Everett Ecological

May 30, 2022

Summa Silver Corp.
918-1030 West Georgia St.
Vancouver, BC, V6E 2Y3

Re: Mexican Spotted Owl Survey Results

Summa Silver,

I am pleased to present details and findings regarding Mexican spotted owl (MSO) surveys recently concluded for the Mogollon Project (Project) on your patented Lehigh claim near Mogollon, New Mexico. Everett Ecological and NV5 collaborated to conduct MSO surveys following the 2022 U.S. Fish and Wildlife Service (USFWS) protocol under a Section 10(a)(1)(a) research and recovery permit issued to NV5 staff. Our survey crew consisted of wildlife biologists experienced in conducting MSO surveys in various habitats over a combined total of 30 years. This letter intends to provide a contextual overview of findings related to the Project. Specific details regarding the surveys can be found in the Biological Technical Memorandum.

Purpose and Need

New Mexico Mining and Minerals Division (MMD) issued a Minimal Impact Exploration Permit (Permit [# CA027EM]) to Summa Silver in 2021. Permit Section 10 - Part E, "Mexican Spotted Owl Mitigations to be Performed," explains that MSO surveys must be completed if Project work commences during the MSO breeding and fledgling-dependency season (March 1 – August 31). If an MSO breeding territory is located within the buffer zone, work activities will not occur until the young have fully fledged and dispersed from the area. Moreover, Permit Section 4 - Part B2, "Findings of Fact," found that the Project area is not located in MSO designated critical habitat nor situated in a location determined by the New Mexico Department of Game and Fish likely to result in adverse impact on the MSO. MSO surveys are therefore required to identify the presence or absence of occupied MSO breeding territory within a 0.5-mile buffer zone delineated around Project worksites to fulfill compliance obligations described in Permit Section 10 - Part E and to confirm the Section 4 - Part B2 MSO determination.

Findings

MSO nighttime surveys and daytime follow-up surveys conducted both within and outside of the buffer zone did not locate occupied breeding territories within the buffer zone. However, two occupied MSO territories were located in suitable riparian habitats approximately 0.25 miles north (Mineral Creek) and south

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(Silver Creek) of the buffer edge. Both MSO territories were previously unknown to federal and state agencies and these discoveries constitute a valuable contribution to MSO inventory knowledge and conservation. Moreover, MSO habitat models developed by the USFWS and US Forest Service suggest that the buffer zone is unlikely to contain suitable habitat and that suitable habitat is present in riparian corridors outside the buffer zone, which survey findings support. Lastly, extensive daytime nest searches conducted within and throughout the buffer zone did not detect occupied MSO nest sites.

Determination

My professional opinion is that Summa Silver's compliance obligations concerning the issued Permit, Section 10 - Part E, have been fulfilled. We concur with Permit Section 4, Part B2 Findings of Fact, that the Project is not located in an area likely to result in adverse impact on the MSO because no occupied breeding territories were located within the buffer. Furthermore, adverse impact on the newly discovered MSO territories is unlikely because each is isolated in deep canyon bottoms situated well outside the buffer zone.

I appreciate the opportunity to assist Summa Silver with assuring adherence to Project natural resource compliance requirements. I am also proud of the critical and collaborative work that resulted in the discovery of two previously unknown MSO territories. It is a privilege to participate in a project that takes environmental stewardship seriously, contributes needed economic and material resources to society, and shares essential ecological data to benefit present and future conservation priorities.

Respectfully,

James Waddell
Ecologist – Wildlife Biologist
Everett Ecological

BIOLOGICAL TECHNICAL MEMORANDUM

To: Summa Silver Inc., - Chris York
From: NV5 - Jenny Lisignoli and Steve Albert and Everett Ecological - James Waddell
Date: May 28, 2022
Subject: Results of Mexican Spotted Owl Surveys for the Summa-Mogollon Silver Mining Project

EXECUTIVE SUMMARY

Under a U.S. Fish and Wildlife Service issued Section 10(a)(1)(a) research and recovery permit, Mexican spotted owl (*Strix occidentalis lucida*) surveys were conducted from April 4 through April 29, 2022 on behalf of Summa Silver near Mogollon, New Mexico. Summa Silver contracted NV5, with support from Everett Ecological, to perform Mexican spotted owl surveys in compliance with New Mexico Mining and Minerals Division minimal impact exploration permit requirements. Mexican spotted owl surveys have been completed across the project area, referred to as the Area of Interest, which is a 0.5-mile (0.80 kilometers [km]) buffer zone around work sites (Figure 1). Four nighttime surveys were conducted at nine calling stations established in the Area of Interest (Figure 2). Several daytime follow-up surveys occurred in areas where Mexican spotted owls were detected. Key synopses of the 2022 MSO surveys are itemized below.

Mexican Spotted Owl Surveys – Significant Findings

- No Mexican spotted owl nests or roosts were discovered nor were known to occur within the Area Of Interest. Therefore, activities approved by the minimal impact exploration permit are not located in an area likely to result in adverse impact on the Mexican spotted owl.

- One Mexican spotted owl territory occupied by a single male was identified outside of the Area of Interest in Silver Creek. This male Mexican spotted owl is suspected of having a territory in this general area, although no female was detected during any nighttime or daytime follow-up surveys.

- One Mexican spotted owl territory occupied by a breeding pair was identified outside of the Area of Interest in Mineral Creek. Although a nest was not found following three daytime surveys, subsequent nighttime surveys elicited responses from a male Mexican spotted owl consistently heard in the same approximate area that the pair were heard together.

