2016 YELLOW-BILLED CUCKOO SURVEY WHITLOW RANCH DAM, DEVILS CANYON, AND MINERAL CREEK, PINAL COUNTY, ARIZONA

Resolution Copper

Prepared for:

RESOLUTION COPPER

102 Magma Heights – Superior, Arizona 85173

Project Number: 807.115-09-04

October 28, 2016

WestLand Resources

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APPENDICES

1. INTRODUCTION AND BACKGROUND

At the request of Resolution Copper (Resolution), WestLand Resources, Inc. (WestLand) conducted survey in 2016 for the yellow-billed cuckoo (YBCU; *Coccyzus americanus*) at four sites in the vicinity of the Resolution Copper Project (the Project), a proposed underground mine and ore processing operation with associated facilities and infrastructure near Superior, Arizona. Survey was conducted at the Whitlow Ranch Dam, two portions of Devils Canyon, and one segment of Mineral Creek, all in Pinal County, Arizona (Survey Transects; **Figure 1**). The objective of the 2016 YBCU survey was to determine the presence and abundance of YBCU, based on habitat conditions considered most likely to support YBCU, in the vicinity of the Resolution Project.

The YBCU was petitioned to be listed as endangered under the Endangered Species Act (ESA) in 1998 (CBD 1998). In 2001, the U.S. Fish and Wildlife Service (USFWS) issued a finding that the petitioned action was warranted, but was precluded by higher listing priorities, and added the YBCU to its list of candidate species (USFWS 2001). On October 3, 2014, the USFWS published a final rule to list the western distinct population segment (DPS) of the YBCU as threatened under the ESA (USFWS 2014b). On August 15, 2014, the USFWS proposed the designation of critical habitat, totaling approximately 546,335 acres (ac; 221,094 hectares [ha]) across Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah, and Wyoming (USFWS 2014a). No critical habitat has been proposed within Resolution's facilities. The closest proposed critical habitat unit to Resolution's facilities is Unit 40 (Pinto Creek South), approximately 6.7 miles (10.8 kilometers [km]) northeast of the proposed East Plant Site. The YBCU is also considered a Sensitive species by Region 3 of the U.S. Forest Service (USFS 2013).

In the following sections, we provide a brief natural history of the YBCU (**Section 2**), a description of how the Survey Transects were selected and a description of each (**Section 3**), a description of the survey methods (**Section 4**), and results (**Section 5**). References cited within the text are provided in **Section 6**.

2. NATURAL HISTORY OF YELLOW-BILLED CUCKOO

The YBCU is a medium-sized neotropical migrant that winters in South America and migrates to portions of the United States (U.S.), Canada, Mexico, and the Caribbean Islands to breed. USFWS currently recognizes YBCUs in the western U.S., Canada, and Mexico as a DPS, inclusive of all breeding YBCUs west of the Rocky Mountains (USFWS 2014b).[1] In the U.S., the western DPS of YBCU covers portions of Washington, Oregon, Idaho, Montana, Wyoming, Colorado, New Mexico, Texas, Arizona, Utah, Nevada, and California. These areas also represent the known breeding range of the species, with the exception of Montana, Oregon, and Washington (USFWS 2014b). Within

[1] For the purposes of this document, references to the YBCU are limited to the western DPS.

Arizona, YBCU can be found in the largest numbers in the southern and central portions of the state, but have been documented in all counties (AGFD 2011).

The description of suitable habitat for the western DPS of YBCU provided by USFWS focuses primarily on riparian woodlands dominated by cottonwoods (*Populus* spp.) and willows (*Salix* spp.) (USFWS 2014a, 2014b). The proposed critical habitat rule identifies habitat patches greater than 325 feet (ft; 100 meters [m]) in width and 200 ac (81 ha) in extent with an above average canopy closure, adequate prey base, and a cooler, more humid environment than the surrounding riparian and upland habitats, as optimal YBCU breeding habitat. The proposed rule adds that the species does not use narrow, steep-walled canyons (USFWS 2014a).

