FREEPORT-McMoRan

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February 14, 2020

Certified Mail #70182290000160737610
Return Receipt Requested

Ms. Rebecca Roose, Director
New Mexico Environment Department
Water Protection Division
P.O. Box 5469
Santa Fe, New Mexico 87502

Dear Ms. Roose:

Re: Chiricahua Leopard Frog Surveys, Fall 2019
Lampbright Investigation Unit – Chino Administrative Order on Consent

Freeport-McMoRan Chino Mines Company (Chino) submitted the *Chiricahua Leopard Frog Survey Workplan, Fall 2019* on September 16, 2019 to address risk uncertainty identified in the final LIU ERA work plan to the New Mexico Environment Department (NMED) as follow up to its request to survey for CLF habitat and presence/absence. NMED approved the survey work plan in an email dated September 19, 2019. Chino and its biologist (BIOME) performed the formal survey for CLF habitat and presence/absence surveys in the vicinity of the LIU during the week of September 23, 2019 with NMED participation. Chino submits under separate cover the *Chiricahua Leopard Frog Surveys for the Lampbright Investigation Unit, Grant County, New Mexico, Fall 2019* under the Chino Administrative Order on Consent (AOC). The survey results report was submitted today to Mr. David Mercer.

We previously have expressed our concerns to NMED that the requests made for more expansive CLF surveys are largely irrelevant to the AOC and that these requests may be more relevant to CLF recovery efforts by other agencies. Per a previous discussion, NMED has taken those concerns under consideration in their communications with AOC stakeholders. To reiterate those concerns and previous communications:

- The presence or absence of CLF within the AOC areas is not relevant because NMED has developed through an Applicable or Relevant and Appropriate Requirements (ARARs), remedial action criteria that are protective of CLF.
- Consequently, Chino maintains its position that additional CLF surveys and research are not necessary to address risk uncertainty in the LIU or other AOC investigation areas and that sufficient information has been developed regarding CLF to move forward to completion of the AOC investigations.
- Chino contends that any further discussions relating to CLF surveys and research on Chino lands should be addressed outside the AOC process and as part of separate discussions with the agencies involved in CLF recovery efforts. That said, we include in this letter a discussion, as an addition to that provided in the referenced report, regarding the extirpation of CLF in the Chino AOC Investigation Area as a result of *Batrachochytrium dendrobatidis* (*Bd*), a fungus, which is entirely unrelated to historic or current mining operations.

Discussion

In general, this study area historically held a productive population of CLF prior to the introduction of fungus *Bd* in the late 1990s and following the description and natural history of chytrid fungus by 1999. It was suggested that bullfrogs may have introduced the pathogen into the survey area. No bullfrogs were observed during this study. The earliest documented infection of *Bd* in New Mexico was from a CLF tadpole in 1984 (Christman and Jennings 2018), so this pathogen has likely been present in the area for some time prior to large-scale die offs of CLF. Furthermore, the fact that other species of anurans can carry the disease, and not succumb to the effects of chytridiomycosis, suggests that the fungus may persist within habitats long after die-offs of more susceptible species have occurred. Christman and Jennings found 3.2% (N=5 of 154) of Arizona toads carried *Bd* and 4.6% (N=6 of 130) of Woodhouse toads carried *Bd*. Both of these species occur in the study area. *Bd* is also be carried by crayfish, which can harbor the pathogen and contribute to subsequent amphibian outbreaks of the disease (McMahon et al 2013). It is clear that *Bd* can potentially persist in a water source long after amphibian mortalities events.

Randy Jennings documented the spread of this fungus within the study area during annual surveys and *Bd* swabbing of anurans during field studies. In Ash and Bolton Springs, to the west of the Lampbright Draw area, he documented persistence of CLF from 2007-2015, with a loss of CLF in Ash Spring and great reductions in numbers in Bolton by 2015 (Jennings 2008, Jennings 2009a, Jennings 2009b, Jennings 2010, Jennings, unpublished data, 2015-2018, (Christman and Jennings 2015). In the current study area, CLF were last observed in West Fork Lampbright Draw in 1997 and in Rustler Canyon in 1998 (Jennings 1998).

It is useful to note that *Bd* does not always cause population die-offs and CLF found in other areas of the Southwest have been observed to experience reduced mortality “at warm sites where the frogs may be able to survive with the disease or clear it from their systems. This indicates that warmer, southern exposures, lower elevations, and especially warm springs, may be critical for the persistence of native leopard frogs in the Southwest as the effects of this disease continue to emerge” (USFWS 2007, page 16). In consideration of available habitat within the study area, little has changed since the extirpation of CLF by *Bd* from these localities.

This portion of Management Area (MA) within the Black-Mimbres-Rio Grande Recovery Unit (RU8) (USFWD 2007) has been greatly affected by chytridiomycosis, a fungal disease associated with *Bd*, and the probable cause for extirpation within this region. Disease effects are compounded by, in many areas, predation from non-native American bullfrogs (*Lithobates catesbiana*), crayfish (*Procambarus spp., Orconectes virilis*), and non-native fish species. Chytridiomycosis (from *Bd* infection) results in direct mortality of adults in areas where the fungus is found by overwhelming the animals system with fungal propagates. Within the survey area, American bullfrogs are suspected of spreading *Bd* to populations of CLF, but other species of anurans, particularly Woodhouse toad (*Anaxyrus woodhousii*) and Arizona toad (*Anaxyrus microscaphus*), present in the project area, may also harbor this fungal disease. Canyon tree frog (*Hyla arenicolor*), the most common anuran identified in the study area, has not been show to harbor *Bd* (Christman and Jennings 2018). These factors have undoubtedly contributed to the current status of CLF within the region and will continue to be important factors affecting the persistence of CLF within this management area. Please note that references can be found in the 2019 CLF Survey Report.

To determine if the habitats present may be suitable for CLF, environmental DNA (e-DNA) sampling could be done to test for the presence of *Bd* in the system. Kamroff and Goldberg (2017) recently used environmental DNA (eDNA) techniques to detect *Bd* in the environment prior to anuran die-offs. Water samples from 13 lakes were tested using eDNA methods to test for the presence of the fungus and found 3 of the populations experienced die-offs within one month after sampling. These 3 populations tested positive for *Bd*. No *Bd* was detected in

sites where no die-offs occurred. Given the potential for *Bd* to persist in the environment through amphibian and non-amphibian hosts, it may be infeasible to consider this area for reintroduction without attempting some additional biological measures to reduce the impacts of *Bd* on reintroduced CLF.

Conclusions

CLF can utilize a wide variety of habitat types including riverine, streams, perennial pools in intermittent streams, beaver ponds, wetlands, springs and artificial sites that may consist of cattle tanks, wildlife drinkers, backyard ponds, and agricultural infrastructure. In the Southwest, perennial water sources, especially warmer water temperatures that allows some year-round adult activity in the absence of fish communities is also important. Warm springs/warm flowing water also may provide some survival advantage against *Bd* (USFWS 2012). Most important habitat characteristics for CLF use include permanent or nearly permanent water sources that are free of or contain low levels of non-native predators. In addition to permanent or semi-permanent water, aquatic vegetation, to which egg masses are deposited are also important.

The sites surveyed outside of the LIU, specifically from the West Fork of Lampbright Draw downstream and including Rustler Canyon, are suitable habitats for CLF and should currently be considered extirpated. Those sites surveyed within the LIU, although suitable by Recovery Plan definition, should be considered marginal in nature and would not contribute to a metapopulation that may have historically occurred there. Although other species of frogs and toads may use those sites for breeding after summer monsoon rainfall, these site do not provide habitat for all life stages of CLF. Based on results from the 2019 CLF surveys and documented presence of *Bd* within the metapopulation area, it can be concluded that CLF does not occur within the survey area nor will have opportunity to occur therein.

Please contact Ms. Pam Pinson at (575) 912-5213 for any questions concerning the CLF survey report.

Sincerely,

Sherry Burt-Kested, Manager
Environmental Services

SBK:pp
20200214-001

c via email: David Mercer, NMED
Joseph Fox, NMED
Kurt Vollbrecht, NMED
Petra Sanchez, U.S. Environmental Protection Agency
Susan Millsap, USFWS
Ron Kellermueller, NMDGF
Mike Steward, Freeport-McMoRan Minerals Corporation

Chiricahua Leopard Frog Surveys for the Lampbright Investigation Unit Grant County, New Mexico – Fall 2019

Submitted to:
Freeport-McMoRan Chino Mines Company
12 February 2020

By

Bryce Marshall, Principal
BIOME, Ecological & Wildlife Research
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BIOME,
Ecological & Wildlife Research

EXECUTIVE SUMMARY

In June of 2019, the New Mexico Environmental Department (NMED) requested that surveys for the presence of the Chiricahua leopard frog (CLF) be completed in several tributaries in the vicinity of the Chino Mine operations, near Vanadium, New Mexico within and downgradient of the Lampbright Investigation Unit (LIU) under the Chino Administrative Order on Consent (AOC). Freeport-McMoRan Chino Mines Company (Chino) requested BIOME, Ecological & Wildlife Research, to conduct these activities during the fall of 2019, prior to the end of the survey season (September 30). Chino provided NMED a workplan (BIOME 2019) for the CLF survey on September 16, 2019 and received approval on September 19, 2019. The objectives of these surveys as identified in the CLF Survey Workplan (BIOME 2019) for the LIU are focused on:

1. A habitat suitability assessment for CLF habitat within the study area and,
2. Protocol-level surveys for CLF at all locations identified as potentially suitable habitat.

A reconnaissance was completed for all of the physical reaches within and downgradient of the LIU, targeted in the workplan (Figure 2). This included the full reach of the West Fork segment of Lampbright Draw, including its upstream Tributaries 1, 2, and 2A, as well as the main and west lower reaches of Rustler Canyon above the Draw confluence. Both the West Fork and lower Rustler Canyon are documented to have CLF perennial habitat sites from earlier surveys as noted in the workplan. These identified drainages were visually surveyed to verify location of temporary, semi-permanent, and perennial habitat sites. Each pool was assessed for habitat suitability for CLF, and photographed to provide a record of the conditions along the survey length at the time of reconnaissance. CLF surveys were completed per the CLF Survey Protocol, utilizing the two daytime surveys method to identify species status within the survey area. Standard survey datasheet were used to collect survey data and water quality data was collected at each site. Water parameters tested included pH and conductivity, while abiotic terrestrial data including temperature and humidity were also collected.

In general, aquatic habitats within the LIU and to 1.5 miles downgradient from the LIU boundary are lower in quality, more susceptible to completely drying out, have shallower basins, and less developed aquatic vegetation than those habitats found in the West Fork of Lampbright Draw and habitats found in Rustler Canyon (Figure 3). Sites within Tributary 2 above the junction of Tributary 1 should all be considered marginal habitat for CLF. The West Fork of Lampbright Draw contained the first surveyed perennial habitat with several permanent pools and well-established phreophytic vegetation one mile downstream of the Tributary 1 drainage junction with Tributary 2. Above its confluence with the West Fork, Rustler Canyon provided the best habitat found within the survey area with substantial reaches of perennial habitat in both forks of the canyon. These sites were previously identified in the CLF workplan (BIOME 2019).

Mean conductivity within Tributary 2 and the West Fork of Lampbright Draw sites was four times higher measured at 597 µS (microseimens) than Rustler sites with mean conductivity at 155 µS Mean pH for both tributaries was similar with a mean 7.55 pH in Rustler and 7.78 pH in the West Fork and its Tributary 2 sites.

Utilizing the 2 day survey method, surveys were completed at nine sites during the week of September 24, 2019 and included all six sites historically surveyed by R. Jennings (1997, 1998) and three additional sites as identified in the workplan. Three sites were surveyed in Tributary 2, one site downstream in the Lampbright West Fork, and five sites were surveyed in Rustler Canyon (Figure 11 and 12). Two or three species of amphibians were documented during CLF surveys, canyon tree frog (*Hyla arenicolor*), and either Arizona (*Anaxyrus microscaphus*) or woodhouse toad (*Anaxyrus woodhousii*), or both. A definitive identification of these tadpoles/toadlets could not be made in the field. No CLF, adults or tadpoles of any stage of development, were identified at any of the survey sites. American bullfrogs (*Lithobates catesbeiana*), found in previous R. Jennings surveys were not observed during the 2019 surveys. The most common vertebrate observed during surveys was the western black-necked garter snake (*Thamnophis cyrtopsis*) that was frequently observed in pools with tadpoles. Both the bullfrog and garter snake have been noted in past surveys to deplete amphibian populations (Tables 1 & 2).

Citation: Marshall, B. L. 2020. Chiricahua Leopard Frog Surveys for the Lampbright Investigation Unit, Grant County, New Mexico – Fall 2019. Survey Report for Freeport-McMoRan Chino Mine Company (Chino). Biome, Ecological & Wildlife Research, LLC, Flagstaff, AZ.

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INTRODUCTION

Chiricahua leopard frog (CLF*, Lithobates =Rana chiricahuensis*) historically occupied six sites within the West Fork of Lampbright Draw and Rustler Canyon, approximately 1.5 miles south of the Lampbright Inverstigation Unit (LIU).However, by 2004, all populations within this area had been confirmed as extirpated as a result of chytridiomycosis resulting from infection by (*Batrachochytridium dendrobatidis,* Bd)(Jennings 2005). All other populations on Chino property, with the exceptions of Ash and Bolton Springs, were also extirpated at that time. In June 2019 the New Mexico Environmental Department (NMED) requested surveys and habitat assessments for CLF be completed in the LIU pursuant to addressing ecological risk uncertainties identified in the Chino Administrative Order on Consent (AOC) (Chino 1994). Chino developed a work plan for CLF surveys and habitat assessment within the LIU on September 16, 2019 (BIOME 2019). NMED conditionally approved the work plan on September 19, 2019. These 2019 surveys focused on the Lampbright Draw and Rustler Canyon area of west-central New Mexico (Figure 1). Chino contracted BIOME, Ecological & Wildlife Research, to conduct the field investigations, prior to the end of the survey season (September 30). This report details the methods and results of the CLF surveys and habitat assessment within the LIU. As noted, surveys were also conducted beyond the LIU boundary to assess the potential for dispersing LCF to occur in the LIU.

Project Location and Objectives

The project area is located just east of the towns of Bayard and Hurley, in west-central New Mexico and extends southward from Kneeling Nun Ridge to the junction of Rustler Canyon and Lampbright Canyon. The project is in Grant County (Figure 1).

Canyons where surveys were focused included the West Fork of Lampbright Draw, Rustler and West Rustler Canyons and encompassed six historically surveyed populations all of which occur outside of the LIU. Canyons where surveys were focused included the West Fork of Lampbright

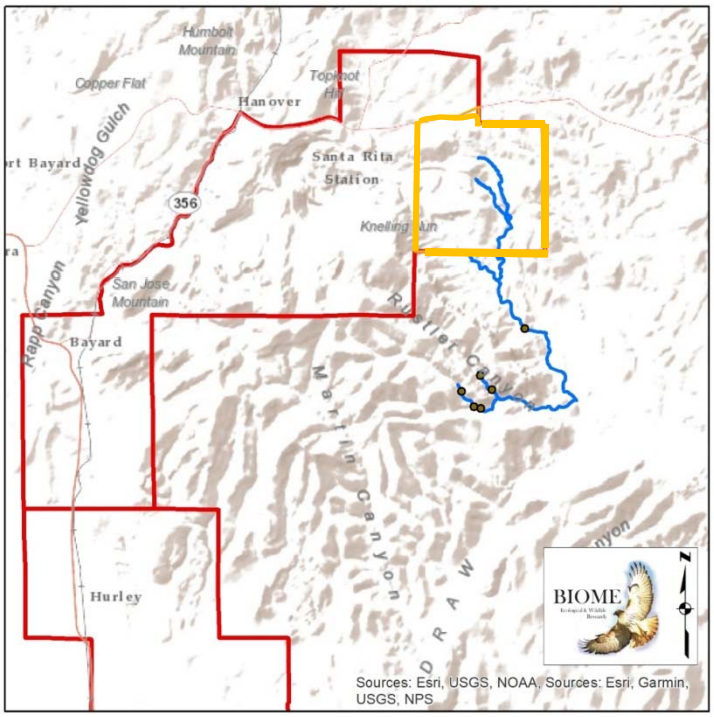

Figure 1. Location and general area of the Chiricahua leopard frog surveys for the Lampbright Investigation Unit (LIU, orange boundary line), Grant County, New Mexico. AOC boundary in red line.

Draw, Rustler and West Rustler Canyons and encompassed six historically surveyed populations. The total length of the surveyed area was approximately 8.5 miles of ephemeral, intermittent, or perennial drainages[1] and ranged in elevation from 5,500 to 6,400 feet above mean sea level (msl) (Figure 2). Reaches of the southern drainages to and including lower Rustler Canyon are not perennial, but pools are due to seeps/springs inflow which does not persist downstream of the pool habitats. Habitats consisted of pinyon-juniper woodland and upland scrub to upland riparian drainages that had numerous phreophytic obligates. Drainages surveyed had varying amounts of standing and free-flowing water that ranged from storm flow catch basins or stock tanks with little or no in-stream or aquatic vegetation development (upper reach of the West Fork of Lampbright, Tributary 1, and Tributary 2), to permanent perennial water with substantial in-stream vegetation that included aquatic, emergent, and littoral multi-storied vegetation (Rustler Canyon). Outside of Rustler Canyon and a small area in the lower reach of the West Fork of Lampbright Draw, most habitats surveyed had only seasonal aquatic plant development even where mesic vegetative species occurred.

Habitat Conditions

As per the CLF Recovery Plan (USFWS 2007) regarding the 1-3-5 Rule for CLF dispersal within metapopulations, CLF can potentially disperse up to 1 mile across dry habitats, 3 miles along intermittent, and 5 miles along perennial habitats, allowing CLF to utilize sites that are dispersed across landscapes. Although there are more specific ways for modeling habitat suitability for various species, this document considers habitat based upon U.S. Fish and Wildlife Service classification (SESAT 2008). These habitat definitions are non-linear in nature and are defined in an attempt to describe all habitats in which CLF may potentially be found. These habitat types are:

1. Suitable Habitat – habitats CLF are able to use during *any* life stage and may include marginal, occupied, or unoccupied habitats. This reference is based on all habitat types that CLF has been found in across the range of the species and describes all subsequent habitats that may include small pools used only temporally during dispersal through occupied breeding habitats and *does not consider the impacts such habitats may have on CLF that may use it* (i.e. a cattle tank that is seasonally ephemeral that when occupied, may result in CLF mortality when that water source dries up). For purposes of this biological report, the term "suitable habitat" is used only when the habitat considered ***may contribute to the persistence of CLF within the area of the LIU***. Thus,

[1] The purpose of the surveys was not to classify any of these drainages for Jurisdictional Waters or other classification, and are not based on any prior formal classification scheme, or indicate a specific classification except for potential to harbor CLF.

when an area of habitat is found on the LIU, it is considered "suitable" only in reference to potential for supporting CLF (see also Potentially Suitable Habitats). All habitats that may be "suitable" but would not support other life stages of the CLF that may contribute to a population are herein referred to as "marginal" or "potentially suitable".

a. Marginal Habitat – habitats that may provide only marginal conditions for some life stages of the frog. These may include habitats that are small in size or temporary in nature or which may only have the potential to support a small population of CLF that may not be viable over time (i.e. plunge pools that only seasonally hold water).
b. Potentially Suitable Habitat – as defined in the recovery plan (USFWS 2007), that are, "not suitable, are damaged or degraded from natural perturbations or chronic stressors…but have the appropriate hydro- and ecological components, which are capable of being restored to suitable habitat." These types of habitats may only be important to a particular life stage and thus may be considered potential, but unsuitable for a specific life stage of CLF.
c. Occupied or unoccupied – habitats that support all constituent elements necessary for CLF, whether CLF are present or absent. This also considers habitats that have been occupied within the previous 10 years, but are currently not occupied.

2. Non-habitat – are areas where CLF are not found and would never be found except as transient individuals during dispersal between other habitat types. Such habitat would include dry wash reaches and dry upland areas within the LIU.