- Two male Mexican spotted owls were detected within the Area of Interest in Graveyard Gulch, however, no further detections occurred during subsequent surveys. During the first survey period, surveyors detected one male Mexican spotted owl, which responded to the surveyor's calls inside of the Area of Interest. During the first follow-up survey conducted three hours after the first survey was completed, two male MSOs were detected. It is also possible that the two male owls heard are "floaters" (i.e., nonterritorial individuals). No Mexican spotted owls were detected in this area during succeeding nighttime and daytime follow-up surveys.

INTRODUCTION

For this project area near Mogollon, New Mexico (NM) (Figure 1), Summa Silver (Summa) contracted NV5, with support from Everett Ecological, to perform Mexican spotted owl (*Strix occidentalis lucida* [MSO]) surveys in compliance with New Mexico Mining and Minerals Division (MMD) minimal impact exploration permit number CA027EM, Section 10, Part E "Mexican Spotted Owl Mitigations to be Performed" (MMD 2021). The CA027EM, Section 10, Part E states:

> "To minimize potential impacts to Mexican Spotted Owl, all drilling and disturbance activities should be performed outside of the breeding and fledgling-dependency period of March 1 through August 31 when possible. If drilling activities cannot be avoided during the breeding and fledgling-dependency period, spotted owl surveying shall be conducted within a 0.5-mile (0.80 kilometers [km]) buffer zone prior to any road work, drill pad construction, and drilling. Surveys shall be conducted by qualified biologists using U.S. Fish and Wildlife Service Mexican Spotted Owl Survey Protocol (2012) and in accordance with New Mexico Department of Game and Fish recommendations. If an occupied breeding territory is located within the 0.5-mile buffer zone (0.80 km), drilling activities shall not occur until the young have fully fledged and dispersed from the area."

PROJECT LOCATION AND DESCRIPTION

Summa's Mogollon Project area consists of approximately 2,400-acres in the historic Mogollon mining district of southwest NM, approximately 75 miles (121 km) north of Silver City; in Township 10 South, Range 19 West, Sections 27 and 28 on private land/patented mining claims. Starting in the late 1800s and over several decades, numerous underground mining activities have extracted high-grade gold and silver veins from three primary mines: Fanny, Last Chance, and Consolidated (The Assay 2022; Cision PR Newswire 2020). Most mining ceased in 1942, and the district has since been largely inactive, except for a few exploratory drilling projects conducted in the 1980s and in 2010 (Cision PR Newswire 2020). The project hosts approximately 21-miles (34 km) of near-continuous epithermal-associated veins and faults (Summa Silver 2022a, b; Cision PR Newswire 2020).

MSO surveys have been conducted across the project area, referred to as the Area of Interest (AOI), which is a 0.5-mile (0.80 kilometers [km]) buffer zone around work sites (Figure 2). This biological technical memorandum was prepared to provide the results of the MSO surveys conducted by NV5 in and around the AOI during the spring of 2022.