Halterman et al. (2016) state that YBCU have not been found nesting in isolated riparian patches of less than 1 to 2 ac (0.4 to 0.8 ha) or in linear patches less than 33 to 66 ft (10 to 20 m) in width, and that they rarely use riparian patches of less than 49 ac (20 ha) in size. A typical minimum size for cuckoo occupancy is 12 ac (5 ha) (Halterman et al. 2016). There is evidence, however, that the species also uses habitats strikingly different than those described by USFWS (2014b) and Halterman et al. (2016). In southeastern Arizona, YBCUs have often been documented in areas of upland-associated vegetation and in drainages dominated by oaks (*Quercus* spp.) and junipers (*Juniperus* spp.) (WestLand 2013b; 2014; 2015a) that do not contain the large blocks of cottonwoods and willows described by USFWS (2014b; 2014a) as the habitat necessary to support YBCU.

3. SURVEY TRANSECT DETERMINATION AND DESCRIPTION

In 2015, WestLand used YBCU habitat characteristics described by USFWS (2014a) and Halterman et al. (2015), aerial photography, and observations made during previous field studies in the Project vicinity to select areas within which to survey. In assessing areas of riparian vegetation for YBCU survey, WestLand recommended surveys be conducted in all areas of riparian habitat with a high level of canopy closure covering 12 ac (5 ha) or greater, and in which prominent trees in the riparian community included at least some of the following species: Goodding's willow (*Salix gooddingii*), Fremont's cottonwood (*Populus fremontii*), Arizona alder (*Alnus oblongifolia*), velvet ash (*Fraxinus velutina*), Arizona sycamore (*Platanus wrightii*), netleaf hackberry (*Celtis reticulata*), Arizona walnut (*Juglans major*), and saltcedar (*Tamarix* spp.). Areas of dense mesquite (*Prosopis* spp.) with none, or only scattered individuals of the above tree species were not recommended for survey (WestLand 2015b).

When selecting transects for survey in 2015, WestLand used a conservative approach, recommending some areas that did not fully meet the above criteria. This primarily included drainage channels in which the canopy cover was very narrow and/or the drainage was within a narrow, steep-walled canyon. As such, the areas WestLand recommended for survey included: Mineral Creek and two segments of Devils Canyon (Middle and Lower), all areas in which WestLand had previously surveyed for YBCU (WestLand 2011; 2013a), as well as Queen Creek in the vicinity of Boyce-Thompson

Arboretum, and at Whitlow Ranch Dam; both of which had not been previously surveyed for YBCU (WestLand 2015b).

In 2015 and 2016, WestLand conducted survey in all of the previously mentioned areas, with the exception of Queen Creek near Boyce-Thompson Arboretum, which was instead surveyed by Audubon Arizona. Audubon Arizona was also contracted by Resolution to survey a portion of Queen Creek between the Highway 60 tunnel and the Town of Superior, an area WestLand did not include in our survey recommendation, and along a portion of Arnett Creek, which was outside the area WestLand assessed for survey. Audubon Arizona did not detect any cuckoos during the 2016 survey season (**Appendix A**).

3.1. WHITLOW RANCH DAM TRANSECTS

The Whitlow Ranch Dam transects are located along Queen Creek upstream of the Whitlow Ranch Dam, approximately 10 miles west of Superior (**Figure 1**). Six parallel survey transects were established to cover the approximately 45 acres of land,[2] the eastern portion managed by the USFS and the western portion managed by the Bureau of Land Management (**Figure 2**). Collectively, the transects are approximately 2,000 ft long, with elevations ranging from approximately 2,100 to 2,200 ft (640 to 671 m) above mean sea level (amsl).

Vegetation located within the vicinity of the Whitlow Ranch Dam transects is typical of the Sonoran Riparian Scrubland community as described by Minckley and Brown (1994b). Though exotic saltcedar is the dominant overstory species, large Goodding's willow and Fremont's cottonwood are also present, particularly along the Queen Creek channel. Many of these trees, however, are dead. The often dense understory includes species such as baccharis (*Baccharis* spp.), lupine (*Lupinus* spp.), and unidentified grasses. Though some trees that were charred in the June 2012 Comet Fire (the majority of which are saltcedar) are still prevalent throughout the area, many of them appear to be regenerating. In general, the area in which the transects are located supports both living and dead tree species.