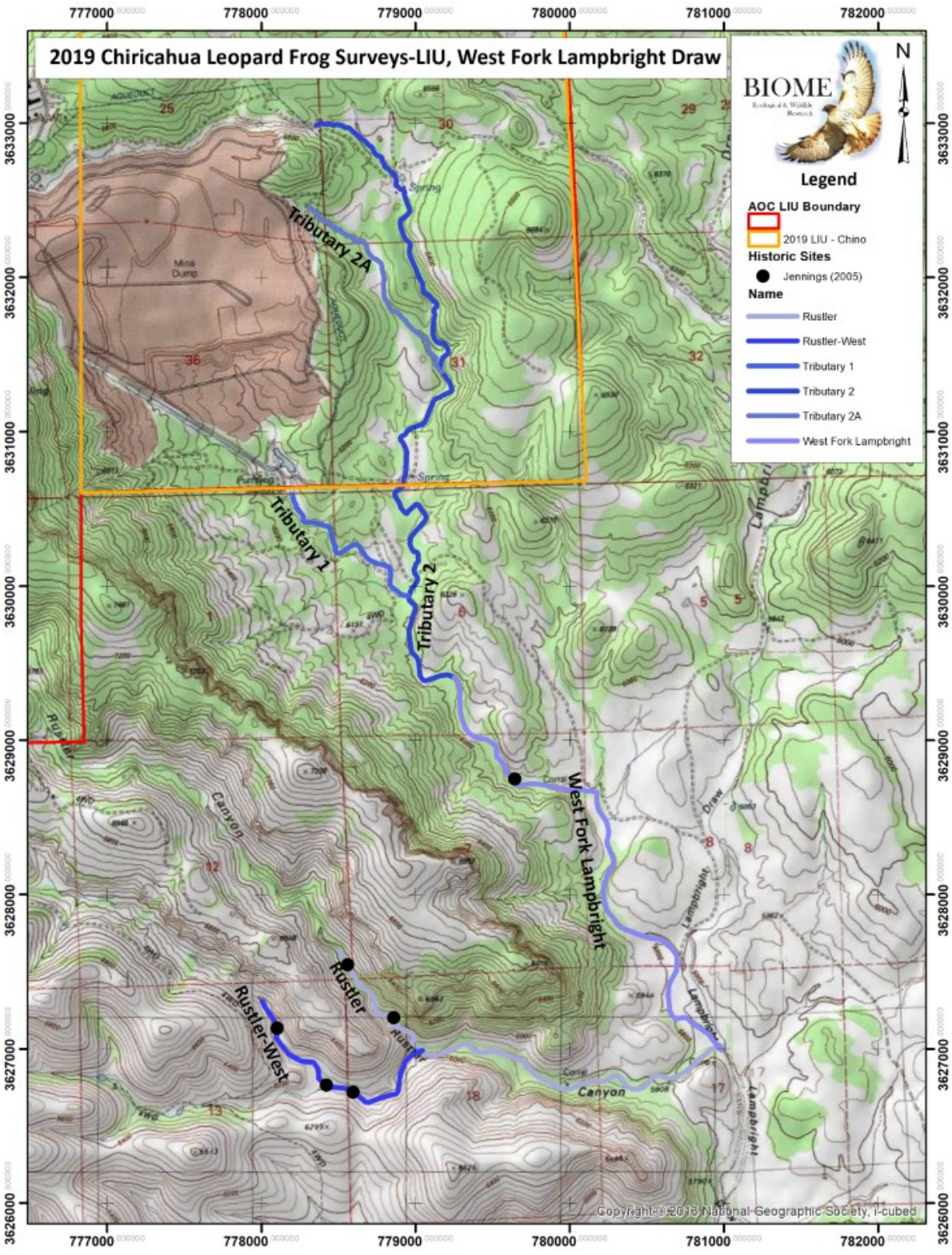

Figure 2. CLF Survey Area. Extent of the survey area within and downgradient of the LIU showing historic CLF sites and segments of the LIU tributaries.

The main objectives of these surveys as identified in the CLF Survey Workplan were:

1. Examine all potentially suitable habitats within and downstream of the LIU for the potential to harbor CLF and for potential alternate breeding localities of yet unknown populations of the species. This population represents an important Management Area (MA) within the Black-Mimbres-Rio Grande Recovery Unit (RU8) and thus remains an important potential area for Recovery of the species. (USFWS 2007) A survey in May of 2013 (Chino photo documentation, 2013) and again in May 2019 (Chino photo documentation memo, 2019) documented the status of the habitats within Tributary 2, including Tributaries 1 and 2A, during dry seasons and information from these two reports has been used to document site persistence in this report. See Appendices C and D.
2. Complete protocol-level surveys in an attempt to identify extant populations of CLF. Since all known populations within this Investigation Unit (IU) are assumed *extirpated* due to chytridiomycosis, the current survey will add current information to the species status in the survey area.

METHODS

Site Reconnaissance

During the week of September 23, 2019 and prior to the initiation of field surveys, a reconnaissance was completed for all of the physical reaches within and downgradient of the LIU, targeted in the workplan (Figure 2). This included the full reach of the West Fork segment of Lampbright Draw, including its upstream Tributaries 1, 2, and 2A, as well as the main and west lower reaches of Rustler Canyon above the Draw confluence. Both the West Fork and lower Rustler Canyon are documented to have CLF perennial habitat sites from earlier surveys as noted in the workplan. The entire length of the West Fork Lampbright Draw, including its upstream tributaries, was visually surveyed to verify location of temporary, semi-permanent, and perennial habitat sites. Each pool was assessed for habitat suitability for CLF, and photographed to provide a record of the conditions along the survey length at the time of reconnaissance. Habitat suitability focused on depth and size of pool, presence of aquatic vegetation, and presence of aquatic and terrestrial predators. A cursory visual survey of each pool was completed during this reconnaissance that looked for evidence of CLF presence including adults, tadpoles and egg masses, and each site was marked with GPS coordinates. Since the area had received some rainfall in advance of the surveys, many of these sites had recognizably higher water levels than that observed in spring/summer surveys. All sites were identified using GPS coordinates and, at sites deemed potentially suitable, notes were taken to prepare for subsequent formal CLF surveys. Photos of each site are shown in order from north to south in Appendix A.

CLF Surveys

CLF surveys were completed per the CLF Survey Protocol, utilizing the two daytime surveys method to identify species status within the survey area. Standard survey datasheet were used to collect survey data and limited water quality data was collected at each site. Due to safety concerns at this site, CLF survey work was completed using ***two daytime surveys*** to identify species status within the survey area. Although a single nighttime survey is preferred, especially for complex habitats, two daytime surveys are sufficient when surveying less complex habitat types (i.e. cattle tanks, plunge pools, isolated seeps and springs). To determine presence of CLF, a combination of visual surveys using high powered optics, and dip netting was used to complete a uniform search of each habitat site/reach and confirm identity of the frogs present. Digital photography was used to document each aquatic habitat surveyed. Water quality data was collected at each site including pH and conductivity, while abiotic terrestrial data including temperature and humidity was also collected. All surveys at each location were documented using standardized CLF survey datasheets (Attachment B). To reduce the potential for spreading Bd between sites, a quaternary ammonia solution was used, both in the field and at the field vehicle, to sanitize waders, dipnets, and other field equipment that contacts aquatic surfaces. Wading in and through wet habitats unnecessarily was avoided and we used a combination of hiking boots and thigh-high waders to complete these surveys. All equipment was thoroughly disinfected following completion of each of the survey sites. Surveys were completed by BIOME (Bryce Marshall, Logan Marshall) and were attended by NMED representatives (Joe Allen, Joe Fox), and Chino representatives (Pam Pinson, Terrence Enk).

Water Chemistry Sampling

At various sites that were visited during the reconnaissance, water samples were collected to provide an understanding of some basic water parameters present within the survey area. At each site, current water and ambient temperatures were taken using a Hannah Handheld water meter. A water sample was also taken and transported to the lab where conductivity and pH were measured.

RESULTS

Habitat Evaluations – Reconnaissance

A habitat reconnaissance was completed of the West Fork of Lampbright Draw, including Tributary 1 and Tributaries 2 and 2A on September 23, 2019. Rustler Canyon was reconnoitered on the following day and, due to difficulty of accessing the terrain and that it was already documented as CLF habitat, was surveyed concurrently with the habitat evaluation. Site location data was collected in UTM, NAD 83 datum and photographic documentation is reported in decimal degrees to match. A total of 111 photos of various habitat sites were taken during the reconnaissance providing an excellent overview of the habitat gradation from north

Figure 3. Upper Tributary 2 Photo. Small pool at the top of Tributary 2, just below a muddy stock tank showing lack of aquatic vegetation and bedrock base material.

to south along the West Fork and its tributaries (see Attachment A).

In general, habitats farther north are lower in quality, more susceptible to completely drying out, have shallower basins, and less developed aquatic vegetation than sites surveyed within the West Fork of Lampbright Draw and Rustler Canyon (Figure 3). Sites within Tributary 2 above the junction of Tributary 1 are classified as marginal habitat for CLF. There is a notable downstream gradient of increasing habitat quality from Tributary 2A to the West Fork of Lampbright Draw, probably consistent with the water that is held in the drainage above bedrock level at various sites along the drainage (Figure 4). Although there are several locations with plunge pools or intermittent springs in this section of Tributary 2, these habitats are small, reliant upon rainfall for replenishment, and are considered intermittent-ephemeral with regards to aquatic habitats and temporal water presence. Approximately 1.5 miles upstream of its junction with Rustler Canyon, the West Fork of Lampbright Draw contained the first surveyed perennial habitat with several permanent pools and well-established phreophytic vegetation (Figure 5). This site is approximately one mile downstream of the confluence with the Tributary 1 drainage and nearly 1.5 miles downstream of the LIU boundary.

Upstream of its confluence with the West Fork, Rustler Canyon provided the best habitat found within the survey area with substantial reaches of perennial habitat in both forks of the canyon. These sites were previously identified in the CLF workplan (BIOME 2019).

Figure 4. Tributary 2 Photos. Two marginal habitat pools in Trib 2within LIU showing various stages of phreophytic vegetation. On left (Pool 4) is above the first plunge pool and right (Pool 5) is below the plunge pool.

Figure 5. West Fork Lampbright Draw Photo. Development of riparian vegetation just above West Fork Lampbright CLF site showing flowing water, and willows in overstory.

Similar habitats are present in Tributary 1 and Tributary 2A, which held a few small pockets of water that were all intermittent-ephemeral in nature. One seep in Tributary 2A was found to have wetted soils in the area of the seep in May 2013 (spring). This same seep area had produced a small area of shallow pools when surveyed again in September 2019 (Figure 6). Given this sites tendency to maintain water during the drier periods of the year, this site can be considered perennial. However, the habitat that constitutes the drainage below the seep (Figure 7) suggests this seep provides subsurface flow predominantly where bedrock does not contain water to the surface and allows pooling.

Figure 6. Tributary 2A Photo. Single seep in Tributary 2A with photos taken in May 2013 (left, top) and September 2019 (right, top) showing the presence of water or wetted soils during both surveys; this is the only perennial habitat in Trib 2A. ***Photos by Chino (left) and NMED (right).***

Figure7. Downstream area near seep in Tributary 2A (pictured above) showing development of grasses but lacking pools or aquatic species of vegetation. ***Photo: Pam Pinson, Chino Mines, May 2013.***

Beyond the junction of the West Fork and Rustler Canyon, heading west (upstream) into Rustler Canyon, drainage habitats include an overstory of oak (*Quercus spp*) and alder (*Alnus oblongifolia*) with varying densities of riparian vegetation based on the availability of water. In the main stem of Rustler Canyon, there were three isolated pools within the first 2,000m of canyon surveyed (i.e. Figure 8). Surrounding these pools were varying amount of grass species and all of these larger pools had some aquatic vegetation including filamentous algae (*Spirogyra sp., Pithophora sp.*), waterweed (*Elodea sp.*), watercress (*Nasturtium officinale*), and others. Free-flowing water began at 2,400m and continued for 1,000m upstream to an end point at approximately 3,400m upstream from the mouth of the canyon. Vegetation within Rustler Canyon along the perennial reach consisted of other emergent and littoral species of

Figure 6. Rustler Canyon, Main Photo. Lower pool in the main Rustler Canyon showing the size and development of habitats in lower Rustler Canyon.

wetland vegetation that included cattail (*Typha sp.*), bulrush (*Scirpus sp.*), spikerush (*Eleocharis sp.*) and other emergent aquatic obligates.

The west branch of Rustler canyon was dry at the mouth and for the first 400m of the canyon bottom. Two solitary pools are located in the canyon below the first reach of continuous habitat and then flowing water and occasional pools were present for 1,100m upstream of this point (Figure 9). Vegetative constituents of this drainage were similar, but less developed than those observed in the main Rustler Canyon drainage. Both reaches of Rustler have pool development that is associated with the bedrock formation shown in Figure 9. A list of photos at select locations is provided in Attachment A.

Figure 7. Rustler Canyon, West Photo. Main lower pool in the lower part of the perennial reach of west Rustler Canyon showing depth and size of pool and the bedrock base material consistent within the upper areas of both branches of Rustler Canyon.

Water Chemistry

Water samples were taken at various sites along all drainages in the survey area where pools were deep enough to collect samples. Sampling sites included the upstream and downstream ends of individual survey reaches (Rustler), at midpoints of survey reaches, or at isolated pool locations within intermittent-ephemeral sections of the West Fork and Tributarys 1 and 2. Water chemistry parameters that were measured included pH, temperature (°C), and conductivity (µS) (microseimens). Due to a problem with the field water meter, conductivity and pH were measured in the Chino lab facility from samples collected at the time of survey. A total of 17 water samples were taken at 14 sites within the survey area. Temperatures of water at sites ranged from 15.9°C to 23.7°C and, generally were higher for areas with shallow pools and slower moving water. Sites with higher solar exposure had correspondingly higher temperatures as well. Conductivity within the West Fork and Tributary 2 sites with mean conductivity of 597 µS (microseimens) was four times higher than Rustler sites at 155 µS. Mean pH was similar in both drainages with a mean 7.55 pH in Rustler and 7.78 pH in West Fork sites. No additional water parameters were measured. A list of all water sampling sites, with location data, date of collection, and individual water parameter measurements is provided in Table 1.

Table 1. Site Water Chemistry. Sites where water was sampled within the survey area with water chemistry from each site. Sites are listed from north to south within the survey area.

Site	Lat	Long	Date	Temp (°C)	Conductivity	pH
Tributary 2 Stock	32.79626	-108.02174	9/27/2019	18.6	240	8.21
Tributary2 Plunge 1	32.79291	-108.02150	9/27/2019	19.4	774	7.84
Tributary 2 Pool 8	32.79234	-108.02128	9/24/2019	NT	160.7	7.51
Tributary 2 Tineja	32.78363	-108.01938	9/25/2019	19.0	1033	7.63
West Fork LB	32.76177	-108.01568	9/25/2019	19.0	700	7.82
West Fork Windmill	32.76177	-108.01568	9/27/2019	20.1	680	7.69
Rustler Top	32.75376	-108.02949	9/26/2019	15.9	135	7
Rustler North TAD	32.75219	-108.02890	9/26/2019	16.6	192	8.24
Rustler R4 - Mid	32.75113	-108.02726	9/24/2019	23.7	155.7	7.36
DS Rustler	32.74735	-108.02398	9/26/2019	17.1	158	8.04
Rustler Pool 4 DS Reach	32.74735	-108.02398	9/24/2019	21.7	189	7.51
Rustler 2	32.74572	-108.01896	9/24/2019	22.9	186.3	7.23
Rustler R2	32.74572	-108.01896	9/24/2019	23.0	157	7.23
Rustler 1	32.74475	-108.01571	9/26/2019	17.3	148	6.91
Rustler Bottom Pool 1	32.74348	-108.00825	9/26/2019	16.3	148.2	7.34
WR (West Rustler)	32.74310	-108.02681	9/24/2019	22.9	125.8	7.78
SRE Rustler	32.74267	-108.03612	9/26/2019	23.0	120	8.48

CLF Surveys Results

Surveys were completed at nine sites on two separate days during the week of September 24, 2019 and included six sites historically surveyed by R. Jennings. For each of the nine sites targeted through reconnaissance for performing the CLF survey, two separate days, spaced one day apart, were used to perform a repeated survey process for each site. Four sites were surveyed in the West Fork and Tributary 2 and five were surveyed in Rustler Canyon. Habitats were only surveyed if they had been deemed potentially suitable during the previous habitat reconnaissance, conducted on September 23, 2019. Weather conditions ranged from clear and sunny with temperatures between 70-85°F, to overcast with light to moderate rain and temperatures of 55-65°F (September, 24 2019). Site names, tributary associations, and UTM coordinates for each site are provided in Table 2. Locations of these surveys sites are provided in Figures 10 and 11.

Table 2. List of Survey Sites. Nine sites within or downstream of the LIU that were surveyed for CLF during the week of September 24, 2019.

Site Name	Tributary	Easting	Northing
Tributary 2 Stock Tank	Tributary 2	778938	3632609
Tributary 2 Plunge	Tributary 2	778961	3632129
West Fork LB	Tributary 2	779582	3628820
West Fork Windmill	Tributary 2	780013	3628717
Rustler West	Rustler	778027	3627267
Rustler Main Reach	Rustler	778843	3627193
Rustler 2	Rustler	779325	3627030
Rustler 1	Rustler	779633	3626932
Rustler Bottom	Rustler	780336	3626811

Surveys used dip netting, visual surveys, and hand exploration to survey the circumference of each pool, and along both banks of continuous reaches. Water clarity ranged from slightly cloudy to extremely clear in a gradient from north to south within the surveys area. All sites from West Fork of Lampbright Draw and into Rustler were composed of substantial in-stream and littoral aquatic plants as well as bank-stabilizing species (see Habitat Evaluations). Arthropods were few to very numerous within each survey site and consisted of a diverse array species including backswimmers (*Notonecta glauca*), water boatmen (Corixidae), predacious diving beetles (Dytiscidae), giant water bugs (Belostomatidae), water striders (Gerridae) and other smaller species. Predacious leeches (Hirudinea) were common in Rustler Canyon. The most common vertebrate observed during surveys was the western black-necked garter snake (*Thamnophis cyrtopsis*) (Figure 12). This species was frequently observed in pools with tadpoles.

Figure 8. Black-necked Garter Snake Photo. Black-necked garter snakes (*Thamnophis cyrtopsis*) were common during CLF surveys especially

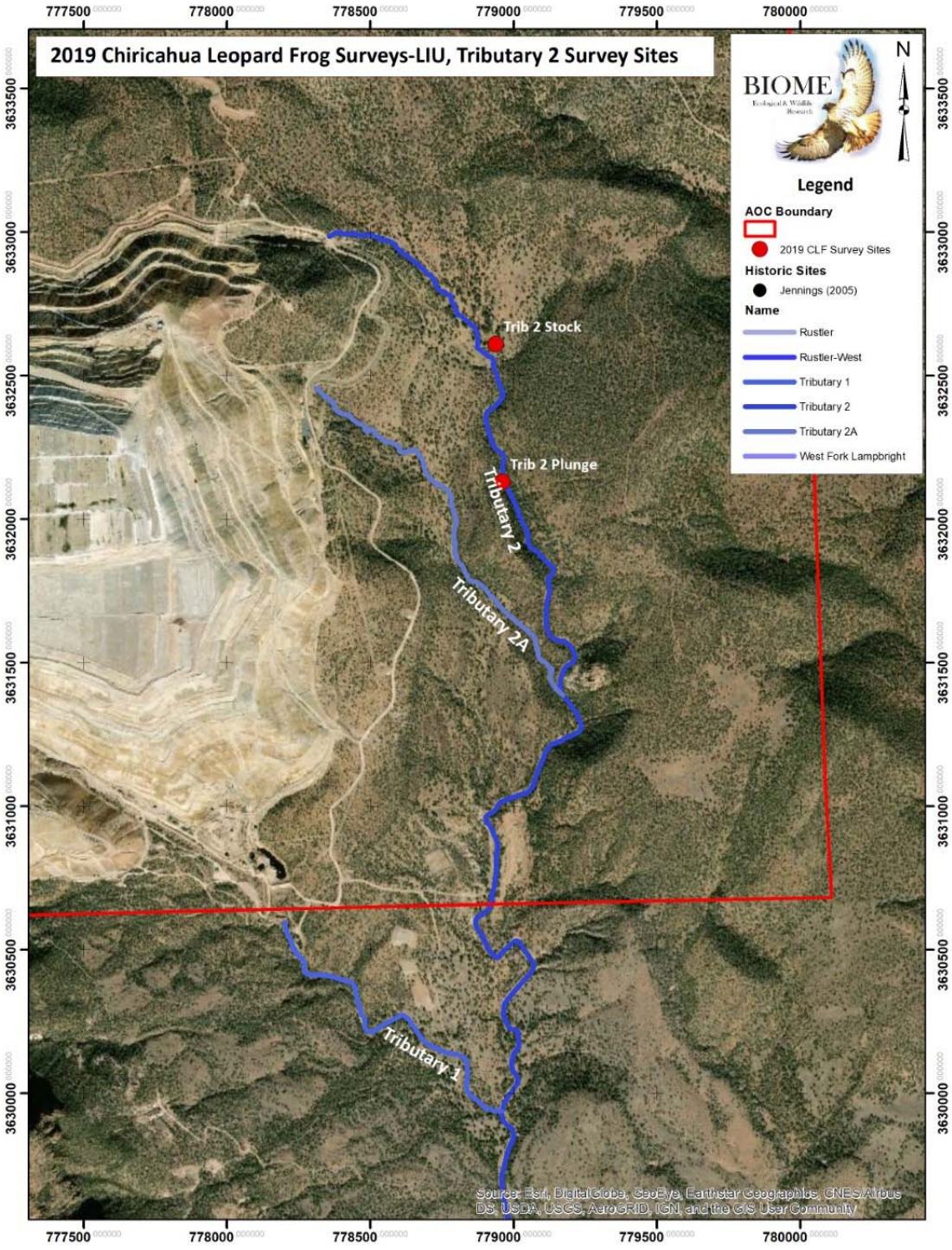

Figure 9. Aerial of Tributary 2. Aerial image showing the location of the two northern survey sites within Tributary 2 with locations of habitat reconnaissance photos of this upper region of the drainage.