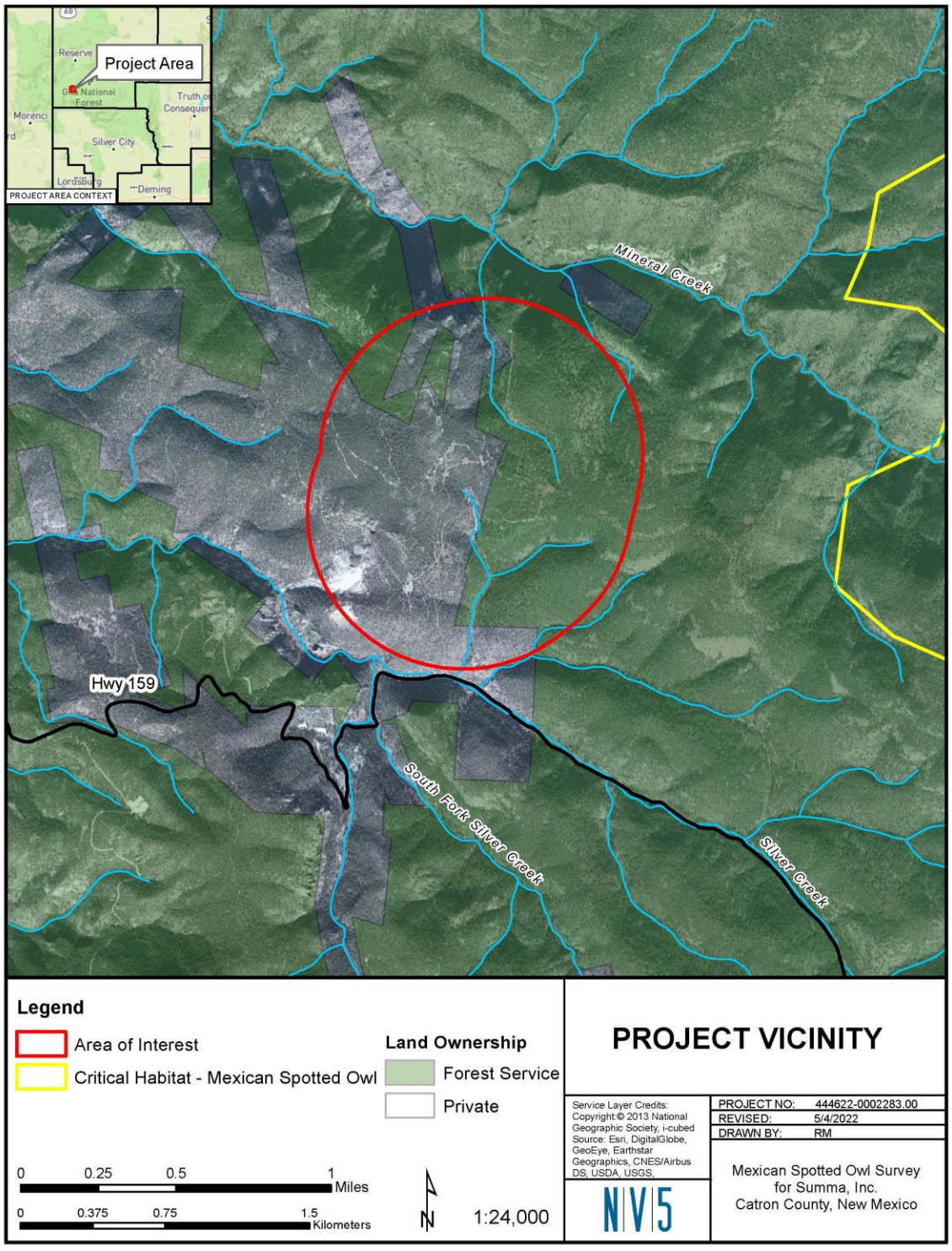

Figure 1. Map depicting the greater vicinity of the project area.

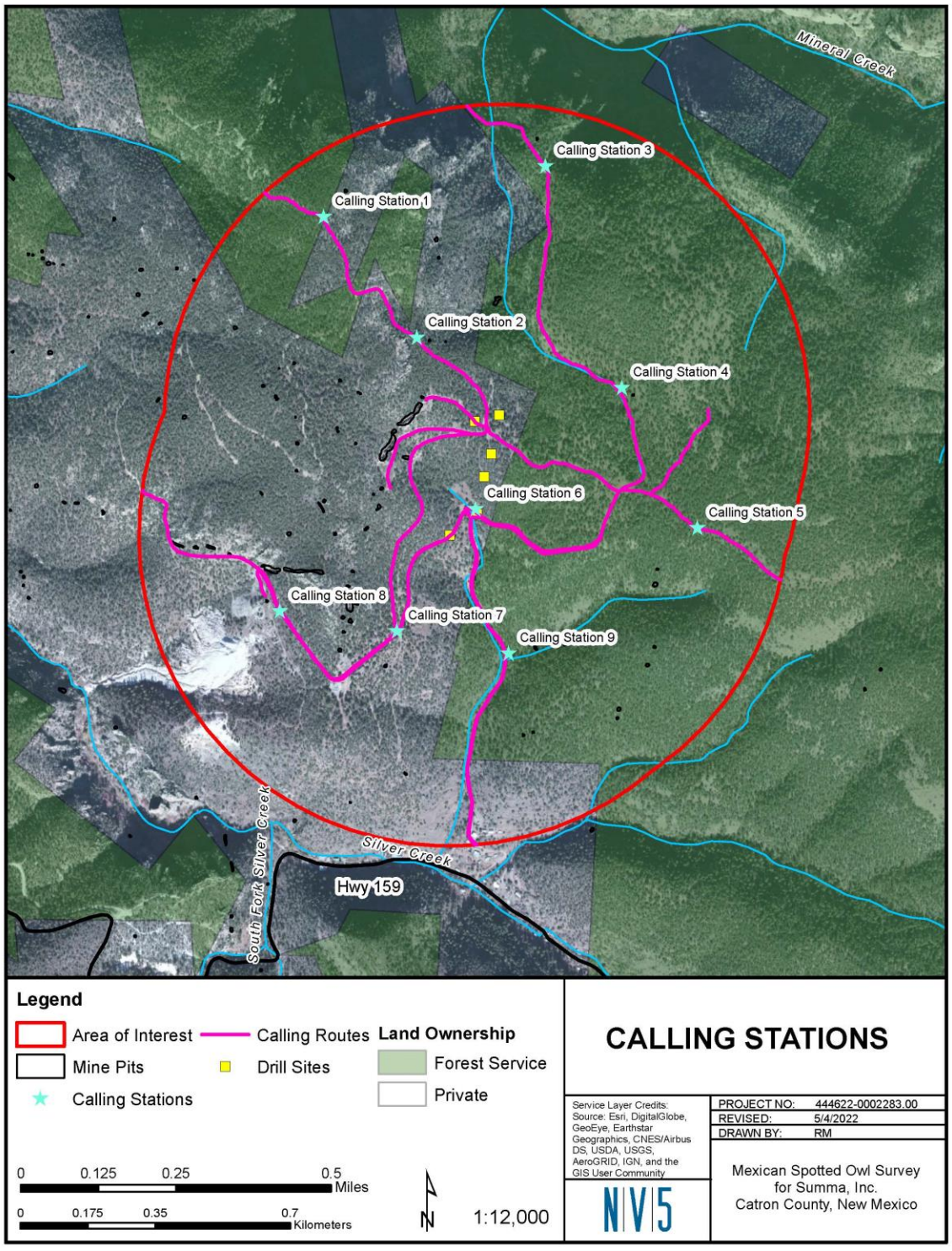

Figure 2. Map depicting calling routes and calling stations in the AOI.

METHODS

From April 4 to 30, 2022, NV5 conducted a series of nighttime and daytime MSO surveys and daytime follow-up searches, to attempt to locate MSOs in the AOI. Surveys were conducted according to the most recent version of the MSO survey protocol (U.S. Fish and Wildlife Service [USFWS] 2022a), which includes nighttime broadcast calls of owls, documenting responses, and daytime follow-up surveys to locate roosting and potential nesting sites. Prior to conducting the MSO surveys, the revised 2022 USFWS protocol was reviewed by the surveying team. Summa and Everett Ecological provided NV5 with a map of the project area, which identified open mines shafts and access routes in AOI – the primary extent for MSO surveys in 2022. A 0.5-mile (0.8 km) buffer was identified around the proposed work area per survey requirements. The file was also used to identify land features and determine where calling routes and calling stations would be placed within the AOI.

