider highwall modifications that could enhance habitat for cliff-nesting raptors.

3.2 Habitat Enhancement Projects on Hitch Rack Ranch

Opportunities exist to protect or enhance habitat on the Hitch Rack Ranch in areas other than reclaimed mine lands. Project sites could include parts of the permit area to be mined in future phases, areas within the permit area not planned for development, or Hitch Rack Ranch lands outside of the permit area. Projects could include:

A. Seeding and/or fertilizing to improve wildlife forage, particularly useful for improving big game winter range and wild turkey foraging areas.

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B. Development of water sources for wildlife. These could include small ponds on the lower ranch, or "guzzlers" that capture rain water and provide drinking water through troughs or pans, useful in the upper ranch where surface water is mostly absent.

C. Forest health assessment and management, on forested lands outside of mined areas. This could make use of Colorado State Forest Service landowner assistance programs such as a Forest Stewardship Plan to professionally assess forest health and carry out management actions to meet forest objectives emphasizing wildlife habitat quality.

D. Livestock grazing management planning on the lower Ranch, to assess current horse grazing practices and identify improved practices such as fencing, grazing rotation, and vegetation monitoring to reduce impacts to riparian vegetation and improve grassland function as wildlife habitat. U.S. Natural Resources Conservation Service (NRCS) landowner assistance programs can be useful and cost-effective for achieving improved grazing practices.

3.3 Long-Term Habitat Protection and Land Stewardship

Opportunities exist to provide long-term protection for wildlife and biodiversity in the surrounding region. Projects that provide permanent protection of land for conservation purposes are an important element in regional landscape-scale conservation and help to ensure animal movement and resilience to natural disturbances such as wildfire.

Projects could include purchase of property for conservation purposes, or assisting in accomplishing deed restrictions for conservation. Projects that adjoin existing protected lands in the area such as the Aiken Canyon Preserve would be particularly beneficial.

A. Lower Hitch Rack Ranch, outside of the mine permit area.

B. Other private land parcels in the surrounding region.

3.4 Wildlife Research and Management Assistance

Opportunities exist to assist CPW, federal agencies, or non-profit groups with funding to conduct needed research or management on wildlife populations in the regional area. These may include:

A. CPW radio-marking of area elk, mule deer, or wild turkeys to further understanding of population status, reproduction, or seasonal habitat use and movements.

B. CPW trapping and transplanting of wild turkeys or other species to improve distribution or population dispersion.

C. USFWS research or monitoring of Mexican spotted owl, to improve understanding of conservation status or seasonal movements. Particularly lacking is information on habitat use outside of breeding season and seasonal movements.

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D. The Nature Conservancy or other non-profit science-based organizations, to facilitate research or monitoring of species of concern on conserved properties in the regional area.

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Appendix A. Mexican Spotted Owl Conservation Assessment, Hitch Rack Ranch Quarry Site

The Colowyo Mine: A Case Study for Successful Mine Reclamation

Leave a reply

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In northwestern Colorado, U.S., coal mining has been a critical part of the culture and economy since the turn of the 20th century. The history of the Colowyo Mine (Colowyo), currently operated by Western Fuels-Colorado, LLC, and owned by Tri-State Generation and Transmission Association, Inc. (Tri-State), dates back to 1908 when the underground Collom Mine operated in the 24-foot-thick Collom coal seam. Starting in 1976, Colowyo transitioned to a highly efficient multiseam dragline and truck-shovel surface mine that today produces approximately 2.5 million tons per year of high-quality, low-sulfur, sub-bituminous coal that is used for coal-fired electrical generation.

The coal produced from Colowyo feeds Craig Station, the second largest coal-fired baseload power plant in Colorado. This power station uses modern emissions control technologies to produce approximately 1300 MW, or one third of the coal-fired electricity generated in Colorado. The electricity generated at Craig Station is an important component of the Tri-State portfolio of power generation. Tri-State is a not-for-profit wholesale power supplier to 44 electric cooperatives and public power districts serving 1.5 million members throughout 200,000 square miles in Colorado, Nebraska, New Mexico, and Wyoming.