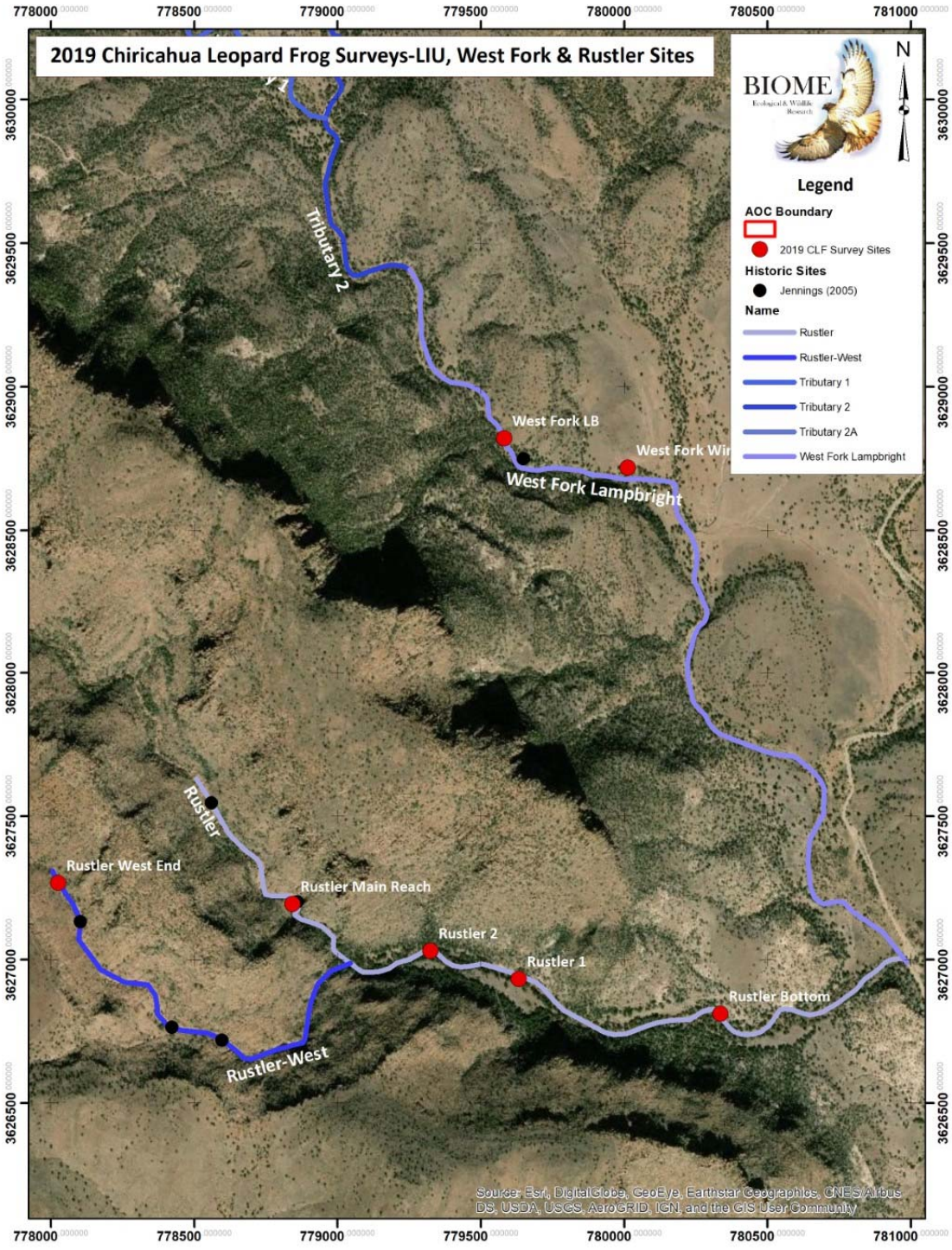

Figure 10. South Survey area Aerial. Aerial image showing the location of seven CLF survey sites within the West Fork of Lampbright Draw and Rustler Canyon downstream of the LIU.

Two or three species of amphibians were documented during CLF surveys, canyon tree frog (*Hyla arenicolor*), and either Arizona (*Anaxyrus microscaphus*) or woodhouse toad (*Anaxyrus woodhousii*), or both. A definitive identification of these tadpoles/toadlets could not be made in the field, but they were much smaller and darker colored than those of CLF; CLF tadpoles are typically around 3" in length and double the size of most *Anaxyrus* tadpoles. No CLF, adults or tadpoles of any stage of development, were identified at any of the survey sites and American bullfrogs (*Lithobates catesbeiana*), documented in earlier surveys (Jennings 2005) to be found in the study area were not observed during the 2019 surveys.

DISCUSSION

Tributary 2, Tributary 1 and Tributary 2A

For the areas that encompass the upper reaches of West Lampbright Draw (Tributary 2), habitat suitability increases on a downstream gradient with more aquatic vegetation development found at downstream sites and culminating at the perennial pool habitat in the West Fork of Lambright Draw. The areas of Tributary 2 upstream of the perennial habitat in the West Fork of Lampbright Draw, specifically those pools below the first plunge pool (UTM 778922, 3632247 – Photo#4213) appeared to provide suitable, but marginal habitats for CLF. Areas above the first plunge pool in Tributary 2, (stock tank and associated pool), are marginal at best, but are more likely to completely dry out and are the furthest from historically occupied habitats. All habitats above the West Fork site, just over 1.5 miles downstream of the LIU boundary would act as population sinks for CLF and are not likely to ever be populated even if additional historic sites become populated in the future.

West Fork Lampbright Draw

CLF was known from this area until 1997 when tadpoles were observed in the main pool (Jennings 1998). No CLF were found in 2004 (Jennings 2005) or afterwards suggesting that this population has been extirpated since around 1997. Per the 1-3-5 Rule (USFWS 2007) used to determine habitats that could be potentially immigrated to, there are no known populations of CLF within 3 miles of this site, and it is unlikely that this habitat will become occupied through natural immigration. Despite the status of CLF in this region of the study area, it does provide the most suitable habitat within the West Fork of Lampbright Draw above Rustler Canyon and should continue to be considered extirpated for purposes of Recovery.

Rustler Canyon

Rustler Canyon begins at the junction with West Fork of Lampbright, a site 3.25 miles downstream of the LIU boundary and proceeds west for approximately 2.8 miles. Surveys by

Jennings found CLF tadpoles in 1998, but none in 2004 (Jennings 2005) and none have been observed there since. This drainage contains the most suitable potential CLF habitat within the study area and the canyon has many attributes that contribute to CLF suitability. First, there do not currently appear to be any bullfrogs in this canyon. Second, there are no introduced fish within the canyon, and much of the perennial habitat within both the West Fork and main Rustler Canyon occur above pour-offs that make the area unreachable by fishes, even at higher flows. Third, both forks of Rustler canyon have various amounts of solar irradiance, lending to warmer water temperatures, especially during spring and summer months, the period when *Bd* is known to most frequently impact adult frogs. The fact that CLF do not occur here however, most likely due to *Bd* infection, may preclude any future populations from naturally immigrating back into this area from adjacent populations that have not been extirpated.

Conclusions

Using the most current understanding of CLF biology, and methods outlined in the Recovery Plan for habitat assessment and direct surveys, this study delineated a variety of habitat conditions both within and outside of the LIU while completing focused surveys for CLF within the entire survey area. From these surveys, the following summary supports the conclusion that CLF does not occur within the survey area:

1. No CLF of any life stage were observed within any of the available habitats surveyed. Although the previous surveys that detected CLF in West Fork identified tadpoles (Jennings 1998), the current surveys were unable to identify CLF presence.
2. Although there are potentially suitable and marginal habitats within the LIU, these sites are extremely limited to small isolated pools that are subject to complete drying and have limited aquatic vegetation development for egg-laying. These habitats do not provide stability for all life stages of CLF and should therefore be considered *marginal*.
3. Rustler Canyon contains potential habitat but is currently unoccupied and potentially suitable CLF habitat found within Rustler Canyon is located nearly 4 miles of ephemeral drainage from the LIU. These distances are beyond the criteria set by the 1-3-5 Rule for dry terrestrial, intermittent, or perennial aquatic habitats.
4. Given the current absence of CLF populations and existing hydrological conditions of West Lampbright, Tributary 1 and Tributary 2 and 2A, the potential for CLF to occur in the LIU is extremely limited.

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APPENDICES

APPENDIX A - SITE PHOTOS

Reference photos were taken at all sites where CLF surveys were conducted. A full list of photos taken in the study area with georeferenced GIS data is provided in Table 3. Photos of each site are shown from left to right in chronological order to show status of habitat at each survey period. Not all sites shown in photos were surveyed for CLF.

Table 3. Photo Log List. Photo number and location for 111 habitat photos taken during the reconnaissance of the study area. Photo data is provided as an electronic Appendix to this report.

Photo Locations for 2019 Reconnaissance - Lampbright Investigation Unit								
Pic #	Lat	Long	Pic #	Lat	Long	Pic #	Lat	Long
4208	32.796045	-108.0213933	4256	32.78364833	-108.01939	4293	32.76145167	-108.0156033
4209	32.79601167	-108.0213983	4257	32.783645	-108.0194183	4294	32.761345	-108.01554
4210	32.796255	-108.02169	4258	32.783635	-108.0193667	4295	32.76131333	-108.015455
4212	32.79338333	-108.0216733	4259	32.78363167	-108.0193683	4296	32.76124	-108.01544
4213	32.792805	-108.0216833	4260	32.78362333	-108.019365	4297	32.76124167	-108.0154333
4220	32.79250833	-108.0211533	4261	32.78361333	-108.0193633	4298	32.76116833	-108.0153767
4221	32.79259167	-108.0212367	4262	32.78482167	-108.019215	4299	32.761165	-108.0153533
4224	32.79248333	-108.0212717	4263	32.784885	-108.0191883	4301	32.76090167	-108.0150333
4225	32.79242167	-108.021175	4264	32.78491333	-108.0192183	4302	32.76082833	-108.0148417
4226	32.7923	-108.0213267	4265	32.78491333	-108.0192183	4306	32.74468667	-108.01527
4227	32.79217333	-108.0213333	4266	32.78490333	-108.0192467	4307	32.74469333	-108.0152633
4228	32.79215333	-108.0213783	4267	32.78490333	-108.0192467	4308	32.74471167	-108.01524
4229	32.79204667	-108.0212583	4268	32.784905	-108.019255	4309	32.74489167	-108.015485
4230	32.791985	-108.0212567	4269	32.77608	-108.0272817	4310	32.74485667	-108.0156867
4231	32.79193833	-108.02124	4270	32.77611333	-108.0273667	4311	32.74487167	-108.0156717
4232	32.79192167	-108.0212283	4271	32.776105	-108.027385	4312	32.74374	-108.0186033
4233	32.79185	-108.0212467	4272	32.77610833	-108.0273967	4313	32.74375333	-108.0187383
4234	32.79175833	-108.0212333	4273	32.77511667	-108.027495	4315	32.74434667	-108.0154567
4235	32.79173167	-108.021215	4274	32.77519167	-108.0273417	4316	32.744285	-108.0155
4236	32.79173	-108.0212117	4275	32.77522333	-108.0273	4317	32.74435667	-108.0154733
4237	32.791725	-108.0211667	4276	32.76751	-108.021485	4318	32.74447333	-108.0153817
4238	32.78677333	-108.0191967	4277	32.76757833	-108.021485	4319	32.74447167	-108.01541
4239	32.785165	-108.0195233	4278	32.76758667	-108.0214933	4320	32.74484	-108.0179467
4240	32.78517833	-108.0195083	4279	32.76757667	-108.0214933	4321	32.74476667	-108.0179517
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4244	32.79324	-108.02589	4282	32.762045	-108.0158317	4324	32.74590333	-108.019715
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4246	32.778755	-108.022295	4284	32.76201667	-108.0158133	4327	32.74543167	-108.018405
4247	32.77875	-108.0222767	4285	32.76195833	-108.0158283	4328	32.74546	-108.0184133
4248	32.77875667	-108.022255	4286	32.76196167	-108.0157983	4329	32.74539833	-108.0184667
4249	32.77900667	-108.0221617	4287	32.76193333	-108.0157733	4331	32.74790667	-108.02352
4251	32.78313	-108.0200683	4288	32.761805	-108.015765	4332	32.74774167	-108.0241467
4252	32.78316167	-108.020085	4289	32.76176333	-108.0157467	4333	32.747735	-108.0241633
4253	32.78314833	-108.020085	4290	32.761615	-108.0157183	4334	32.747735	-108.0241633
4254	32.78313333	-108.0200983	4291	32.761625	-108.0157167	4335	32.74753167	-108.024245
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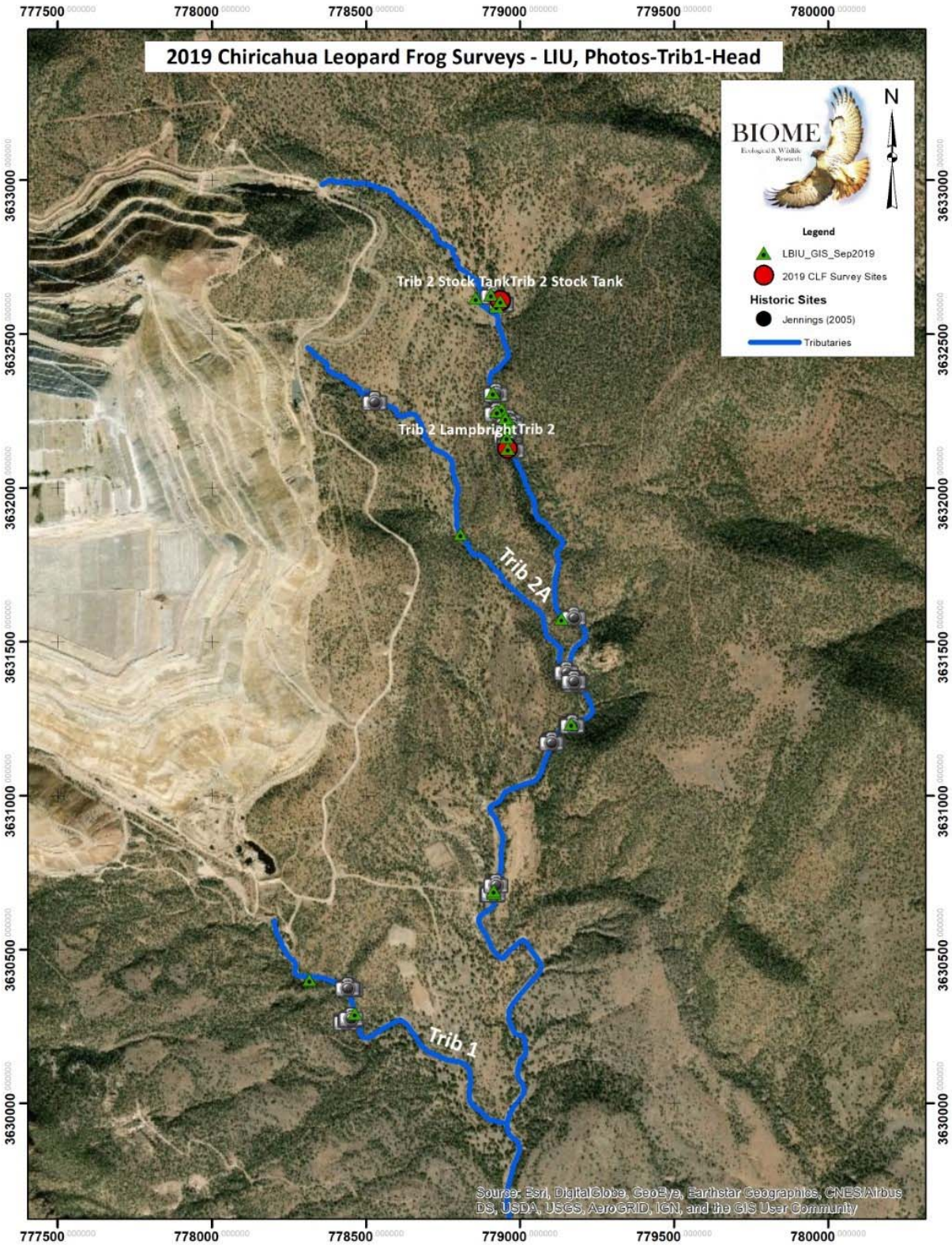

Figure 11. Photopoint Map 1 - Location of photo points within upper Tributary 2, Tributary 2A, and Tributary 1.

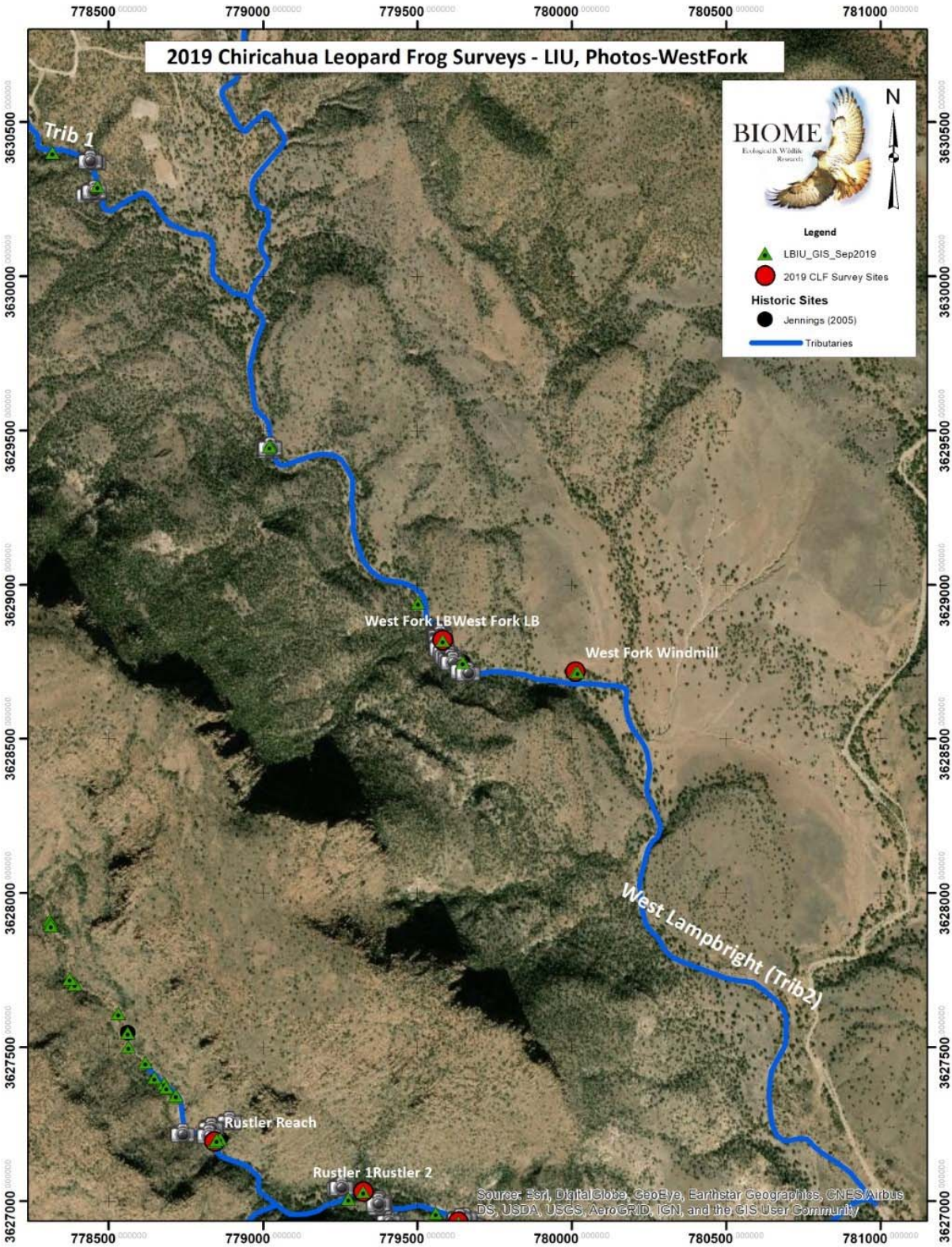

Figure 12. Photopoint Map 2 - Location of photo points within the West Fork Lampbright section of survey area.