Prior to surveys: The main objective of conducting surveys is to locate and observe an MSO nest and any potential young associated with that nest (USFWS 2022). Since spotted owls do not nest every year, it is important to note that it can take up to four years of compiling roost locations to "effectively delineate owl core activity areas" (USFWS 2022; Ward and Salas 2000).

Critical Habitat and PACs: MSO critical habitat is found approximately 0.5- to 1.0-miles (0.8 to 1.6 km) northeast, east, and southeast of the AOI (USFS 2022). The U.S. Forest Service (USFS), Glenwood Ranger District, provided Everett Ecological with the most current PAC data for this project's MSO surveys (USFWS 2022). Based on the Glenwood Ranger District PAC information, two PACs were recorded, approximately 2-miles (3.2 km) northeast (in 2002) and east (in 2004) of the AOI. In 2009, two PACs were recorded within 2-miles (3.2 km) southeast of the AOI (USFS 2022). However, the PAC data from the Glenwood Ranger District did not identify any known PACs in the AOI nor any known nests within 1-mile of the AOI (USFS 2022).

Reconnaissance: NV5 biologists experienced in conducting MSO surveys in a variety of habitats over a combined total of 30 years, initially conducted daytime reconnaissance of the AOI. The goal of this reconnaissance was to locate potential habitat where this species might be found and establish call routes and calling stations where owl calls could be broadcast well, and surveyors could listen and watch for owls to respond. During the reconnaissance survey, calling stations were shifted/relocated as needed to ensure the most complete coverage of the project area per the USFWS 2022 protocol (USFWS 2022). Nine calling stations were established, which covered the potential habitat present. Mineral Creek and Silver Creek are located north and south of the AOI, respectively. Each contains important areas of riparian habitat, water, and rocky ledges/shelves that can provide MSOs with nesting sites.

Safety Hazards: Due to the number of abandoned mine shafts in the project area and the dangers associated with conducting nighttime surveys in these areas, for safety, calling routes were established along designated roadways in the AOI (Photograph 1). Calling routes and calling stations were delineated on Google earth, transferred to a kmz file, and uploaded to the Field Maps App for surveyors to review in the field. Calling stations were established from approximately 0.25 to 0.5 miles (0.4 to 0.8 km apart), depending on topography and habitat present (USFWS 2022).

Photograph 1. James Waddell, owner of Everett Ecological, stands where water flows through one of the many mine shafts in Mineral Creek and the project area.

Protocol Surveys: Per the USFWS 2022 MSO protocol, nocturnal calling surveys typically elicit responses from a territorial owl who may suspect that an intruder is present within their territory (USFWS 2022a). When a territorial owl hears an intruder at night, "most owls respond by calling to/and or approaching the intruder" (USFWS 2022). The 2022 survey protocol states that the optimal survey time to call is two hours after sunset and two hours prior to sunrise (USFWS 2022).

Four MSO nighttime surveys were conducted, spaced more than five days apart. Nighttime surveys included the use of either imitating the three main calls used by the MSO including the four-note call, contact call, and bark series. Playback recordings of the four-note call were also used at times. The four-note-call was the primary call played during the surveys (USFWS 2022).

Owl surveys included using playback calls at the calling stations and continuous calling when daytime follow-up surveys were conducted in Silver and Mineral Creeks. Surveyors remained at each calling station for 15 minutes and actively listened for owls during the surveys. The order the calling stations were visited was modified for each of the four surveys to avoid potential bias discussed in the USFWS protocol (2022).

RESULTS

A complete inventory (four complete surveys) was conducted from April 1 to April 29 in the AOI. Surveys were spaced at least 5-days apart (USFWS 2022a). Surveys were conducted on:

- Survey 1: April 4-5
- Survey 2: April 13-14

- Survey 3: April 19-20
- Survey 4: April 27-29

When an MSO was audibly or visually detected, the type of call, time, and the sex of the owl was noted. If an MSO was heard, compass bearings and approximate distance to the owl were noted. If the owl was heard from more than one station, bearings were triangulated, and daytime follow-up surveys for each detection were conducted the following morning or evening. Follow-up surveys occurred when owls are most active and vocal and are most likely to respond to calls, which help to locate potential nests (USFWS 2022). Compass bearings compiled during the four surveys consistently placed an MSO pair in Mineral Creek and a lone male in Silver Creek.

To locate nests, surveyors obtained pet store "feeder mice" to entice an owl to bring back food to any potential nest (USFWS 2022). However, the MSOs did not respond to daytime calls conducted during the follow-up surveys. The reasons for this are unclear; however, it was noted on at least four occasions that, during the evening surveys, no MSO began calling until after dark in Mineral Creek, in Silver Creek, and on the Calling Route between Calling Station 3 and 4, even though surveyors had previously walked and surveyed at those stations a short period before - just before sundown.

During the April 19, 2022 survey, an agitated male MSO flew to within a few ponderosa pines (*Pinus edulis*) of where the surveyors had called from Calling Station 1. This was the only visual detection surveyors had during the four survey periods. Although, during the third survey, a male MSO was audibly detected north of Calling Station 4, more than likely this was the same male MSO that was visually detected at Calling Station 1. However, a follow-up survey conducted in Mineral Creek on April 28 did not detect any MSOs in the area where an owl was detected north of Calling Station 4 on April 19.