The state of Colorado is known nationally for its snow skiing, big game hunting, fishing, hiking, sightseeing, rafting, and many other types of outdoor recreation—an industry that yields $13.2 billion in state revenue each year.[1] Colorado has 53 mountain summits in excess of 14,000 feet (4267.2 m) and vital water derived from the Colorado watersheds sustains municipalities and agricultural industries in vast areas of the arid southwestern U.S. In recent years, the state's population has grown at twice the national average. Thus, meeting increasing energy demand in Colorado must be done in a way that minimizes impacts on the natural world. In line with such values, Colowyo practices responsive resource extraction with minimized harm to the environment and a dedication to reclaiming the land to a beneficial use that is comparable to or better than the land use that existed prior to mining.

The Colowyo mine has provided coal to produce reliable, cost-effective electricity for nearly four decades while minimizing the environmental footprint.

Colowyo is a mature mining operation composed of the active South Taylor Pit, the fully mined out West Pit undergoing reclamation, and substantial areas that have already undergone successful reclamation. Reclamation begins as soon as mining in a particular area is finished, minimizing the environmental impact and footprint of the mine at any one time.

COLOWYO'S APPROACH TO MINE RECLAMATION

Colowyo's reclamation objective is to restore the mined area to a land use capability equal to or better than the land condition that existed prior to mining. This commitment begins with the Tri-State Board of Directors, which has made reclamation projects a priority and has dedicated the necessary resources to ensure completion at or above industry standards. The desired end results of all reclamation practices are to stabilize the soil, maintain hydrologic and vegetation resources, and restore the approximate original contour of the mined area. Ultimately, the goal is to return the mined areas to a condition that can support its original use as rangeland and the watersheds to their approximate pre-mining character. In general, the long-term appearance and usefulness of the mined area will be similar to that which would have been encountered prior to any mining.

Land currently undergoing the reclamation process at Colowyo

Colowyo has worked cooperatively through the years with Colorado State University, the University of Idaho, the Colorado Division of Reclamation, Mining and Safety (CDRMS), the Colorado Department of Parks and Wildlife, and the U.S. Bureau of Land Management to develop innovative reclamation techniques, including the following practices:

- Hauling topsoil immediately from the salvage area to the final reclamation surface to preserve soil nutrients and seed sources within the topsoil;
- Chisel-plowing the newly spread topsoil to break up soil compaction to help prepare an optimum seed bed;
- Using a rangeland drill to plant a diverse mix of shrub/grass/forb seeds below the soil surface;
- Seeding only in the fall so the seed lies dormant through the winter and germinates in the spring to take advantage of snow melt precipitation and the spring growing season; and
- Placing discontinuous contour furrows in the topsoil when seeding to capture and hold precipitation to sub-irrigate plant root zones.

The Colowyo site has won numerous reclamation awards for outstanding professionalism and performance in conducting mining and reclamation operations, use of innovative approaches in addressing reclamation problems, successfully obtaining environmental permits approving work in several excess spoil disposal fill areas, supporting longstanding efforts to reestablish shrubs on reclaimed mined land through the testing of various seeding and planting techniques, and innovative topsoil replacement methods to enhance shrub establishment and develop beneficial and diverse wildlife habitat. In fact, since 2010, Colowyo has received six Colorado Mining Association Environmental Stewardship and Pollution Prevention awards and three Colorado Division of Reclamation, Mining and Safety Excellence in Reclamation awards.

OUR RECLAMATION PROCESS

The reclamation process at Colowyo begins with the salvage of topsoil before mining commences. Topsoil salvage ensures that soil rooting material, with the associated nutrients and organic matter, is transferred back to the land after mining has ended. Thus, during reclamation much of the area that is temporarily disturbed by mining is covered by soils that provide an excellent source of plant growth media. These soils are deep, dark, and loamy with physical and chemical properties well suited for revegetation. Topsoil is either directly hauled from salvage areas or hauled from topsoil stockpiles and uniformly distributed over the entire regraded landform.