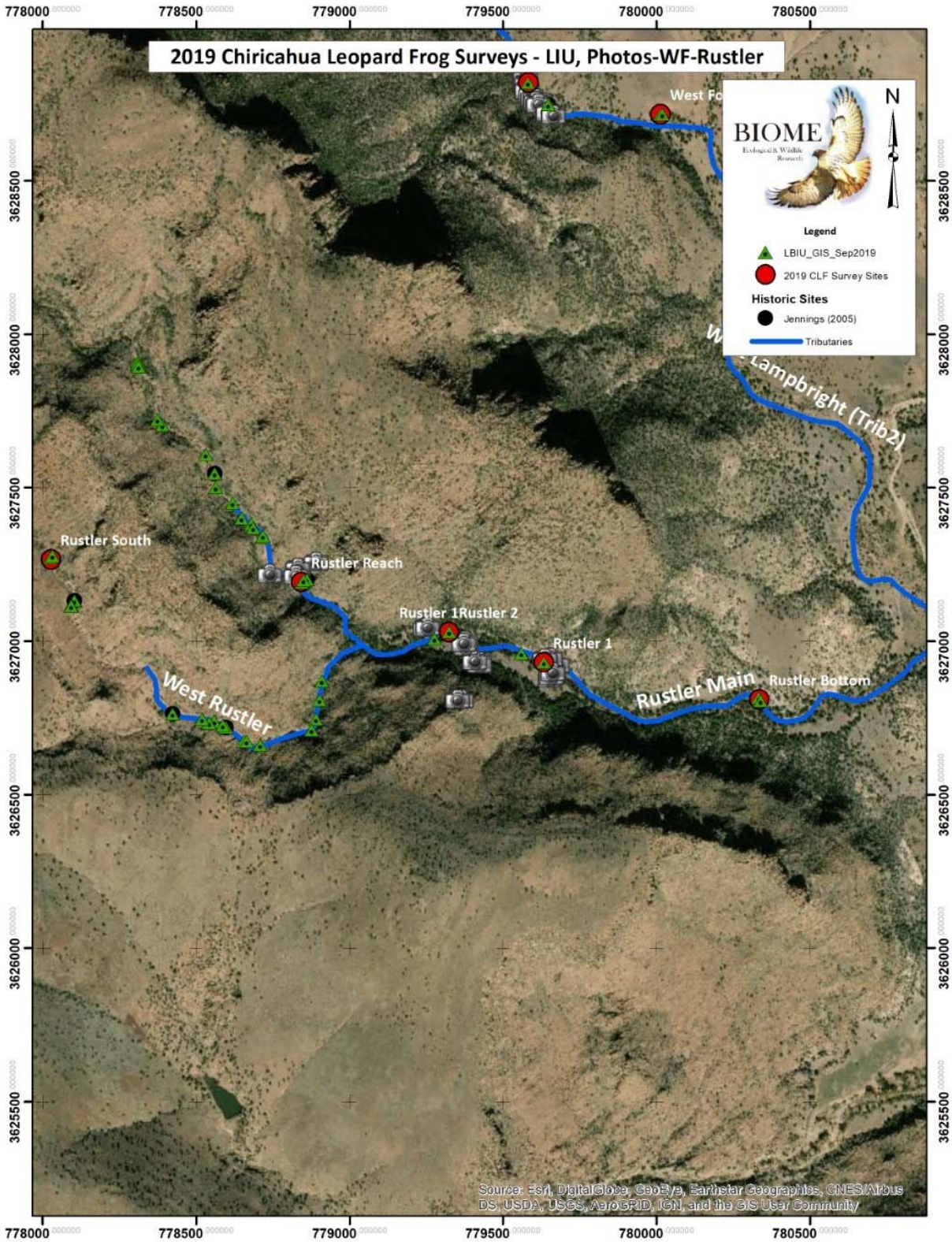

Figure 13. Photopoint Map 3 - Location of photopoints within the Rustler Canyon portion of the survey area.