Summary of Owls Detected

Pair Status in Mineral Creek

Per the USFWS protocol (2022), one of the ways to define if a pair of MSOs are present, is determined when a male and female owl are heard and/or observed within approximately 0.3 miles (500 meters [m]) from one another. Per this USFWS protocol definition, one pair of MSOs were identified outside of the AOI in Mineral Creek during the protocol surveys (USFWS 2022a). Although Mineral Creek is outside of the AOI, it is the most likely location for breeding birds to be found. Flowing water and healthy riparian stands are present in this creek (Photographs 1-2). Surveyors determined that this pair is likely nesting in the area where they were detected together in the creek bottom, as their responses were detected within minutes of each other and were less than 490 feet (150 m) apart. During this time surveyors were not calling, but actively listening. In addition, although a nest was not found following multiple daytime surveys, responses from the male MSO were consistently heard in the same approximate area that the male and female were heard together (Photographs 2-3).

Photograph 2. Surveyor, Steve Albert carries feeder mice to the site in Mineral Creek where a pair of Mexican spotted owls were detected the previous night.

Photograph 3. Facing southeast in Mineral Creek, where a pair of Mexican spotted owls were heard the previous night in April 2022.

MSO Status Unknown - Potential Single Status in Silver Creek

Surveyors detected one male MSO outside of the AOI in Silver Creek (Photograph 4-5). This lone male MSO was heard at least three times (on April 18 from Calling Station 8 on the rim overlooking Silver Creek; and on April 19 and April 30 from within Silver Creek). Bearings/detections were triangulated and compiled on Google Earth. The triangulated bearings consistently placed the male MSO in the same general area. This male MSO is suspected of having a territory in this general area, although no female was detected during any nighttime or follow-up surveys. However, per the USFWS protocol, two years of surveys are required before this male would be considered a single status owl (USFWS 2022).

Photograph 4. Facing southwest where a male MSO was heard on this southern slope of Silver Creek on April 19 and April 29, 2022.

Photograph 5. Facing southeast in Silver Creek where surveyors searched for a single MSO heard on April 19 and April 29, 2022.

Status unknown – Graveyard Gulch

During the first survey period, surveyors detected one male MSO, which responded to the surveyor's calls inside of the AOI. During the first follow-up survey conducted three hours after the first survey was completed, two male MSOs were detected. These two MSO were detected within 980 feet (300 m) of each other and within a few minutes of each other. It is unclear if these two males are from Silver Creek. It is possible that the two male owls heard are "floaters" (i.e., nonterritorial individuals). No MSOs were detected in this area during the following nighttime and daytime surveys or follow-up surveys.

It was noted that during the four protocol surveys, only once did surveyors have a daytime response from an MSO in Graveyard Gulch. During the follow-up survey conducted that same morning - although no playback calls were made, two male MS0s were heard in the same area where the lone male had been heard earlier that morning. Overall, surveyors were more than likely seen or heard by the MSOs, if present in these areas, although no owls responded to the broadcast calls in Silver Creek or Mineral Creek. The lack of daytime responses made mousing and finding nests nonviable in the creeks.

Although the surveyors have conducted numerous surveys in a variety of habitats across the west and southwest US, in this project area, extensive MSO nest surveys were unproductive. Multiple day and night visits were made to each of the Calling Stations where MSOs were initially detected. Due to these repeated visits, the surveyors were able to define a concentrated area that the MSOs in both Mineral Creek and Silver Creek utilize.

Photograph 6. Habitat in Graveyard gulch where Mexican spotted owl males were heard.

DISCUSSION

Importance of the Canyon Habitat in the Project Area

The MSOs detected were consistently present in canyon bottoms with flowing water and a diverse mix of box elder, willow (*Salix* ssp.), oak (*Quercus* spp.), and sycamores (*Platanus* spp.). The surrounding upland areas and slopes consist of ponderosa pine, Douglas fir (*Pseudotsuga menziesiii*), piñon (*Pinus edulis*), juniper (*Juniperus* spp.), and oak. Based on the nighttime and daytime surveys conducted in 2022, NV5 believes the MSOs are nesting relatively close to the creek bottoms or just above the creek bottoms in upland benches. Ganey et al. (2011) documented radio-marked MSOs nesting and roosting on cliff ledges in the Gila Mountains Recovery Unit. It is our experience that this is not an uncommon situation throughout the Southwest. Cliffs are abundant in Mineral Creek where the daytime follow-up surveys were conducted. Water flowed through Mineral Creek at the end of the fourth survey. However, in Silver Creek, there was a marked decrease in surface water between the first and last survey period. The areas where water was present were noted to be much drier by the fourth survey. Based on the nighttime surveys and multiple day surveys conducted, NV5 surveyors believe there are at least two established territories outside of the AOI – one in Mineral Creek and one in Silver Creek. During the surveys, it was noted that the behavior of the two male MSOs in the two canyons was very different.

Habitat Model of the Project Area

The USFS Rocky Mountain Research Station in collaboration with the USFWS has developed a “living map” of MSO habitat trends across Arizona and New Mexico (USFS 2020). The map is based on a model of 2,913 MSO nesting and roosting locations used to identify MSO habitat where MSOs are most likely to establish nesting and/or roosting territories. The map presents probabilities of quality habitat existing at

a given location as well as identifying if forest vegetation (cover type) is similar to vegetation types that MSOs are known to utilize.

With respect to the AOI, the map estimates a 10% probability of MSO habitat occurring in uplands (i.e., AOI) and a 50-60% probability of occurrence in canyon bottomlands (i.e., Mineral and Silver creeks) (Figure 3). Respectively, cover type similarity follows a similar trend, as the map suggests that uplands consist of "not similar" to "marginally similar" cover types whereas canyon bottomlands consist of "marginally similar" to "very similar" cover types (Figure 4). The results of our MSO surveys appear to verify the estimations suggested by the habitat map proposing that the AOI is not composed of quality MSO habitat.