Backfilling and regrading operations, also important during reclamation, are conducted according to the reclamation plan approved as part of the CDRMS permit to mine. These operations return the surface topography to the approximate original pre-mining contours. Post-mining drainages are constructed to reestablish stable drainage basin areas, land profiles, and channel configurations. These drainages are designed to ensure the channels and associated drainage basins remain stable and are not prone to erosion. Contour ditches may be placed in drainage basins to route surface flow to rock-lined channels. These are especially important immediately after topsoil placement and seeding while vegetation is becoming established to prevent or minimize erosion of the topsoil resource.

Diverse vegetation types are selected based on the post-mine land use approved in the mining permit. Since Colowyo's post-mine land use is rangeland, the reclamation areas are seeded with native species of grasses, forbs, and shrubs to reestablish vegetative communities such as sagebrush, juniper, grassland, and riparian. The eventual size and location of these various post-mine vegetative communities are based on factors such as surface topography, elevation, and the direction the landform is facing. Variable depths of topsoil may be replaced in targeted areas to best meet vegetative requirements. Studies have shown that establishment of some shrubs is enhanced by the placement of shallower (4–8 inches) topsoil depths. This potentially precludes the establishment of thick stands of grasses that can out-compete shrubs and forbs for soil moisture and nutrients. Conversely, thicker (12–18 inches) layers of topsoil can enhance the establishment of predominantly grassland communities.

SUCCESSFUL LAND REHABILITATION

Reclaimed mine lands are becoming an increasingly important land use component within the Colowyo mining area. Over 2400 acres of reclaimed land, which continues to expand, provides year-round habitat to local birds and both small- and big-game wildlife populations, including small mammals, birds of various species, elk, mule deer, and pronghorn antelope. It is quite common to observe young animals and birds of every species that were born on or in the near vicinity of the reclaimed mine lands.

Native elk on Colowyo reclaimed mine land

This final surface configuration provides home and shelter for all wildlife. The regrading and revegetation plan reestablishes diverse food sources, establishes escape cover, creates south-facing slopes that do not accumulate deep snow levels, which aids wintering animals, and creates small drainages and water catchment areas where stock ponds and small catchments provide necessary water.

Ultimately, there are two measures of successful mine-land reclamation: full reclamation bond release and the establishment of the targeted post-mine land use. Colowyo has received full bond release on 987 acres by achieving the regulatory-mandated standards set by the CDRM. These bond release standards include requirements for vegetative diversity, density, and production, as well as soil stability and essential hydrologic function. True vegetative success is ultimately measured by the ability of the vegetation to be self-sustaining and flourish under all natural weather conditions without the aid of any artificial intervention. All bond-released areas readily meet this stringent criterion.

The newly reclaimed rangeland is composed of the two primary subcomponents: livestock grazing or grazing land and wildlife habitat or greater sage grouse (GSG) brood-rearing habitat. GSG habitat preservation or reestablishment was of particular concern since the bird species had been identified as potentially eligible for Federal Endangered or Threatened Listing status. On 22 September 2015, the U.S. Department of the Interior determined that the GSG does not require Endangered Species Act protection, but regardless of that decision, Colowyo will continue to reestablish quality wildlife and grouse habitat. Livestock grazing has always been precluded at Colowyo on reclaimed areas to ensure that vegetation is well established. In the future, livestock grazing will be introduced to coincide with regional land use.

Colowyo will continue to reestablish grouse habitat during reclamation.

Indigenous wildlife, such as elk, mule deer, and pronghorn antelope, have already discovered the abundant food resources and secluded habitat available on the reclaimed mine areas and have established either seasonal or year-round residency. Sage, sharptail, and dusky grouse; songbirds from many diverse species; hawks, eagles, owls, and falcons; and many other bird species have already reestablish occupancy in the reclaimed areas as the vegetation has matured. Small mammals such as chipmunks, ground squirrels, cottontail rabbits, jackrabbits, weasels, voles, and mice all find refuge and home in the mined reclamation areas.

Taken collectively, these many indicators point to a true reclamation success story that Colowyo is proud to be a part of and glad to share. Colowyo has always been open in sharing best reclamation practices with other coal mining companies, state and federal regulatory agencies, and academia to ensure that healthy and self-sustaining post-mine environments exist long after mining has ceased. Colowyo continues to work toward building a proud reclamation legacy for all generations to use and enjoy.

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