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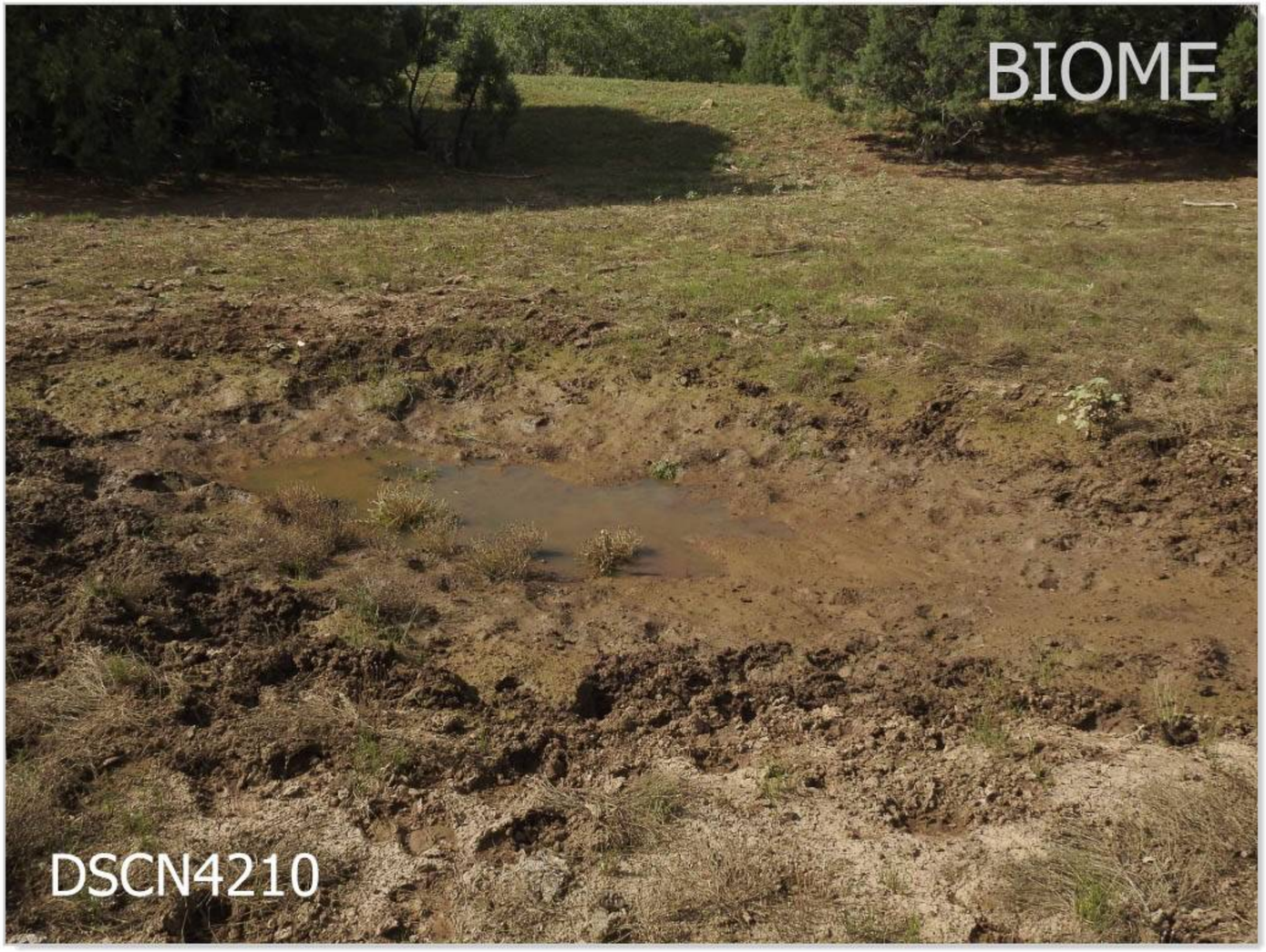
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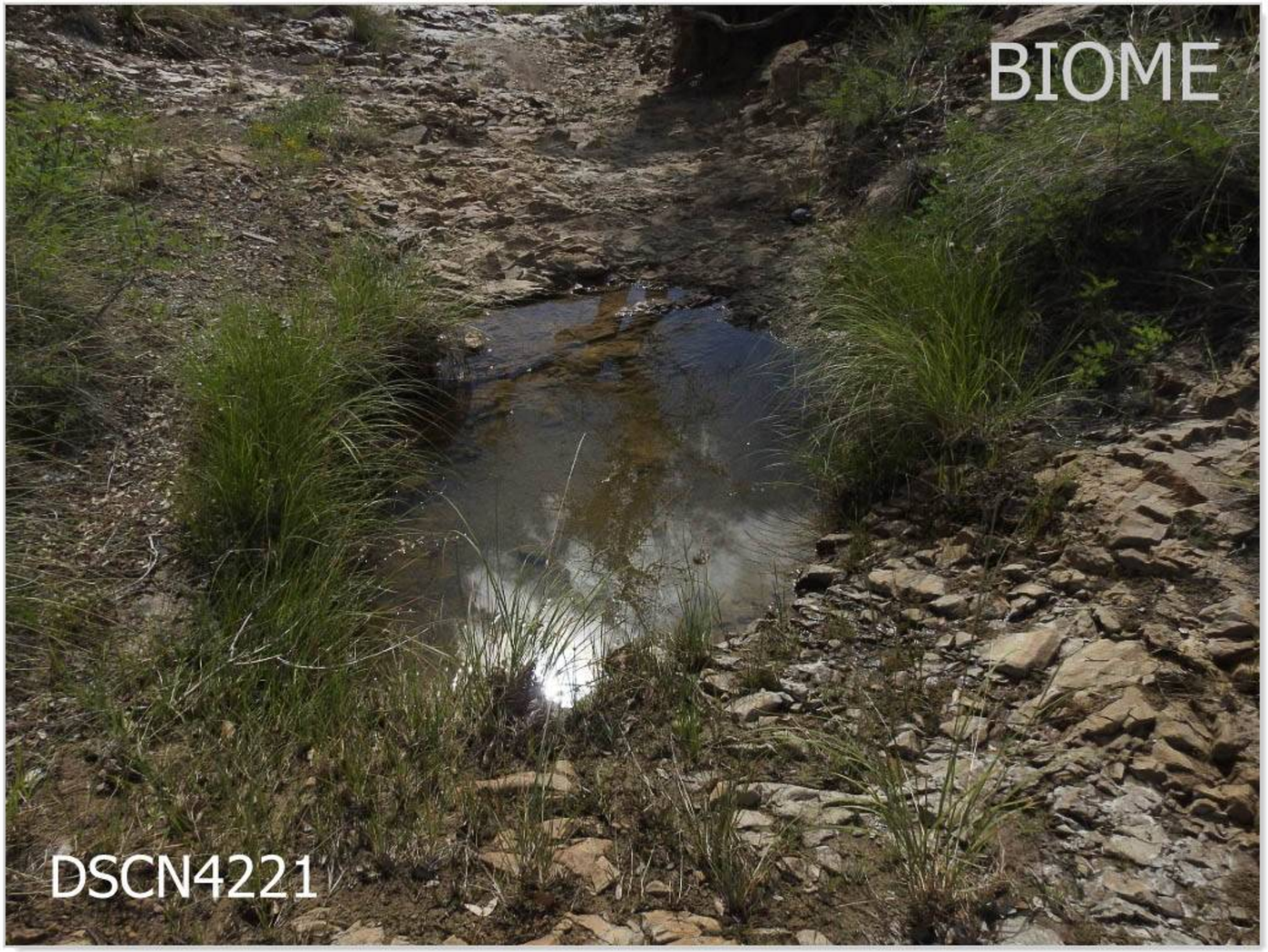
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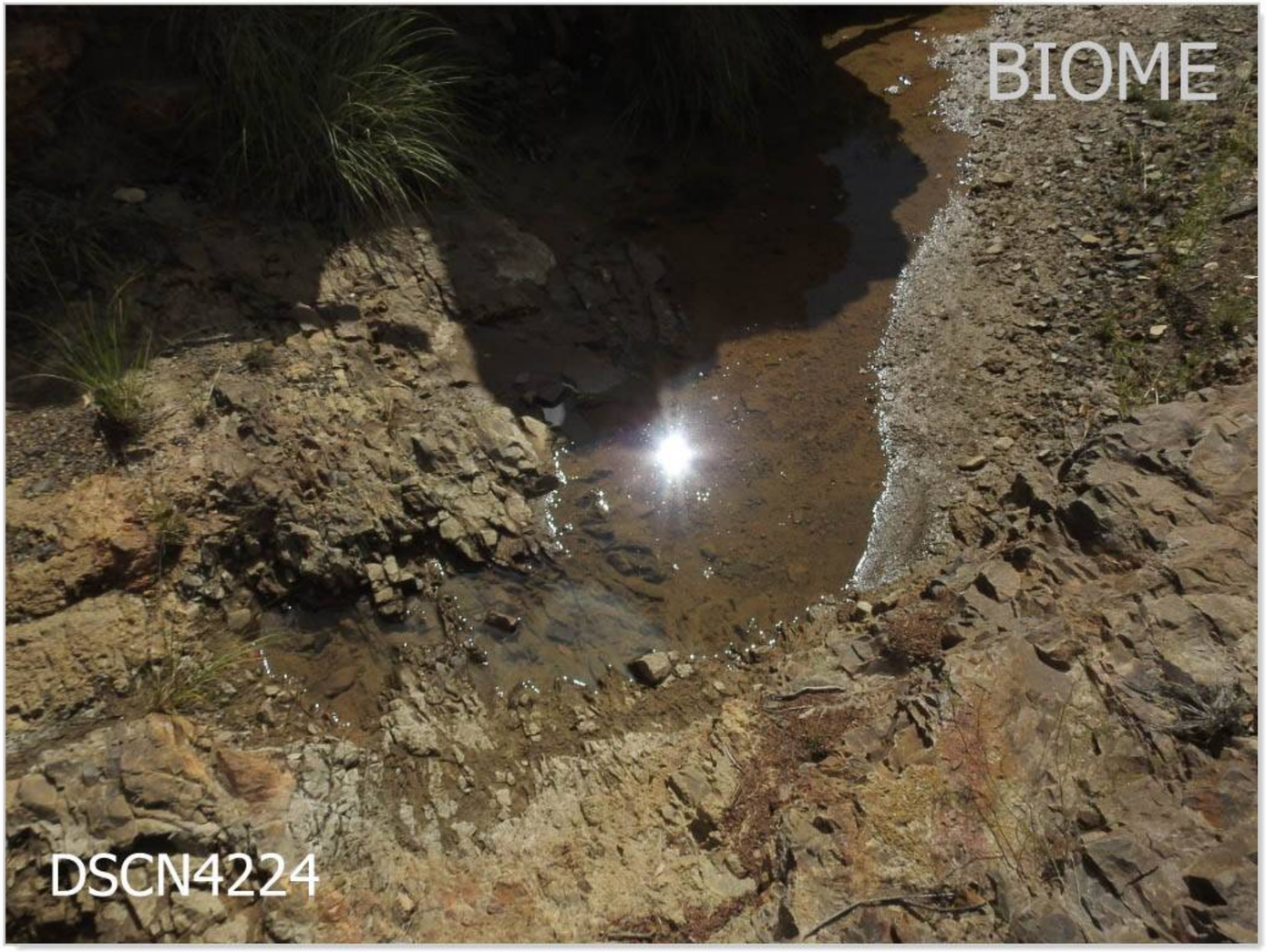
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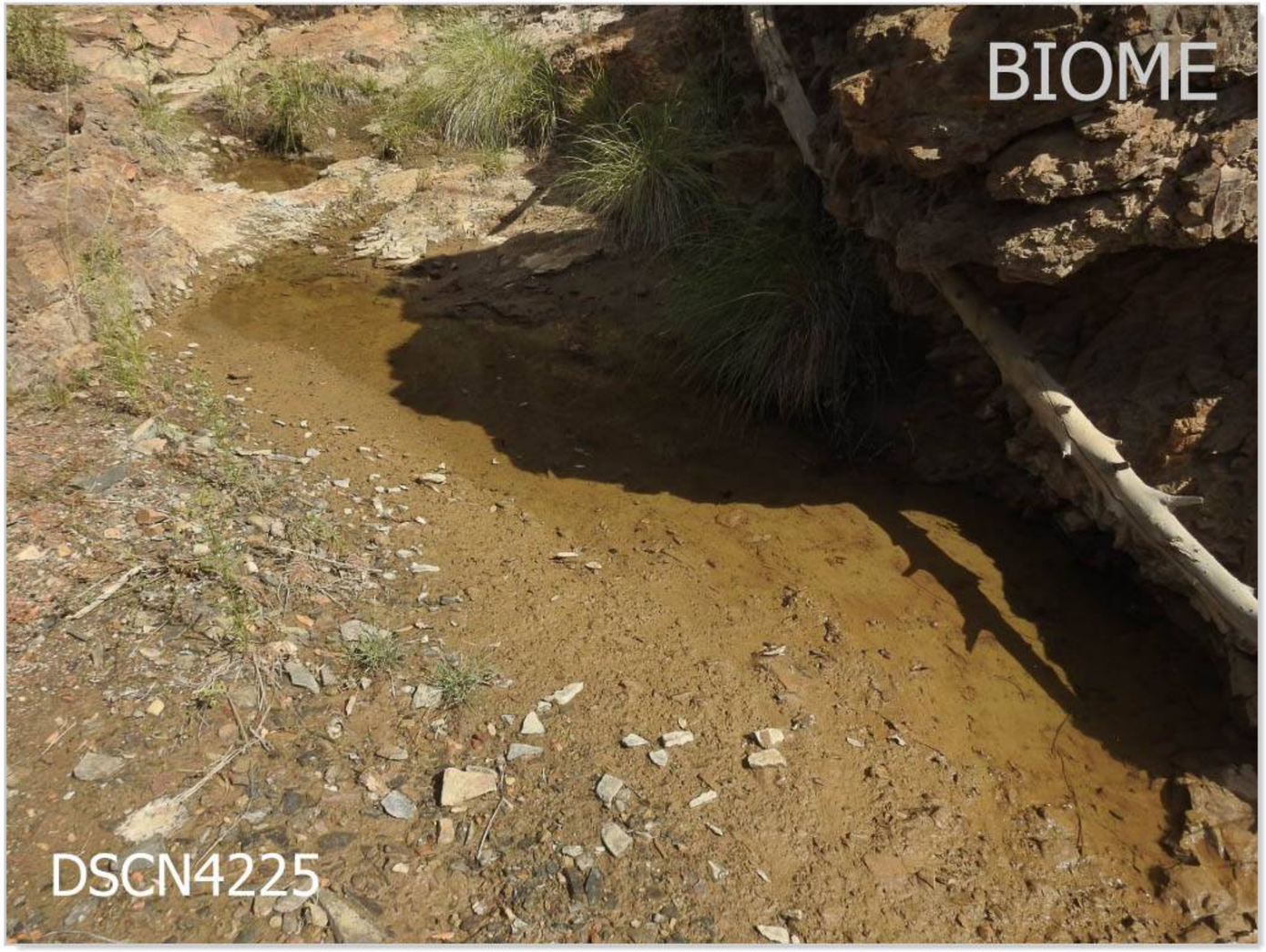
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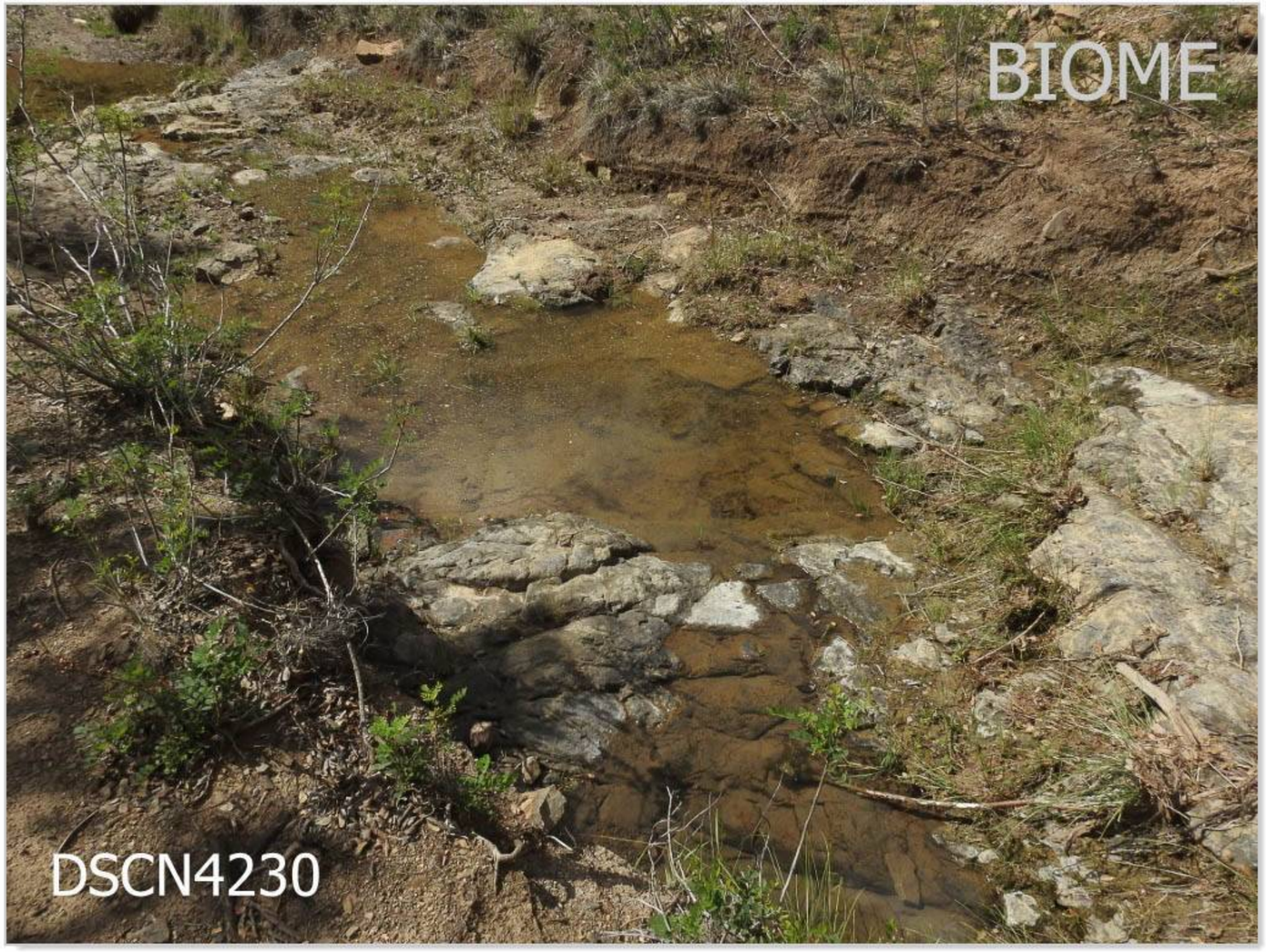
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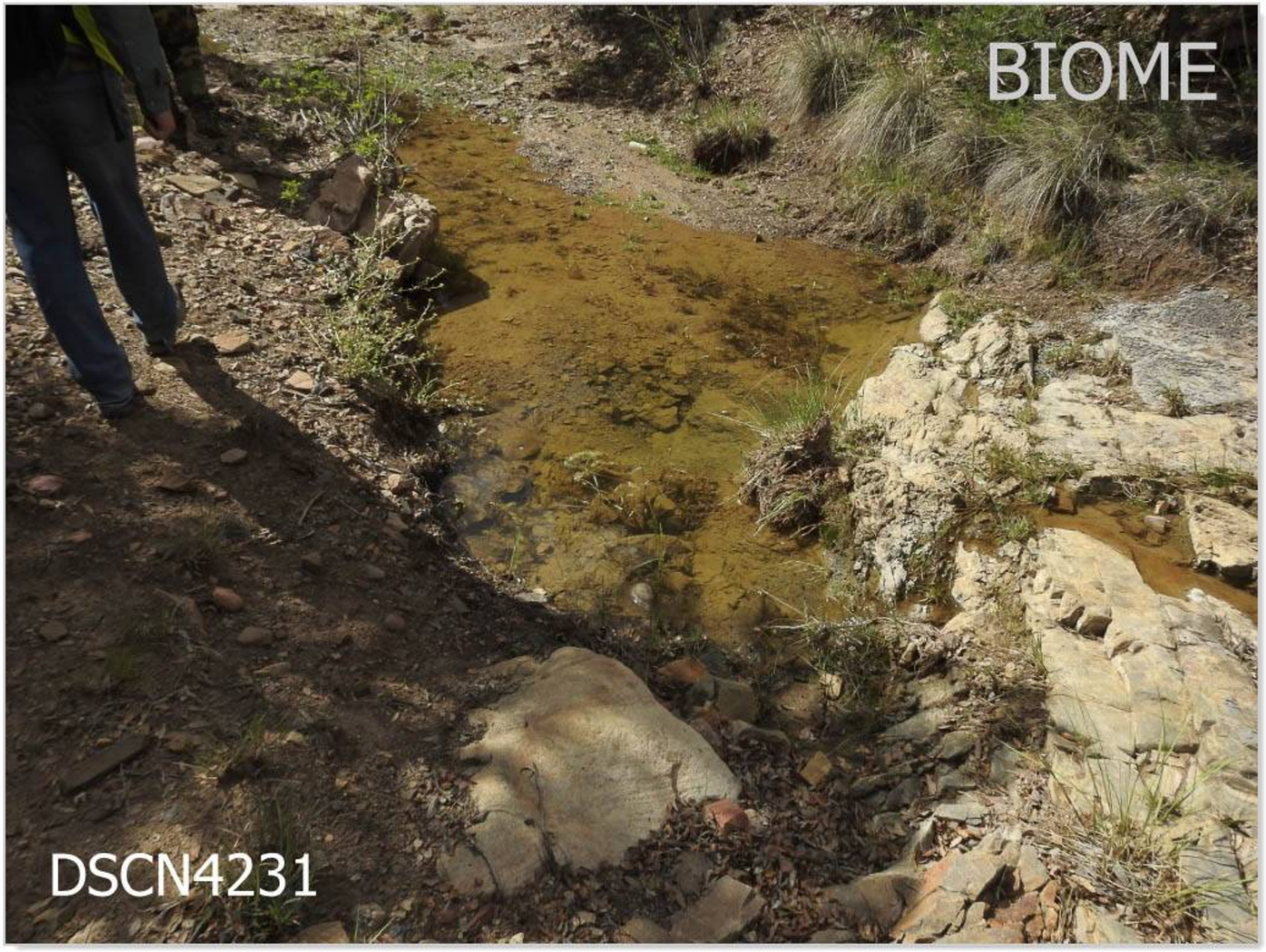
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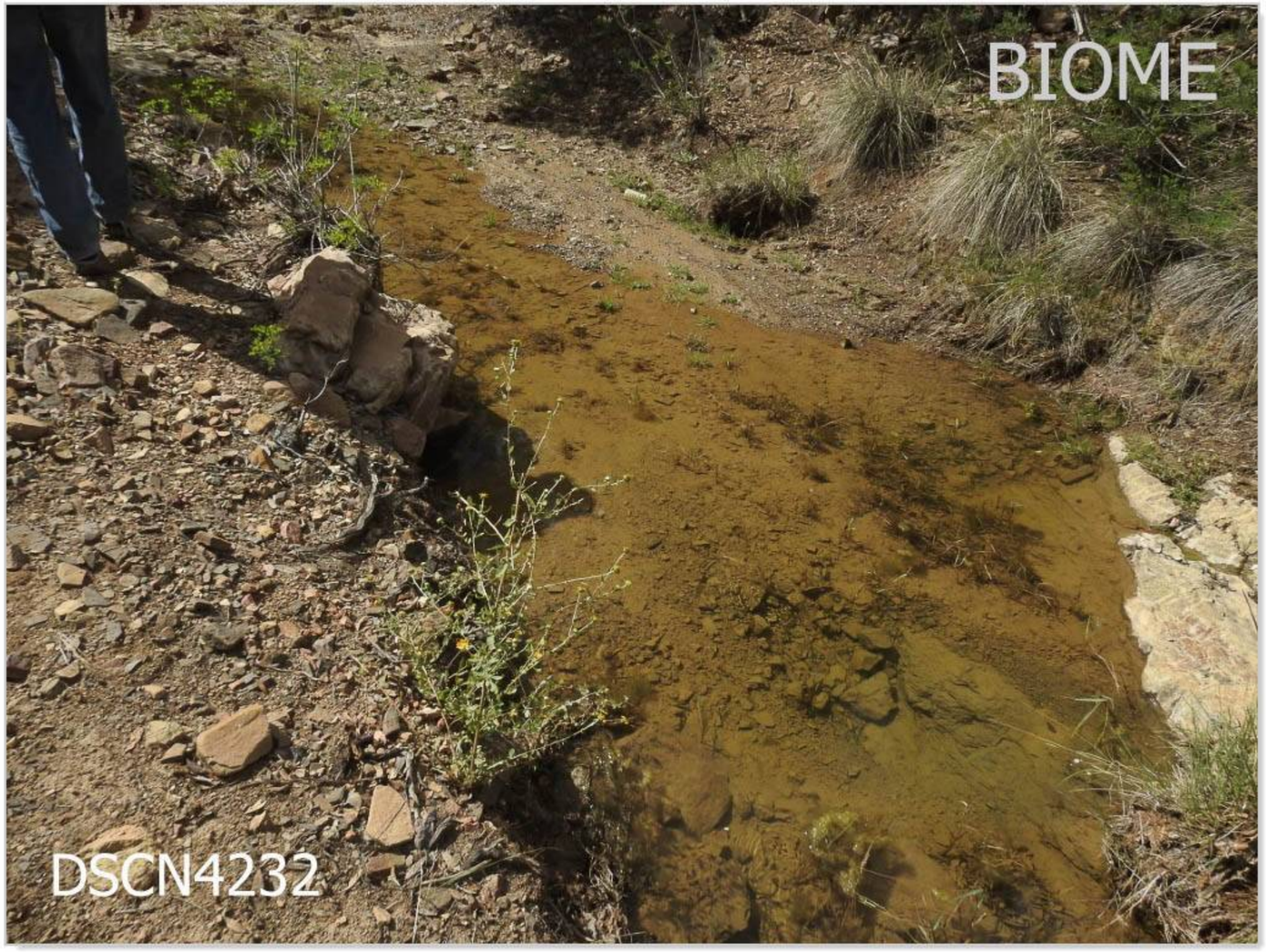
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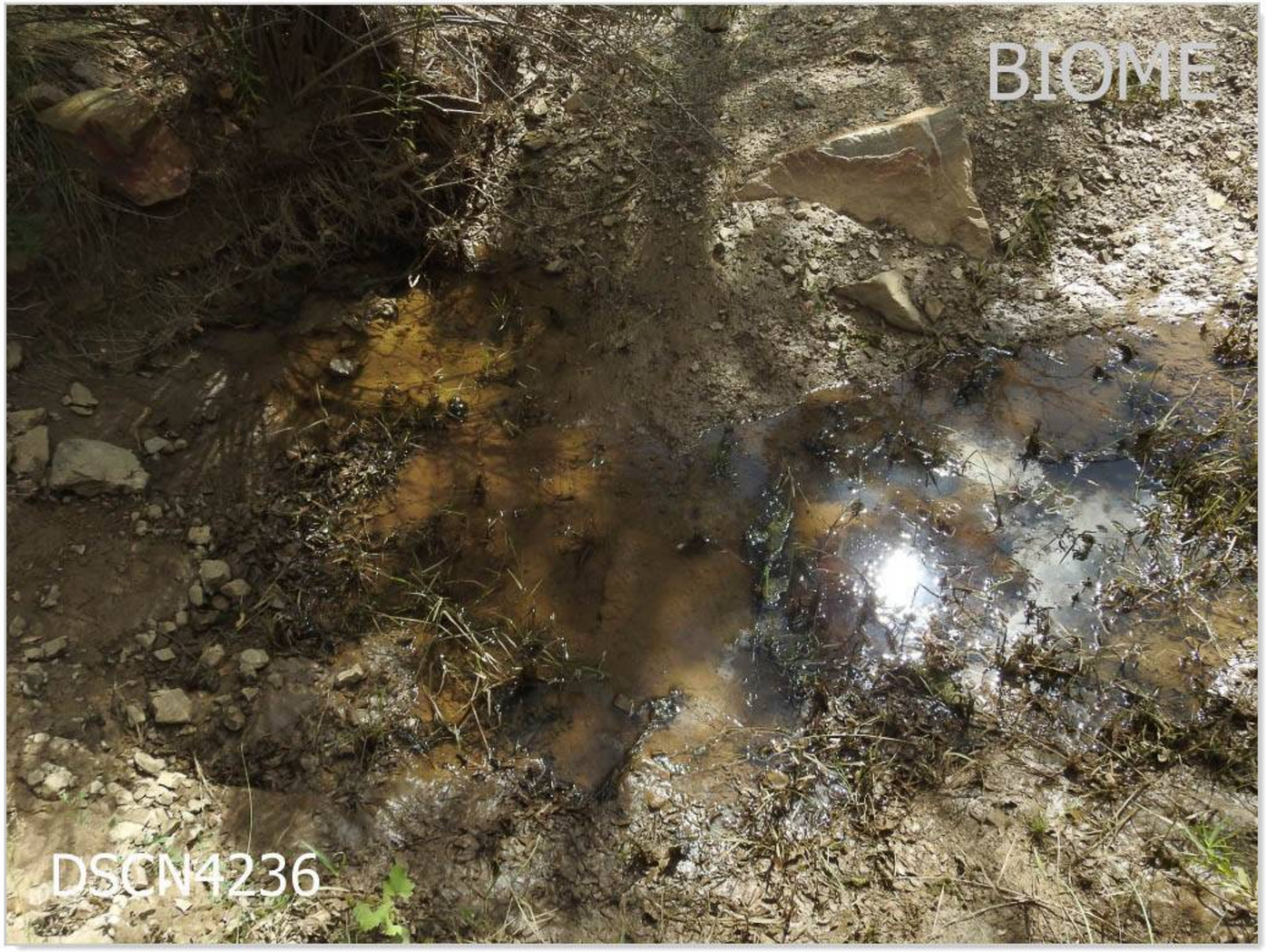
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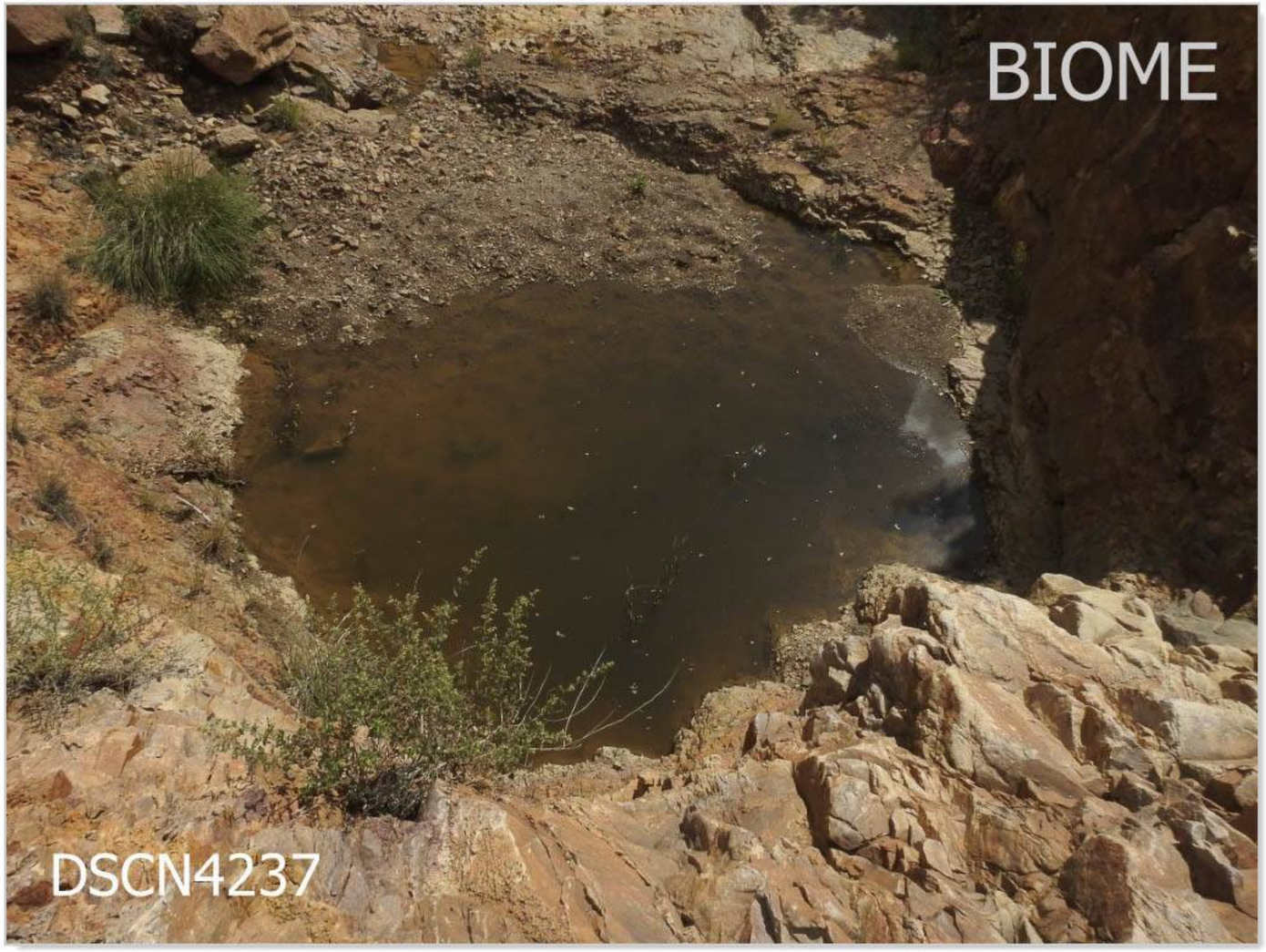