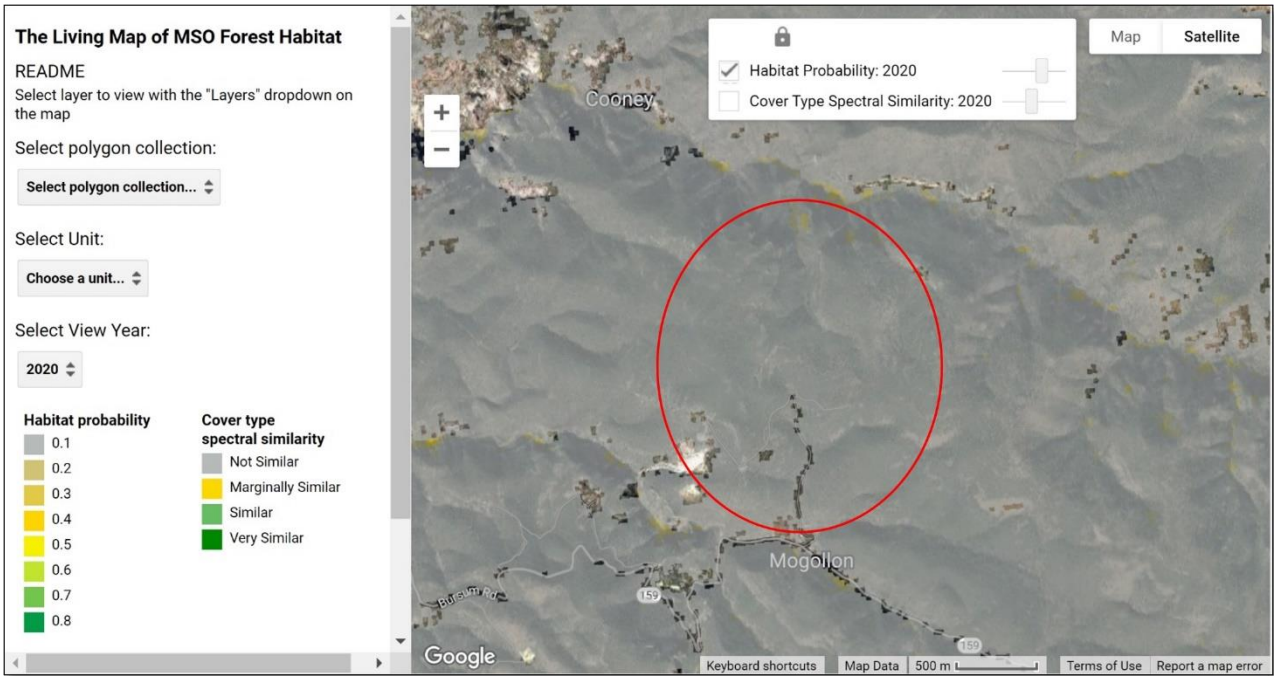

Figure 3. Screenshot of "living map" habitat probabilities present in the Mogollon area. The red ellipse represents the general location of the AOI.

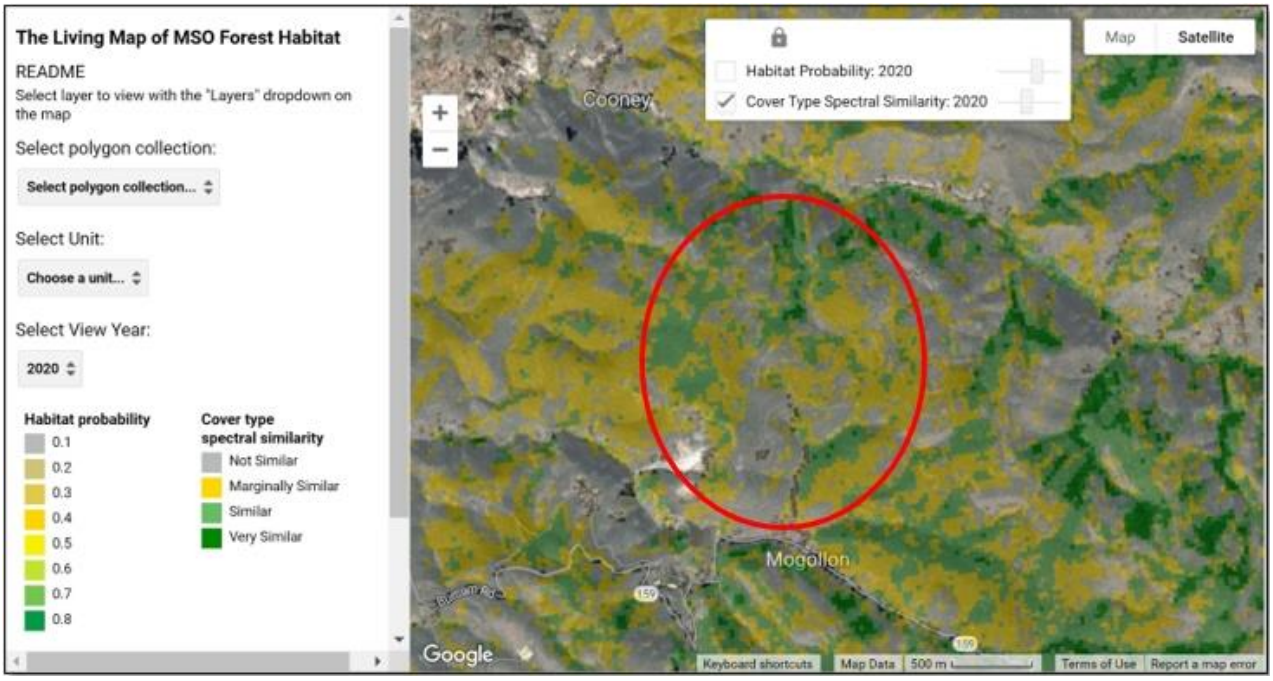

Figure 4. Screenshot of "living map" vegetation cover type similarities present in the Mogollon area. The red ellipse represents the general location of the AOI.