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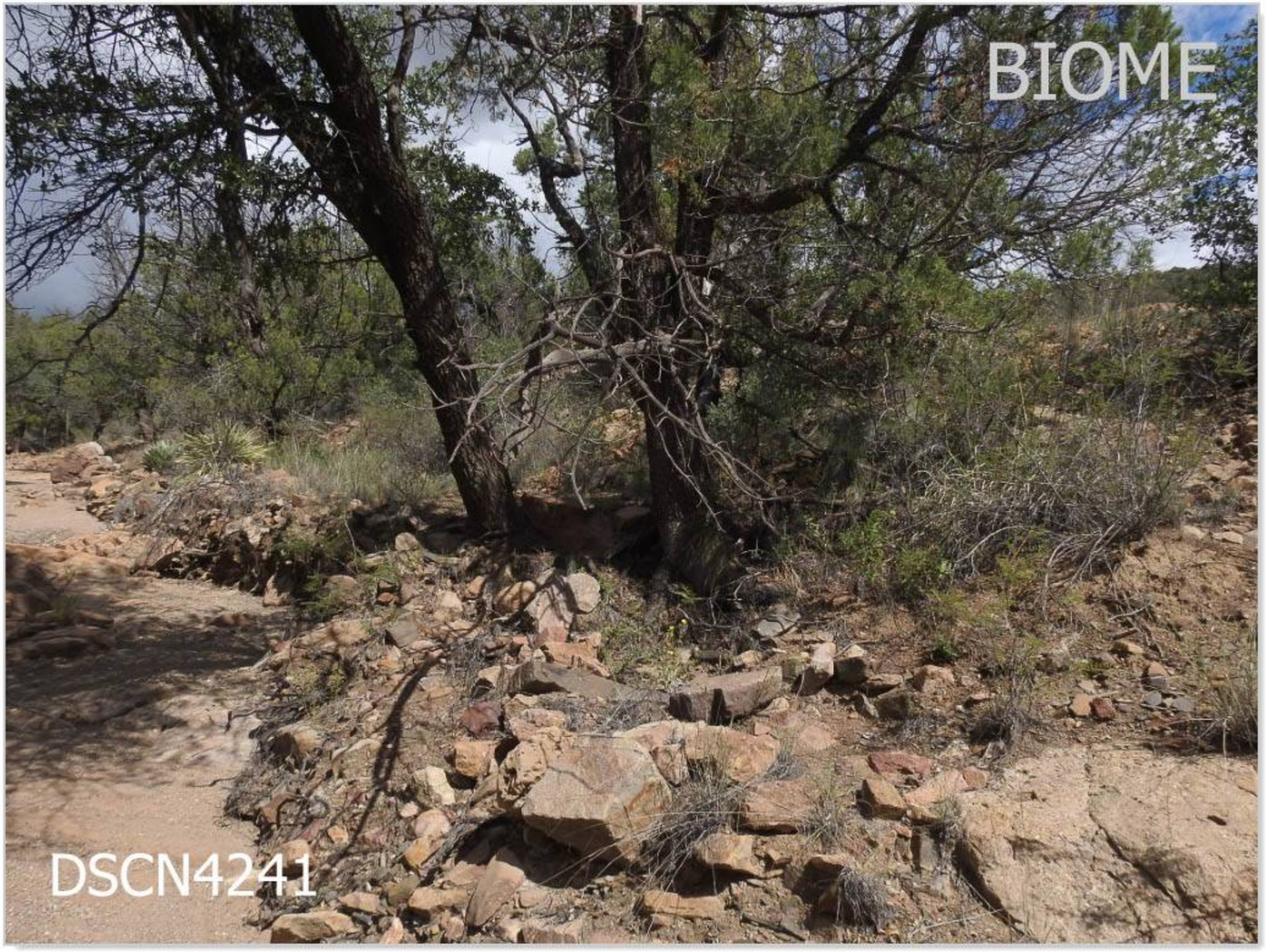
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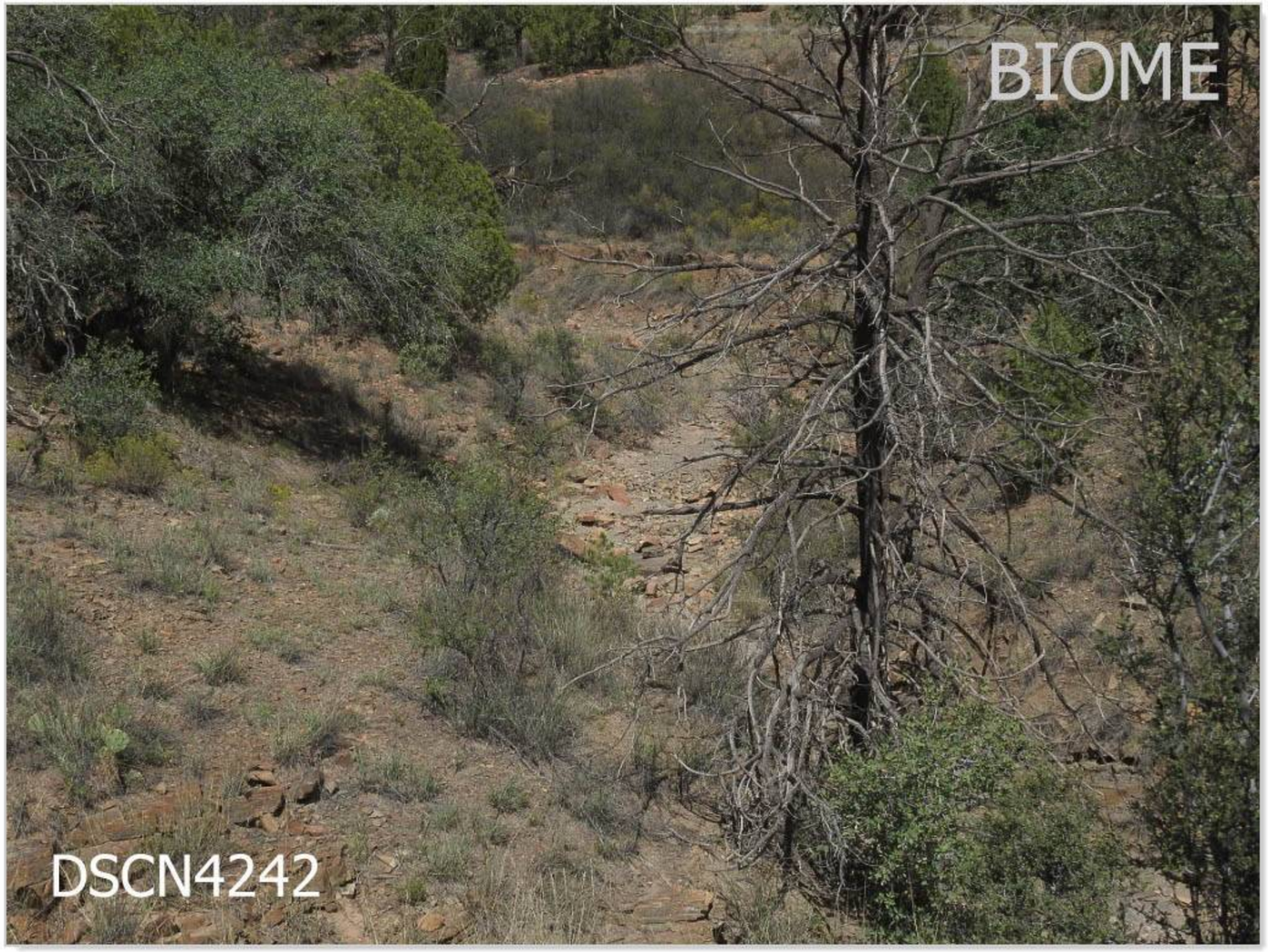
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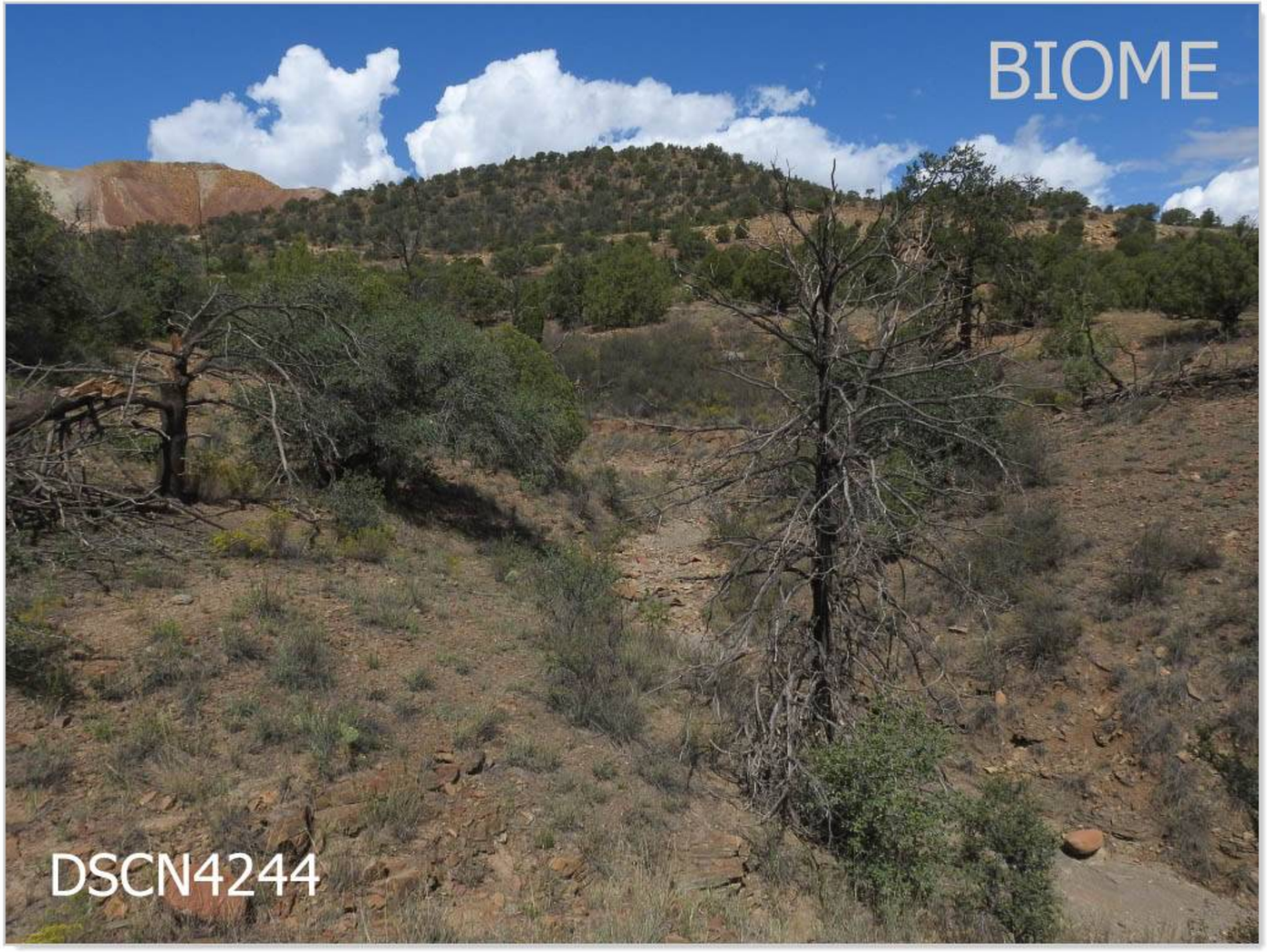
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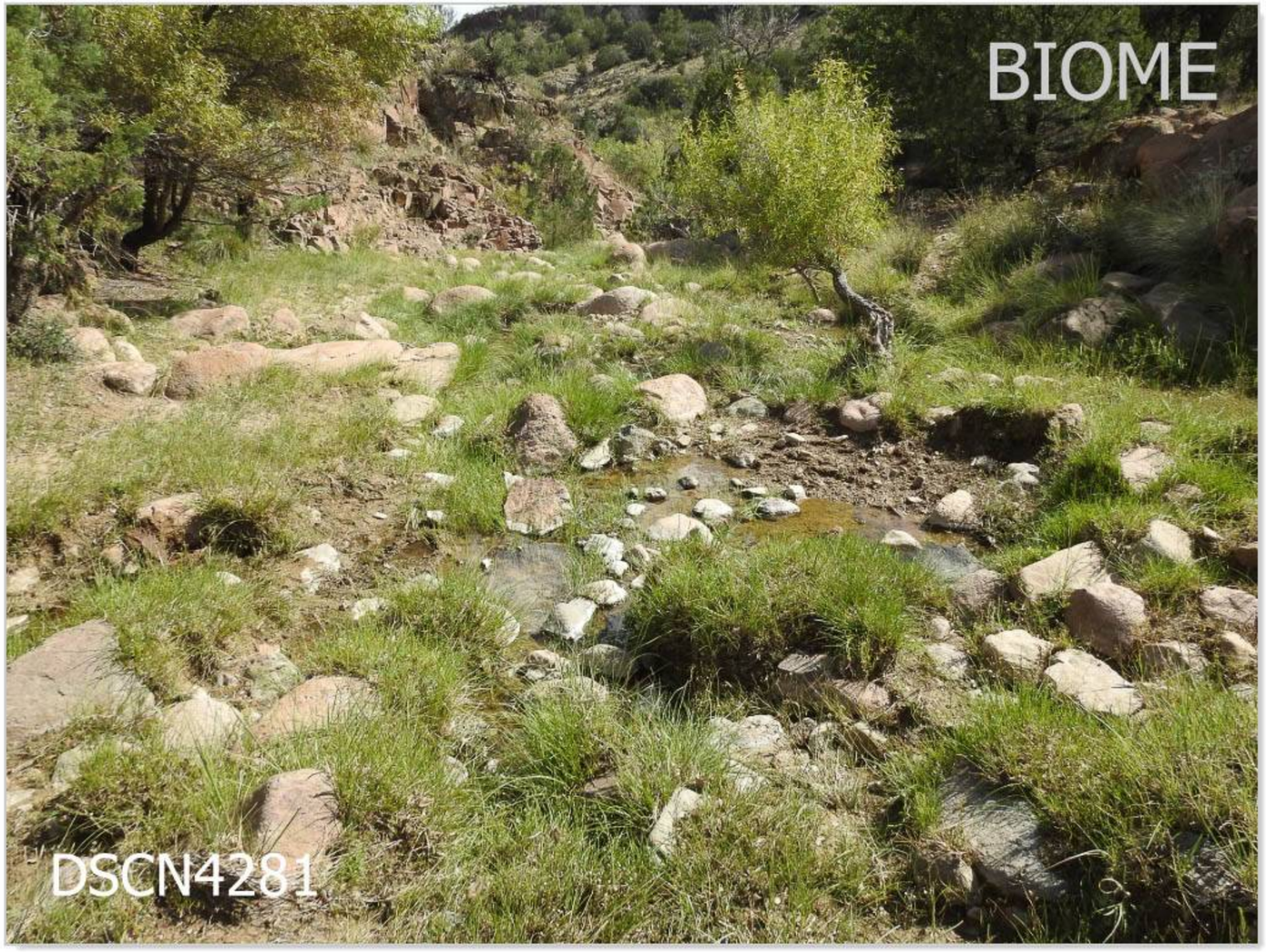
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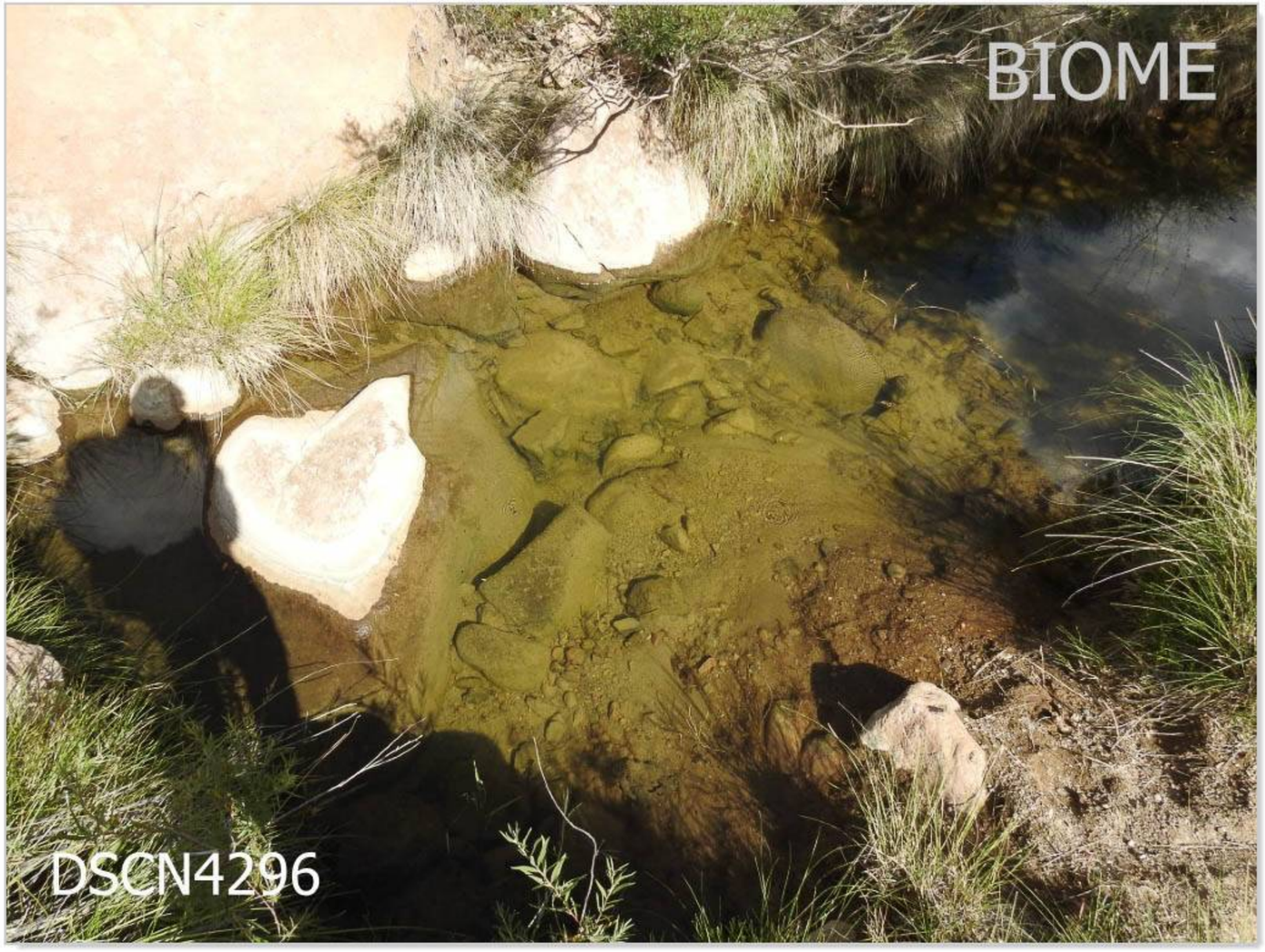
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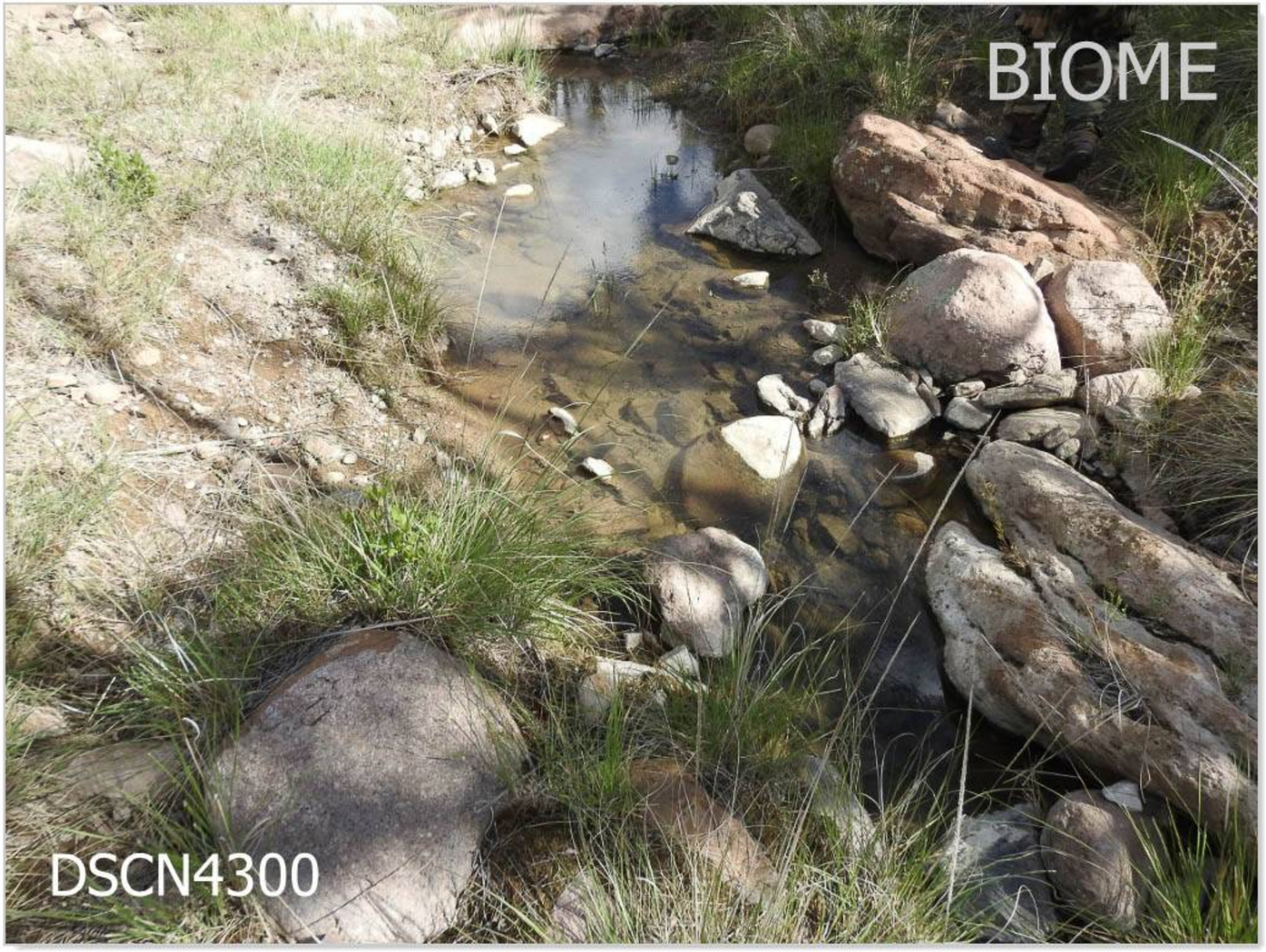
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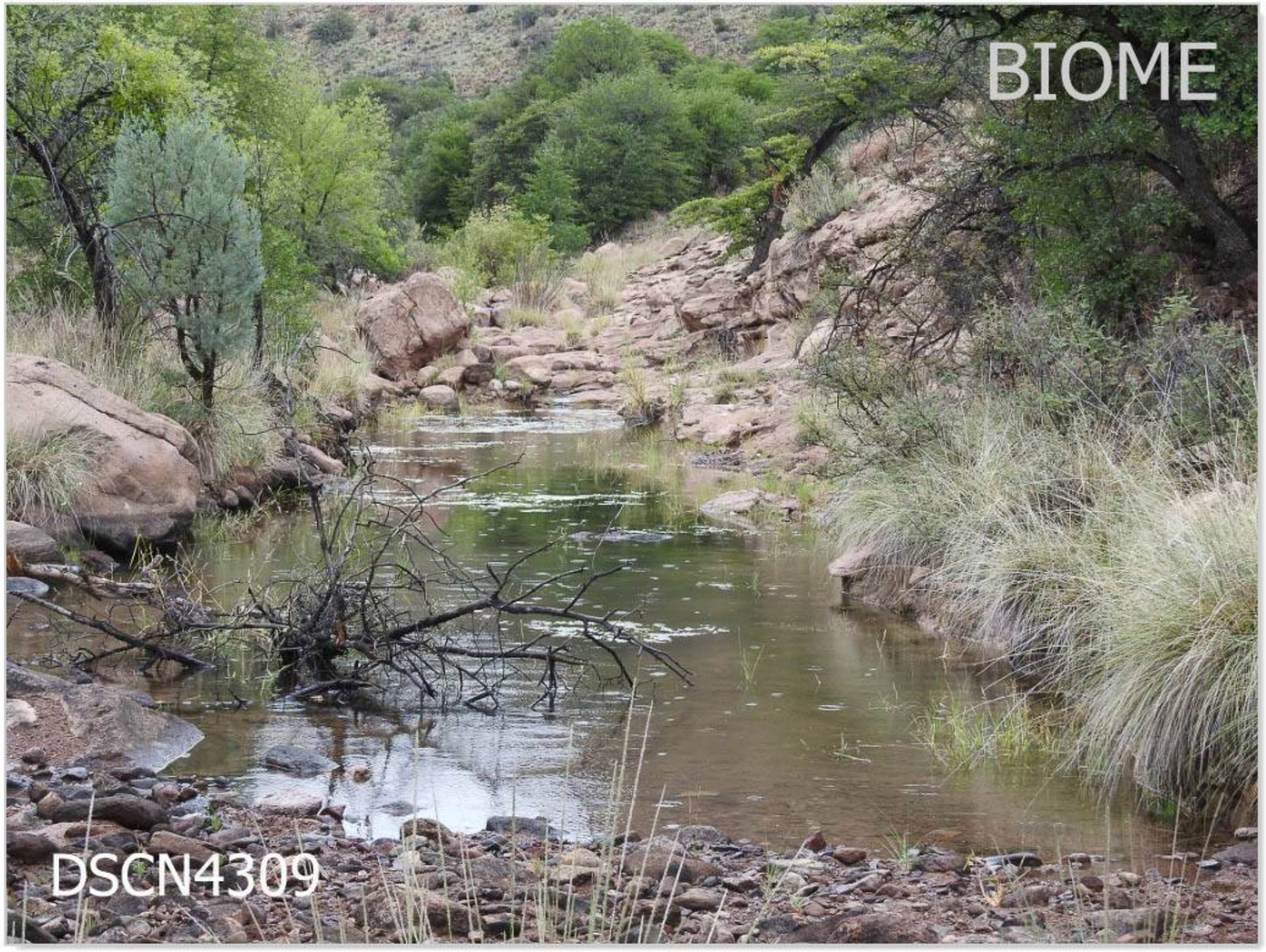
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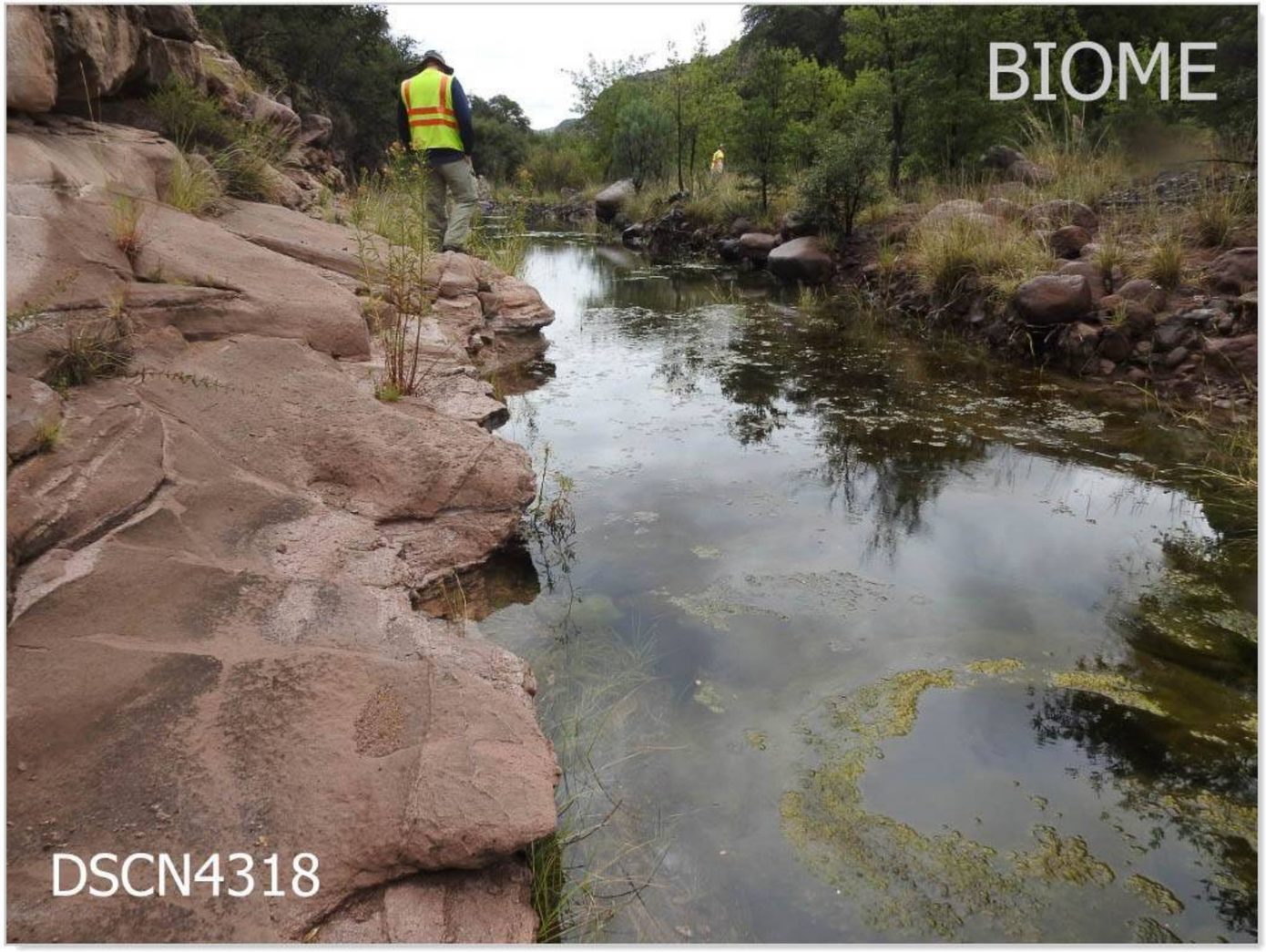
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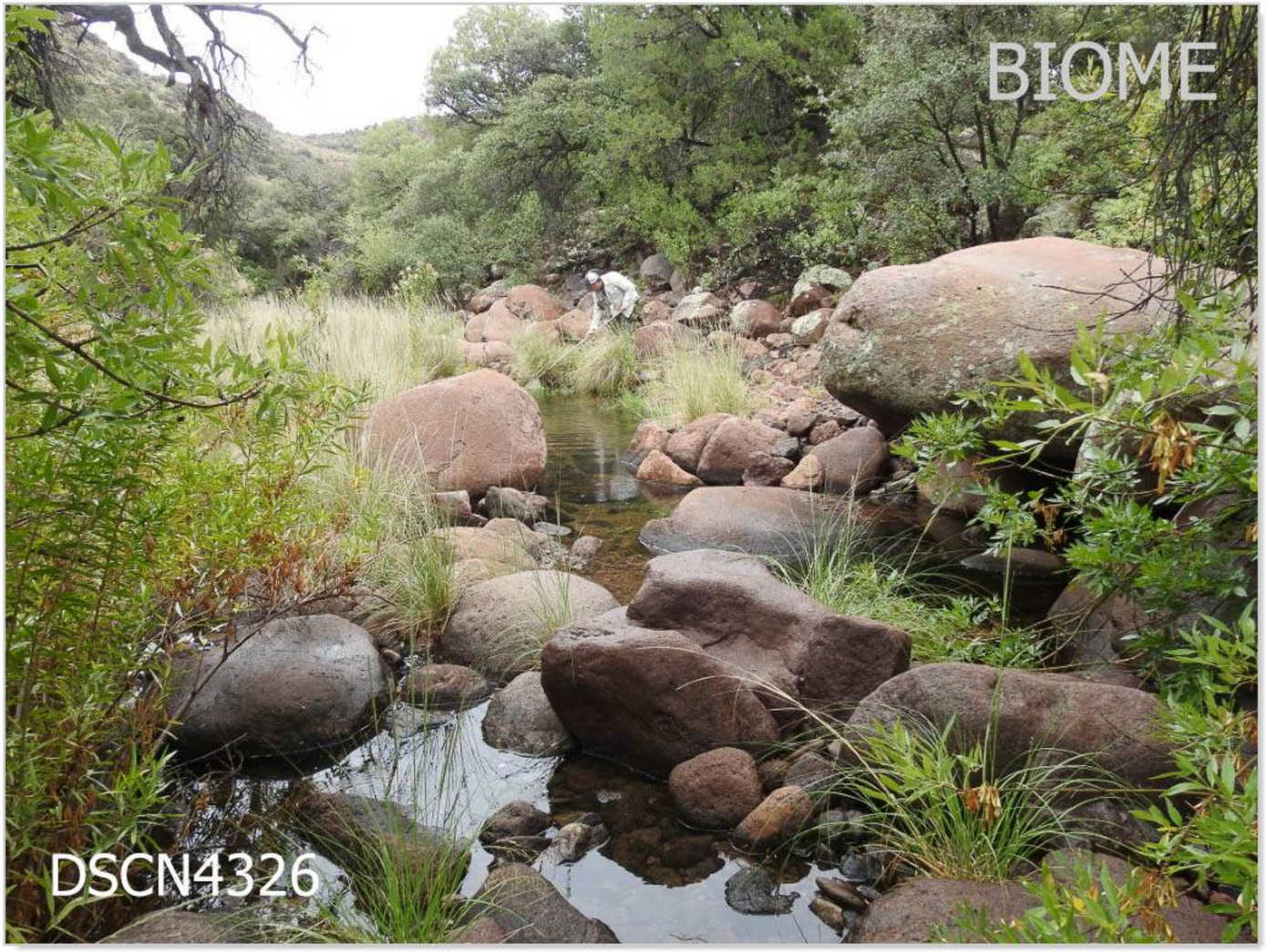
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APPENDIX B – SURVEY DATASHEETS