Important Notes for this Project Area

Timing of Surveys

Protocol surveys were completed relatively early in the survey season. Some of the survey nights in early April were in the upper 20-30 degrees Fahrenheit (-7 to -18 Celsius), when few responses were elicited from any birds during the surveys. As the temperatures warmed up and the vegetation began to leaf out, more avian responses, including the MSOs, were heard during the surveys. It should be noted that no other owl species (i.e., great horned owl [*Bubo virginianus]*, western screech owl [*Megascops kennicottii*], northern pygmy owl [*Glaucidium californicum*], etc.) were detected during any of the surveys, which is unexpected, as it is common to elicit responses from other owl species during nighttime MSO surveys.

Further surveys are planned to occur later this breeding season and next (i.e., June-July 2022 and April-July 2023), outside of the AOI, which could provide potential missing information regarding the pair in Mineral Creek and the lone male in Silver Creek.

Mineral Creek

The Mineral Creek male MSO was seen one time at Calling Point 1. This male was very agitated and remained at the location for several minutes before moving north in search of the MSO it "heard" (our call). After three follow-up visits to Mineral Creek, we detected an MSO male with a female, which corresponded with the territorial behavior where we had a visual encounter with a male MSO at Calling Station 1.

Silver Creek

The detected location of the Silver Creek MSO is a short walk from the town of Mogollon. At least some local residents are aware there is an MSO in the area. It is possible that some residents may visit this owl At the end of the fourth protocol survey and follow-up survey, it is unknown if the Silver Creek male MSO is paired with a female. Surveyors did not hear a female response, even when we heard a male MSO respond from within its roosting area during a follow-up survey. It is possible this owl is considered a floater (Franklin 1992). Although floaters do not contribute to the reproductive output of a population, they can influence population dynamics because they provide a pool of birds that could colonize vacant territories or pair with single birds (Franklin 1992).

Raptor Nest Surveys

Additionally, raptor (I.e., hawks, eagles, etc.) nest surveys occurred on two occasions under a separate contract required to satisfy other permit compliance obligations pertaining to non-federally listed species. These surveys were conducted by Everett Ecological on April 18 -20 and May 17-19, 2022 and provide further insight regarding the status of MSO territories in and around the AOI. A brief overview of methodology and findings is presented as follows:

Raptor nest surveys were conducted following procedures established in the New Mexico Department of Game and Fish (NMDGF) Habitat Handbook "Baseline Wildlife Study Guidelines" (NMDGF 2019), which suggests that methods described in British Columbia's "Inventory Methods for Raptors" (BCRIC 2001) be adapted to inventory raptor presence/absence. Within and around the AOI, call playback surveys, roadside surveys, standwatches, and ground nest searches occurred (Figure 5). Additionally, a high-resolution aerial photography dataset of the AOI was examined before surveys to identify habitat quality and potential nest sites. Surveys occurred during the breeding season when raptor species are most prone to eliciting territorial responses in association with active nesting.

- Call playback surveys were conducted during daytime by broadcasting buteo (i.e., red-tailed hawk [*Buteo jamaicensis*]) and accipiter (i.e., Cooper's hawk [*Accipiter cooperii*]*)* calls at the nine MSO calling stations along roadsides and while walking transects during ground searches. Raptors will travel long distances to respond, consequently, playback is sometimes not beneficial for directly locating nests, but it is very valuable when used in combination with ground searches (BCRIC 2001).
- Roadside surveys were conducted during daytime along roads where surveyors used high powered binoculars and a spotting scope to scan the landscape for soaring and perched raptors. Furthermore, tree stands and cliff faces were scanned for the presence of nests (active, inactive, or dilapidated) or signs of nests (i.e., fecal deposits (whitewash), prey remains, moulted feathers).
- Ground nest searches were conducted during daytime by walking transects throughout the AOI in and around low, medium and high-quality habitat types. Cliffs and trees were scanned along transects and call playbacks were also used. Surveyors searched for raptor presence, signs of nests, and presence of nests.

- Standwatches were used to supplement playback, roadside, and ground searches where a surveyor is positioned on a vantage point and uses binoculars to actively scan a slope for raptor presence, signs of nests, and presence of nests.

Raptor nest surveys did not locate the presence of any occupied raptor nests or territories, including MSO, within the AOI. Species observed include turkey vulture (*Cathartes aura*) [> 50 individuals observed (obs.)], red-tailed hawk (*Buteo jamaicensis*) [5 obs.], common black hawk (*Buteogallus anthracinus*) [1 obs.], peregrine falcon (*Falco peregrinus*) [1 obs.], Cooper's hawk (*Accipiter cooperii*) [3 obs.], and sharp-shined hawk (*Accipiter striatus*) [1 obs.]. These species were observed soaring above or outside of the AOI. All observations occurred incidentally during landscape scanning and none elicited territorial behavior. Moreover, no responses to call playback surveys occurred over the duration of surveys.