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Trib 2 Stock			SITE AT: Upper Trib 2 / Lamp bright		
NEW SITE: (Y) N NUM: —	*UTM ZONE: 11 (12) 13	Easting	Northing	ELEVATION	
QUAD:		778937	3632609	6265 m ft.	
MIN: 7.5 15 Year		COUNTY:			
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/25/19	1045	1500 min	BLM, LLM, JA, PP.			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	X					Specimens: Y/N		#s:
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC: 220 µS	pH:
H2O CLASS:	Lentic (Lotic)	H2O TYPE:	Canal/ Plant Outflow	Riverine	Wetland	(Stock Tank)	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Humi: 84%	T_{air} 68 °C (F)	T_{water} 18.6 °C °F	WATER CLARITY	Extremely Clear	Moderately Clear	(Moderate Turbid)	Heavily Turbid
LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m (3-5 m) 6-10 m 11-20m	21-50 m	51+m

RIPARIAN WIDTH	(0-2 m)	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	(Mud/Silt)	Sand	Gravel	Cobble (Boulder)
	11-20 m	21-50 m	>50 m					

WIND:	<1mph (3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph
CLOUD COVER:	(0-20%)	21-40%	41-60%	61-80%	81-100%	
Precipitation:	(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet	DRY SITE: Y (N)

VEGETATION	%	PROMINENT SPECIES
Floating	0	
Submerged	5	Polygonum
Emergent	0	
Perimeter	5	Cockle burr
Canopy	5	Juniper / Willow (SAGO)

PREDATORS* (include scat and tracks)

Leeches	Boatmen	Belostomatids
Bullfrogs	Backswimmer	Cold water fish
Crayfish	(Beetles)	Warm water fish
Mud Turtles	Garter Snakes	Tiger salamander
Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

2 small pools near old stock tank. Mosquito larva Soup.

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
None	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Tribz Stock Tank				SITE AT: Upper Ramsbright West			
NEW SITE: Y N	NUM:	*UTM ZONE:	Easting		Northing		ELEVATION
QUAD:		11 (12) 13	778938		3L32605		6263 m (ft)
MIN:	7.5 15	Year	COUNTY:	Grant			
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	09/27/2019		9:15	15 min	BLM, LGM			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	50					Specimens: Y/N		#s:
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC: 2500	pH:

H2O CLASS:	Lentic (Lotic)	H2O TYPE:	Canal/ Plant Outflow	Riverine	Wetland	(Stock Tank)	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. 49	T_{air} 71 °C (F)	T_{water} (60) °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid

LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m	(3-5 m)	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	(0-2 m)	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	(Mud/Silt)	Sand	Gravel	Cobble Boulder
	11-20 m	21-50 m	(>50 m)					

WIND:	<1mph (1-3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph
CLOUD COVER:	(0-20%)	21-40%	41-60%	61-80%	81-100%	
Precipitation:	None	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet	DRY SITE: Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			Leeches	Boatmen	Belostomatids
Submerged			Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	Beetles	Warm water fish
Perimeter			Mud Turtles	Garter Snakes	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

16°C

Adapted from USFWS (2007)

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Thb2 – Plunge			SITE AT: Thb2 / Lamphright				
NEW SITE: Y (N) NUM:		*UTM ZONE:	Easting		Northing		ELEVATION
QUAD:		11 (12) 13	278961		3632128		6207 m (ft.)
MIN:	(7.5) 15	Year		COUNTY:			6229 top
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	09/25/19		1100	90min	BLM, LGM, PP, JA			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters						Specimens: Y (N)	yes	#s: See phone
SEARCH METHODS:	(Dip Net)	Seine	Trap	(Hand Exploration)	Snorkel/Boat	Call Playback	EC: 1159.5	pH:
H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers
Rel. Hum. 42%	T_{air} 84 °C (°F)	T_{water} 19.4 (°C) °F	WATER CLARITY		(Extremely Clear)	Moderately Clear	(Moderate Turbid)	Heavily Turbid
LENTIC LENGTH:	100 (m)	LENTIC WIDTH: 2-3 (m)		LOTIC WIDTH:	0-2 m 3-5 m	6-10 m 11-20m	21-50 m	51+m
RIPARIAN WIDTH	0-2 m (11-20 m)	3-5 m 21-50 m	6-10 m >50 m	PRIMARY SUBSTRATE (mark 1-3)	(Mud/Silt)	Sand	(Gravel)	Cobble Boulder
WIND:	(<1mph) 1-3mph 4-7mph 8-12mph 13-18mph 19-24mph >24mph				CLOUD COVER:	(0-20%) 21-40% 41-60% 61-80% 81-100%		
Precipitation:	(None) Intermittant Steady & Light Steady & Heavy Snow/Sleet						DRY SITE:	Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating	2		Leeches	(Boatmen)	Belostomatids
Submerged	5		Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	(Garter Snakes)	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS: NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
BU.WOOD.	(uncertain) (certain)	Egg (Larvae) (Juv) Adult	~6	Legs present
HY. AREN.	uncertain (certain)	Egg (Larvae) (Juv) Adult	~40	Quadrapedal tads
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

Top temp 21.4°C

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Trib 2 - Plunge				SITE AT: Trib 2 / Lamphright			
NEW SITE: Y N NUM:		*UTM ZONE: 11 (12) 13	Easting 778961		Northing 3632129		ELEVATION 6804 m (ft.)
QUAD:							
MIN:	7.5 15	Year ____	COUNTY: Grant				
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/27/2019	10:00	15min	BLM, LGM			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters						Specimens: Y/N		#s:
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC: 880	pH:

H2O CLASS:	Lentic Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. 53	T_{air} 65 °C (F)	T_{water} 19°C 66 °F	WATER CLARITY	Extremely Clear	(Moderately Clear)	Moderate Turbid	Heavily Turbid

LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m	3-5 m	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	Cobble Boulder
	(11-20 m)	21-50 m	(>50m)					

WIND:	<1mph	(1-3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER:	0-20%	(21-40%)	41-60%	61-80%	81-100%

Precipitation:	(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet	DRY SITE: Y N

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			Leeches	(Boatmen)	Belostomatids
Submerged			Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	Garter Snakes	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

17 Hyla

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Westfork Lamp bright		SITE AT: Lamp bright Draw			
NEW SITE: Y N NUM:	*UTM ZONE: 11 (12) 13	Easting	Northing	ELEVATION	
QUAD:		779582	3625820	5867 m (ft.)	
MIN: 7.5 15	Year __	COUNTY:			
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/25/19	1430	60min	BLM, LGM, JA, PP.			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	600m				X	Specimens: Y (N)	No	#s: yes
SEARCH METHODS:	(Dip Net)	Seine	Trap	(Hand Exploration)	Snorkel/Boat	Call Playback	EC: 809uS.	pH:

H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum: 35%	T_{air} 24.1 °C (°F)	T_{water} 80.4 °C (°F)	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid

LENTIC LENGTH: 3-7 (m)	LENTIC WIDTH: 300 (m)	LOTIC WIDTH:	~~0-2 m~~ ~~3-5 m~~	6-10 m	11-20m	21-50 m	51+m
RIPARIAN WIDTH	0-2 m	~~3-5 m~~	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	(Sand)	Gravel	~~Cobble~~ (Boulder)
	11-20 m	(21-50 m)	>50 m					

WIND:	<1mph	(1-3mph)	(4-7mph)	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER: (0-20%) 21-40% 41-60% 61-80% 81-100%
Precipitation:	(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet			DRY SITE: Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating	5	Fil. algae	Leeches	(Boatmen)	Belostomatids
Submerged	15	watercress, Sparganium	Bullfrogs	(Backswimmer)	Cold water fish
Emergent	25	" " , unk (see pics)	Crayfish	(Beetles)	Warm water fish
Perimeter	65		Mud Turtles	Garter Snakes	Tiger salamander
Canopy	10	Juniper, ash, locust	Black Hawk	Mammals	Wading birds

OTHER ORGANISMS: Odonata larvae

NOTES:

SITE/SURVEY NOTES:
Perennial site at historic dam and below. Well developed riparian vegetation and in-channel phreophytes.

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
None	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: West Fork Lamp Draw				SITE AT:			
NEW SITE: Y N NUM:		*UTM ZONE:	Easting		Northing		ELEVATION
QUAD:		11 (12) 13	779582		3628820		5886 m (ft)
MIN: 7.5 15	Year	____	COUNTY:				
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	09/27/2019		10:30	15min	BLM, LGM			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	165m					Specimens: Y/N		#s:
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC: 7905	pH:

H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. 43	T_{air} 70 °C (°F)	T_{water} 19 °C °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid
LENTIC LENGTH: 125 (m)	LENTIC WIDTH: 4 (m)		LOTIC WIDTH:	0-2 m	3-5 m	6-10 m 11-20m	21-50 m 51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	(Gravel) Cobble Boulder
	11-20 m	(21-50 m)	>50 m				

WIND:	<1mph 1-3mph (4-7mph) 8-12mph 13-18mph 19-24mph >24mph	CLOUD COVER:	0-20% (21-40%) 41-60% 61-80% 81-100%		
Precipitation:	(None) Intermittant Steady & Light Steady & Heavy Snow/Sleet	DRY SITE:	Y N		

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			Leeches	(Boatmen)	Belostomatids
Submerged			Bullfrogs	(Backswimmers)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	Garter Snakes	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

Adapted from USFWS (2007)

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Westfork Windmill			SITE AT: West Fork Lamplight Draw		
NEW SITE: (Y) N NUM:	*UTM ZONE: 11 (12) 13	Easting	Northing	ELEVATION	
QUAD:		780013	3628717	5790	m ft.
MIN: (7.5) 15 Year	____	COUNTY: Grant			
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/25/19	1300	30 min	BLM, LGM, PP, JA			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	N/A					Specimens: Y/(N)		#s: yes
SEARCH METHODS:	(Dip Net)	Seine	Trap	(Hand Exploration)	Snorkel/Boat	Call Playback	EC:	pH:

H2O CLASS:	Lentic Lotic	H2O TYPE:	Canal/ Plant Outflow	Riverine	Wetland	(Stock Tank)	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. —	T_{air} — °C °F	T_{water} 19.8 (C) °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid

LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	(0-2 m)	3-5 m	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	Cobble Boulder
	11-20 m	N/A 21-50 m	>50 m			N/A		

WIND:	<1mph	(1-3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER: (0-20%) 21-40% 41-60% 61-80% 81-100%
Precipitation:	(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet			DRY SITE: Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			Leeches	(Boatmen)	Belostomatids
Submerged		None	Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	Garter Snakes	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS: NOTES:

SITE/SURVEY NOTES:
Cattle guzzler and metal storage tank.

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
None	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: West Fork Windmill			SITE AT: West Fork Lamplight				
NEW SITE: (Y) N	NUM: —	*UTM ZONE:	Easting		Northing		ELEVATION
QUAD:		11 (12) 13	780013		3628717		5789 m ft.
MIN: 7.5 15	Year ____		COUNTY: Grand				
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	09/25/19		1300	20min	BLM, LLM, PP, JA			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	N/A					Specimens: Y (N)	—	#s: Yes
SEARCH METHODS:	Dip Net	Seine	Trap	(Hand Exploration)	Snorkel/Boat	Call Playback	EC:	pH:
H2O CLASS:	Lentic (Lotic)	H2O TYPE:	Canal/ Plant Outflow	Riverine	Wetland	(Stock Tank)	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. —	T_{air} — °C °F	T_{water} 20.1 (°C) °F	WATER CLARITY	Extremely Clear	(Moderately Clear)	Moderate Turbid	Heavily Turbid
LENTIC LENGTH:	(m)	LENTIC WIDTH: (m)	LOTIC WIDTH:	(0-2 m)	3-5 m	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	Cobble Boulder
	11-20 m N/A	21-50 m	>50 m		N/A			

WIND:	<1mph	(1-3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER: 0-20% (21-40%) 41-60% 61-80% 81-100%
Precipitation:		(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet		DRY SITE: Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			Leeches	(Boatmen)	Belostomatids
Submerged		NONE	Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	Garter Snakes	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS: NOTES:

SITE/SURVEY NOTES:

Survey of 2 cattle guzzlers and associated catchment tank from windmill. Habitat minimal

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
None	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Rustler West			SITE AT: Rustler Canyon / LD Draw		
NEW SITE: Y N NUM:	*UTM ZONE: 11 (12) 13	Easting	Northing	ELEVATION	
QUAD:		778030	3627267	6200 m (ft.)	
MIN: (7.5) 15 Year ____		COUNTY: Grant			
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	9/24/19				BLM, LM, JA, JF, TF			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters						Specimens: Y/N	yes.	#s: yes
SEARCH METHODS:	(Dip Net)	Seine	Trap	(Hand Exploration)	Snorkel/Boat	Call Playback	EC: in lab	pH:
H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum.	T_{air} °C °F	T_{water} °C °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid
LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m	3-5 m	6-10 m 11-20m 21-50 m 51+m

RIPARIAN WIDTH				PRIMARY SUBSTRATE (mark 1-3)				
0-2 m	3-5 m	6-10 m		Mud/Silt	(Sand)	Gravel	Cobble
11-20 m	(21-50 m)	>50 m					Boulder

WIND:	<1mph	1-3mph	(4-7mph)	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER:	0-20%	21-40%	41-60%	61-80%	(81-100%)
Precipitation:	None	(Intermittent)	Steady & Light	Steady & Heavy	Snow/Sleet			DRY SITE:	Y	(N)			

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			(Leeches)	(Boatmen)	(Belostomatids)
Submerged		See notes on 9/27	Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	(Garter Snakes)	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
Hy arven.	uncertain (certain)	Egg (Larvae) Juv Adult	185	Tadpoles and aquatic
Bu Wood.	(uncertain) certain	Egg (Larvae) Juv Adult	26	juveniles.
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Fgg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

Adapted from USFWS (2007)

SEE further?