It should be noted that the AOI does contain pockets of quality raptor nesting habitat in cliff alcoves, on ridge tops, and within sheltered canyons containing diverse vegetation assemblages. However, the presence of prey species (i.e., small mammals, reptiles, and amphibians) and recent prey sign (i.e., burrows, nests, middens, feces, latrines, etc.) in the AOI was rare, which may explain the lack of raptor occupancy in otherwise quality nesting habitat. We attribute the lack of prey abundance in the AOI to the persistent extreme drought that continues to occur in the region (NIDIS 2022).

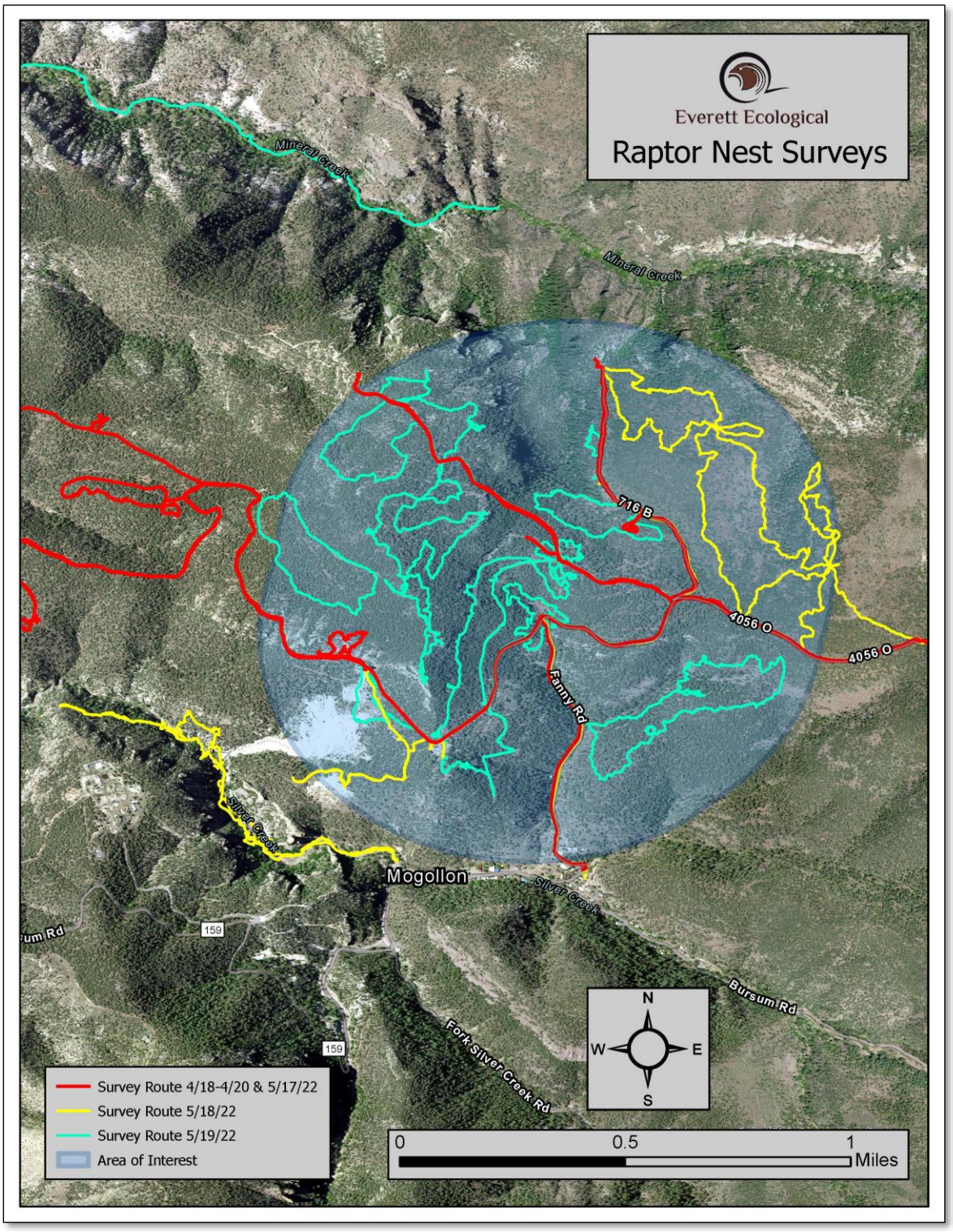

Figure 5: Map depicting survey routes traveled during raptor nest surveys. Red lines represent road survey routes. Yellow and green line represent ground survey routes.

RECOMMENDATIONS AND CONCLUSION

MSO surveys have been completed for the AOI - year 1. Coordination with the client, the USFWS, the USFS, the NM MMD, and the NMDGF to develop a consensus on additional actions or information needed is recommended.

MSO nighttime surveys and daytime follow-up surveys conducted both within and outside of the AOI suggest that there are no occupied breeding territories located within the 0.5-mile buffer zone (0.80 km]). Moreover, MSO habitat models developed by the USFWS and USFS suggest that the AOI is unlikely to contain MSO habitat. Consultation with the USFS Glenwood Ranger District did not identify any known PACs in the AOI nor any known nests within 1-mile of the AOI. Lastly, extensive raptor nest surveys conducted throughout the AOI did not detect occupied MSO nests.

In conclusion, it is our professional opinion that Summa's compliance obligations with respect to permit number CA027EM, Section 10, Part E has been fulfilled. We concur with CA027EM Findings of Fact, Section 4, Part B2 (MMD 2021) that the AOI is not located in an area likely to result in adverse impact on the MSO because no occupied breeding territories were located within the AOI.

REFERENCES

British Columbia Resources Inventory Committee (BCRIC). 2001. Standards for Components of British Columbia's Biodiversity No. 11 Inventory Methods for Raptors. Available at: https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nr-laws-policy/risc/rapt_ml_v2.pdf

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