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Rustler ~~South~~ West			SITE AT: Rustler Canyon / Lamp bright				
NEW SITE: Y (N)	NUM: —	*UTM ZONE:	Easting	Northing	ELEVATION		
QUAD:		11 (12) 13	778027	3627262	6209 m (ft)		
MIN: (/) 15	Year ____		COUNTY: Grant				
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	09/26/2019		1330	90min	BLM, LGM, JA, JF			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters						Specimens: Y/N		#s: See map
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC: 150 µS	pH:
H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. 23%	T_{air} 87 °C (F)	T_{water} 75 °C °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid	
LENTIC LENGTH: 2-4 (m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m	3-5 m	6-10 m	11-20m	21-50 m	51+m
RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	(Sand)	Gravel	(Cobble Boulder)
	11-20 m	(21-50 m)	>50 m					

WIND:	<1mph	(3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph
CLOUD COVER:	(0-20%)	21-40%	41-60%	61-80%	81-100%		
Precipitation:	(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet	DRY SITE:	Y (N)

VEGETATION	%	PROMINENT SPECIES
Floating	5-60	Filamentous algae
Submerged	5	Link & Submerged (see pics)
Emergent	25	Typha, Scirpus, Juncus.
Perimeter	30-85	Mostly grasses
Canopy	10	Oak, Juniper, baccharis

PREDATORS* (include scat and tracks)		
(Leeches)	(Boatmen)	(Belostomatids)
Bullfrogs	(Backswimmer)	Cold water fish
Crayfish	(Beetles)	Warm water fish
Mud Turtles	(Garter Snakes)	Tiger salamander
Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES: 6

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
HYAPEN	uncertain (certain)	Egg (Larvae) Juv Adult	192	Tadpole and bi-quadpedal larval stages.
BULWOO	(uncertain) certain	Egg (Larvae) Juv Adult	21	
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Rustler Reach 9 Main			SITE AT: Rustler Canyon / Lamplight		
NEW SITE: Y (N)	NUM:	*UTM ZONE:	Easting	Northing	ELEVATION
QUAD: Hurley E		11 (12) 13	778843	3627193	5060 m (ft)
MIN: (7.5) 15	Year ____	COUNTY: Grant			
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	9/24/19		1000	145min.	DLM, LAH, JA, JF, TE			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	X					Specimens: Y/N	YES	#s: YES
SEARCH METHODS:	(Dip Net)	Seine	Trap	(Hand Exploration)	Snorkel/Boat	Call Playback	EC:	pH:

H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	Riverine	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. 99	T_{air} 64 °C (°F)	T_{water} °C °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid
LENTIC LENGTH: 800 (m)	LENTIC WIDTH: 5-10 (m)		LOTIC WIDTH:	0-2 m	3-5 m	(6-10 m)	11-20m	21-50 m	51+m

RIPARIAN WIDTH				PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	(Cobble) (Boulder)
	0-2 m	3-5 m	6-10 m					
	(11-20 m)	21-50 m	>50 m					

WIND:	(<1mph) 1-3mph 4-7mph 8-12mph 13-18mph 19-24mph >24mph	CLOUD COVER:	0-20% 21-40% 41-60% 61-80% (81-100%)
Precipitation:	None (Intermittant) Steady & Light Steady & Heavy Snow/Sleet	DRY SITE:	Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			(Leeches)	(Boatmen)	Belostomatids
Submerged	See	9/26/19	Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	Garter Snakes	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
H. arenicolor	uncertain (certain)	Egg Larvae Juv Adult	46	
B. woodhousii	uncertain (certain)	Egg Larvae Juv Adult	65	
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

Pool 4 DS Reach

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: FB Rustler Reach Main			SITE AT: Rustler Canyon/Lamphright Draw		
NEW SITE: Y N NUM:	*UTM ZONE: 11 (12) 13	Easting	Northing	ELEVATION	
QUAD:		[redacted]	[redacted]	6060 ft.	
MIN: 7.5 15 Year ____	COUNTY: Grant	778843	3627195		
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/26/2019	10:10	150 min	BLM, LAM, JA, JF			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	1600m					Specimens: Y/N		#s: See map
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC:	pH:

H2O CLASS:		H2O TYPE:						
	(Lentic) Lotic		Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum.	T_{air}	T_{water}	WATER CLARITY				
35%	80.2 °C (°F)	21.7 °C °F		(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid

LENTIC LENGTH:	LENTIC WIDTH:	LOTIC WIDTH:				
800 (m)	3-10 (m)	0-2 m	3-5 m	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH				PRIMARY SUBSTRATE (mark 1-3)				
0-2 m	(3-5 m)	6-10 m		Mud/Silt	(Sand)	Gravel	(Cobble Boulder)	
11-20 m	21-50 m	>50 m						

WIND:	<1mph (1-3mph) 4-7mph 8-12mph 13-18mph 19-24mph >24mph	CLOUD COVER:	(0-20%) 21-40% 41-60% 61-80% 81-100%
Precipitation:	(None) Intermittant Steady & Light Steady & Heavy Snow/Sleet	DRY SITE:	Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating	0-75	Filamentous algae et al.	Leeches	~~Boatmen~~	Belostomatids
Submerged	10-50	Mimers lettuce, Sedges	Bullfrogs	(Backswimmer)	Cold water fish
Emergent	30-40	Typha, Eleocharis, Scirpus, Juncus,	Crayfish	~~Beetles~~	Warm water fish
Perimeter	0-90	Same as above.	Mud Turtles	Garter Snakes	Tiger salamander
Canopy	0-25	Oak, ash.	Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
HY. AREN.	uncertain (certain)	Egg Larvae (Juv) Adult	1	
HY. AREN.	uncertain (certain)	Egg (Larvae) Juv Adult	10+	Some gadimpodal.
BU. WOOD	(uncertain) ~~certain~~	Egg Larvae Juv Adult	37+	
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Rustler 2		SITE AT: Rustler Canyon / Lamphright Draw			
NEW SITE: Y (N) NUM:	*UTM ZONE:	Easting	Northing	ELEVATION	
QUAD: Hartley E	11 (12) 13	779328	3627030	5865	m ft.
MIN: (7.5) 15 / Year	___	COUNTY:			
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/24/19	1045	~15min	BLM, LCM, TE, J			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	X				X	Specimens: Y/N		#s:
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC:	pH:
H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum: 84%	T_{air} 60.6 °C (°F)	T_{water} 22.9 °C °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid
LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m (3-5 m)	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	Cobble Boulder
	11-20 m	(21-50 m)	>50 m					

WIND:	<1mph (1-3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER:	0-20% 21-40% 41-60% 61-80% (81-100%)
Precipitation:	(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet		DRY SITE:	Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating	10	Filamentous algae	Leeches	(Boatmen)	Belostomatids
Submerged	5	Miners lettuce	Bullfrogs	(Backswimmer)	Cold water fish
Emergent	5	Potamogetan	Crayfish	(Beetles)	Warm water fish
Perimeter	70	Mostly Giant muhly	Mud Turtles	Garter Snakes	Tiger salamander
Canopy	10	Oak, alder, juniper	Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

Thin site that emerges from boulder field and traverses stand of giant muhly.

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
None	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Ruthley 2		SITE AT: Ruthley Canyon			
NEW SITE: Y (N)	NUM:	*UTM ZONE: 11 (12) 13	Easting: 779325	Northing: 3627030	ELEVATION: 5865 m (ft)
QUAD: Huachuca E					
MIN: (7.5) 15	Year:		COUNTY:		
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	9/26/19		45 min	BLM, LGM, TE, JA, JF			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	X					Specimens: Y/N	yes	#s: yes
SEARCH METHODS:	(Dip Net)	Seine	Trap	(Hand Exploration)	Snorkel/Boat	Call Playback	EC:	pH:

H2O CLASS:		H2O TYPE:						
	(Lentic) Lotic		Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum 50%	T_{air} 72° (°C) °F	T_{water} 20 (°C) °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid

LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m	(3-5 m)	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m
	11-20 m	21-50 m	>50 m

PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	Cobble Boulder

WIND:	<1mph (1-3mph) 4-7mph 8-12mph 13-18mph 19-24mph >24mph	CLOUD COVER:	(0-20%) 21-40% 41-60% 61-80% 81-100%
Precipitation:	(None) Intermittant Steady & Light Steady & Heavy Snow/Sleet	DRY SITE:	Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating		See desc. from 9/24/19	Leeches	(Boatmen)	Belostomatids
Submerged			Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	Garter Snakes	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

Very grassy area with grass in central portion of drainage.

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
None	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

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CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Portlet 1				SITE AT:			
NEW SITE: Y (N)	NUM:	*UTM ZONE: 11 (12) 13		Easting	Northing	ELEVATION	
QUAD:				729633	3626932	5787	ft.
MIN:	7.5 15	Year	____	COUNTY:			
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/24/2019	1000	1030	BLM, LGM, TE, J			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	170m		75 m	75 m	✓	Specimens: Y/N	N	#s:
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC:	pH:
H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. 90%	T_{air} 58.7 °C (°F)	T_{water} 17.3 °C °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid
LENTIC LENGTH:	(m)	LENTIC WIDTH:	(m)	LOTIC WIDTH:	0-2 m (3-5 m)	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	(Cobble) (Boulder)
	11-20 m	(21-50 m)	>50 m					

WIND:	(<1mph)	1-3mph	4-7mph	8-12mph	13-18mph	19-24mph	>24mph
CLOUD COVER:	0-20%	21-40%	41-60%	61-80%	(81-100%)		
Precipitation:	None	(Intermittant)	Steady & Light	Steady & Heavy	Snow/Sleet	DRY SITE:	Y (N)	

VEGETATION	%	PROMINENT SPECIES
Floating	90	Filamentous algae
Submerged	25	
Emergent	10	Potomageton / sedges.
Perimeter	15	Bunch grass (Sporobolus)
Canopy	10	Oak, alder

PREDATORS* (include scat and tracks)

Leeches	(Bullfrogs)	Belostomatids
Bullfrogs	(Backswimmer)	Cold water fish
Crayfish	(Beetles)	Warm water fish
Mud Turtles	Garter Snakes	Tiger salamander
Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:
1100m long site. Water emerges from bedrock / boulder pile and continues onto bedrock / caliche base. Water clear to bottom.

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
None	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Rustler 1			SITE AT: Rustler Canyon / Lamplight Draw		
NEW SITE: (Y) N NUM: 1	*UTM ZONE:	Easting	Northing	ELEVATION	
QUAD:	11 (12) 13	779325	3627030	5980 m (ft)	
MIN: 7.5 15 Year	____	COUNTY: Graham	779633	3626932	5787
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers			
DATE:	09/26/2019	1500	45min	BLM, LOM, JA, JF			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters						Specimens: (Y)/N	NO	#s: YES
SEARCH METHODS:	(Dip Net)	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC: 180 µS	pH:

H2O CLASS:	H2O TYPE:						
(Lentic) Lotic	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers

Rel. Hum. 30%	T_{air} 80 °C °F	T_{water} 20.4 °C °F	WATER CLARITY	(Extremely Clear)	Moderately Clear	Moderate Turbid	Heavily Turbid

LENTIC LENGTH: (m)	LENTIC WIDTH: 3-7 (m)	LOTIC WIDTH: 0-2 m	3-5 m	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	3-5 m	6-10 m	11-20 m	(21-50 m)	>50 m

PRIMARY SUBSTRATE (mark 1-3)	(Mud/Silt)	Sand	Gravel	(Cobble Boulder)

WIND:	<1mph	(1-3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph

CLOUD COVER:	(0-20%)	21-40%	41-60%	61-80%	81-100%

Precipitation:	(None)	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet

DRY SITE: Y (N)

VEGETATION	%	PROMINENT SPECIES
Floating		
Submerged		
Emergent		
Perimeter		
Canopy		

PREDATORS* (include scat and tracks)

Leeches	Boatmen	Belostomatids
Bullfrogs	(Backswimmer)	Cold water fish
Crayfish	(Beetles)	Warm water fish
Mud Turtles	Garter Snakes	Tiger salamander
Black Hawk	Mammals	Wading birds

see prev. sheet

OTHER ORGANISMS: NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
NONE	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

Adapted from USFWS (2007)

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Rustler Box Hoar				SITE AT: Rustler Canyon / Lamp bright			
NEW SITE: Y N	NUM:	*UTM ZONE:	Easting		Northing		ELEVATION
QUAD: Hurley E		11 (12) 13	780386		3626811		5800 m (ft)
MIN: (0.5) 15	Year		COUNTY: Grant				
DIRECTIONS:							

Site and Visit Conditions

	MM/DD/YEAR		Start Time	Search Time	Observers			
DATE:	09/24/19		0900	25 min	DLM, LGM, JA, JF, TE			
EFFORT:	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers:	Spec Photos	Habitat Photos
meters	20m					Specimens: Y (N)	Yes	#s: Yes
SEARCH METHODS:	~~Dip Net~~	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC:	pH:
H2O CLASS:	(Lentic) Lotic	H2O TYPE:	Canal/ Plant Outflow	(Riverine)	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers
Rel. Hum. 85%	T_{air} 58° °C (F)		T_{water} 18.1 °C (F)	WATER CLARITY	(Extremely Clear)	Moderately ~~Clear~~	Moderate Turbid	Heavily Turbid
LENTIC LENGTH: 2-3 (m)	LENTIC WIDTH: 2-3 (m)			LOTIC WIDTH:	0-2 m	3-5 m	6-10 m 11-20m	21-50 m 51+m
RIPARIAN WIDTH	0-2 m	(3-5 m)	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	Cobble (Boulder)
	11-20 m	21-50 m	>50 m					
WIND:	<1mph (1-3mph)	4-7mph	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER:	0-20% 21-40% 41-60% 61-80% (81-100%)
Precipitation:	None	(Intermittant)	Steady & Light	Steady & Heavy	Snow/Sleet		DRY SITE:	Y (N)

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating			Leeches	(Boatmen)	Belostomatids
Submerged		See data for 9/26/19	Bullfrogs	(Backswimmer)	Cold water fish
Emergent			Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	(Garter Snakes)	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS:

NOTES:

SITE/SURVEY NOTES:

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#/	NOTES
Hyla arem.	uncertain (certain)	Egg Larvae (Juv) Adult	18	
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

Adapted from USFWS (2007)

BIOME, Ecological Wildlife Research

CHIRICAHUA LEOPARD FROG SURVEY FORM

Locality Data

*SITE: Rustler Bottom			SITE AT: Rustler Canyon / Lamp bright.		
NEW SITE: (Y) N NUM: —	*UTM ZONE: 11 (12) 13	Easting	Northing	ELEVATION	
QUAD:		780336	3626811	5800 m (ft)	
MIN: 7.5 15 Year ____		COUNTY: Graham			
DIRECTIONS:					

Site and Visit Conditions

	MM/DD/YEAR	Start Time	Search Time	Observers
DATE:	09/26/19	0800	10 min	BLA, LGA, JA, JF, PP.

EFFORT: meters	Total Perim	Part Perim	Lft Bank	Rt Bank	Both Banks	Vouchers: Specimens: (Y)/N	Spec Photos	Habitat Photos
	20 m						—	#s: See map

SEARCH METHODS:	Dip Net	Seine	Trap	Hand Exploration	Snorkel/Boat	Call Playback	EC: 170 µS	pH:
	(Dip Net)			(Hand Exploration)				

H2O CLASS:	Lentic / Lotic	H2O TYPE:	Canal/ Plant Outflow	Riverine	Wetland	Stock Tank	Lake/ Reservoir	Small metal/concrete tanks drinkers
	(Lentic) Lotic			(Riverine)				

Rel. Hum: 67%	T_{air} 65.8 °C (F)	T_{water} 11.3 °C °F	WATER CLARITY	Extremely Clear	Moderately Clear	(Moderate Turbid)	Heavily Turbid

LENTIC LENGTH: (m)	LENTIC WIDTH: (m)	LOTIC WIDTH:	0-2 m	3-5 m	6-10 m	11-20m	21-50 m	51+m

RIPARIAN WIDTH	0-2 m	(3-5 m)	6-10 m	PRIMARY SUBSTRATE (mark 1-3)	Mud/Silt	Sand	Gravel	Cobble (Boulder)
	11-20 m	21-50 m	>50 m					

WIND:	<1mph	1-3mph	4-7mph	8-12mph	13-18mph	19-24mph	>24mph	CLOUD COVER:	0-20%	21-40%	41-60%	61-80%	81-100%

Precipitation:	None	Intermittant	Steady & Light	Steady & Heavy	Snow/Sleet	DRY SITE: Y N

VEGETATION	%	PROMINENT SPECIES	PREDATORS* (include scat and tracks)		
Floating	0		Leeches	(Boatmen)	Belostomatids
Submerged	0		Bullfrogs	(Backswimmer)	Cold water fish
Emergent	5	Grass	Crayfish	(Beetles)	Warm water fish
Perimeter			Mud Turtles	(Garter Snakes)	Tiger salamander
Canopy			Black Hawk	Mammals	Wading birds

OTHER ORGANISMS: NOTES:

SITE/SURVEY NOTES:
High tannins from oak leaf input. Basin is a bathtub of limestone.

HERPETOFAUNAL OBSERVATIONS

SPECIES	CERTAINTY	LIFE STAGE	#	NOTES
HY. ARE N.	uncertain (certain)	Egg (Larvae) Juv Adult	16	Tadpole → Froglet.
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		
	uncertain certain	Egg Larvae Juv Adult		

ADDITIONAL NOTES: (Include descriptions of species codes)

APPENDIX C – May 2019 Field Reconnaissance

FREEPORT-McMoRan

Interoffice Memorandum

To: Pam Pinson

Subject: Lambright IU CLF Field Reconnaissance

From: Terry Enk **Date:** 5/28/19

Pam,
The following summarizes results of the field investigations conducted on 5/22/19 along Tributaries 1, 2, and 2a as well as a section of Lambright Draw immediately downstream of the confluence with Tributary 1.

1. A number of small pools and seeps were found along Tributaries 1, 2, and 2a (Table 1; Figure 1). There were no pools or seeps along the 0.5-mile section of Lambright Draw below Tributary 1.

2. All water features were relatively small and located in bedrock-controlled sections of the waterways. Pools tended to be shallow and supported little to no vegetation (Figure 2). Given the timing of the surveys with recent precipitation events, many of the features contained remnant pools although there were a few ephemeral features as indicated in Table 1. Chino's May 2013 field reconnaissance of the same sites did not find these pools or active seeps indicating this year's pools are likely ephemeral.

3. No evidence of frogs (adults, tadpoles, or eggs) were observed at any of the water features. Based upon the size and general physical characteristics of these features, it is not likely that any of them represent suitable habitat for CLF. It should be noted that no historic frog populations occurred in the stream segments assessed during this investigation.

4. It is unlikely that post-monsoon investigations would find evidence of frogs in the stream segments assessed.

Table 1. Summary of Water Features

Waterway	Waypoint #	Photo # (Figure 2)	Description
Trib 2	001	1	6’ diameter pool from bedrock seep; 4” deep; no vegetation
Trib 2	002	2	3x5’ pool in bedrock; 6” deep; algae but no other vegetation
Trib 2	003	3	Shallow ephemeral pools
Trib 2	004	4	Series of small pools; up to 8” deep; some vegetation
Trib 2	005	5	2’ diameter pool; very shallow and likely ephemeral
Trib 2a	007	6	Spring feeding very shallow pools in Trib. 2a
Trib 1	008	7	Pools w/ dense grasses behind emergency dam in Trib. 1
Trib 1	009	8	Upstream end of spring-fed dense grassy area w/ small pools
Trib 1	010	9	Small pools at downstream end of spring-fed dense grassy area
Trib 1	011	10	Upstream end of series of pools on bedrock; shallow w/ no veg
Trib 1	012	11	Middle of series of pools on bedrock; shallow w/ no veg
Trib 1	013	12	Large pool at downstream end of series of pools on bedrock

Figure 1. Location of water features (waypoint 014 denotes downstream extent of investigation and is not a water feature)

Figure 2. Photographs referenced in Table 1

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

APPENDIX D – May 2013 Field Reconnaissance

MAY 30, 2013 FIELD RECONNAICANCE FOR SEEPS, SPRINGS, AND POOLS

Objective: Photo documentation for sites with presence of pools and seeps, or evidence of past presence prior to the start of the 2.

Tributary 1 LBIU - Latitude:32.77322 Longitude:-108.02330

LBIU Tributary 1- Latitude:32.76312 Longitude:-108.01640

Tributary 2A seep - Latitude:32.78920 Longitude:-108.02309

Tributary 2A seep zoomout

Tributary 2A perennial reach - Latitude:32.78920 Longitude:-108.02309

Tributary 2A perennial reach - Latitude:32.78920 Longitude:-108.02309

Tributary 2A perennial reach - Latitude:32.78920 Longitude:-108.02309

Tributary 2A perennial seep - - Latitude:32.78920 Longitude:-108.02309

Tributary 2A perennial seep

Tributary 2 photos 5/30/13 from 10:36 am to 11:00, field walk moves downstream

Tributary 2 confluence with Tributary 2A Latitude 32.785127 Longitude -108.019427