3.2. MIDDLE AND LOWER DEVILS CANYON TRANSECTS

Devils Canyon is a steep-walled, north-south trending canyon located approximately 4 miles east of Superior (**Figure 1**). Survey transects were located on State Trust Lands managed by the Arizona State Land Department (ASLD). Upland vegetation in the vicinity of the two transects is an ecotone of the Arizona Upland subdivision of Sonoran Desertscrub (Turner & Brown 1982) and Interior Chaparral biotic communities (Pase & Brown 1994). Dominant upland species include scrub live-oak (*Quercus turbinella*), jojoba (*Simmondsia chinensis*), point-leaf manzanita (*Arctostaphylos pungens*), wait-a-minute bush

[2] The Whitlow Ranch Dam transects were located in an area that exceeded 200 m in width (**Figure 2**), thus requiring six parallel transects to ensure complete coverage (**Section 5**).

(*Mimosa biuncifera*), saguaro (*Carnegiea gigantea*), cholla (*Cylindropuntia* spp.), agave (*Agave* spp.), and velvet mesquite (*Prosopis velutina*).

The Middle Devils Canyon transect is approximately 1.1 miles (1.8 km) in length (**Figure 3**). Surface water is perennial and present throughout the majority of the transect. Elevations in this portion of the canyon range from roughly 3,600 ft (1,097 m) amsl at the northern end of the transect to approximately 3,500 ft (1,067 m) amsl at the southern end. The width of the canyon along this transect ranges from approximately 1,700 ft (518 m) at the northern end to approximately 2,500 ft (762 m) at the southern end. Canyon depth varies from approximately 480 ft to 680 ft (146- 207 m). Riparian vegetation typical of the Interior Riparian Deciduous Forest biotic community (Minckley and Brown 1994a) lines the canyon bottom, ranging from approximately 70 to 280 ft (21 to 85 m) in width, with small extensions up several side canyons. The canopy closure is fairly consistent within this stretch, with few small areas of open canopy. Dominant species include Arizona alder (*Alnus oblongifolia*), velvet ash (*Fraxinus velutina*), Arizona sycamore (*Platanus wrightii*), and buttonbush (*Cephalanthus occidentalis*). Goodding's willow, Fremont's cottonwood, netleaf hackberry (*Celtis reticulata*), baccharis, and poison ivy (*Toxicodendron* spp.) are also present.

The Lower Devils Canyon transect is approximately 2.1 miles (3.4 km) in length (**Figure 4**) and includes several large, perennial pools. Elevations in this portion of the canyon range from approximately 3,200 ft (975 m) amsl at the northern end of the transect to approximately 2,500 ft (762 m) amsl at the southern end. The width of the canyon varies greatly along this transect, ranging from roughly 2,200 ft (671 m) at the northern end, to approximately 7,100 ft (2,164 m) at the southern end. Canyon depth ranges from approximately 480 ft to 1,460 ft (146 m- 445 m). Vegetation typical of the Interior Riparian Deciduous Forest biotic community (Minckley and Brown 1994a) is also present in this portion of the canyon, though it is much less dense than that of which is present along the Middle Devils Canyon transect. The band of riparian vegetation in this segment ranges from approximately 40 to 300 ft (12 to 91 m) in width. The canopy closure is also much more fragmented than the Middle Devils Canyon transect. Dominant riparian species include Arizona sycamore, Fremont's cottonwood, velvet ash, buttonbush, and baccharis. Goodding's willow, Arizona alder, and Arizona walnut (*Juglans major*) are also present.

3.3. MINERAL CREEK TRANSECT

Mineral Creek is a largely perennial creek that flows south from the Pinal Mountains and joins Devils Canyon at the Big Box Dam site in Pinal County, Arizona (**Figure 1**). The Mineral Creek transect is approximately 2.8 miles (4.5 km) in length, and is located on State Trust Lands managed by the ASLD (**Figure 5**). Elevations range from roughly 2,800 ft (853 m) amsl at the northern end of the transect to approximately 2,400 ft (732 m) amsl at the southern end. Relatively dense riparian vegetation typical of the Interior Riparian Deciduous Forest biotic community (Minckley & Brown 1994a) is present throughout most of the transect, with widths up to 240 ft (73 m), except in areas where the creek is

constricted by steep canyon walls to as little as approximately 30 ft (9 m). Dominant species within the Mineral Creek transect include velvet ash, Goodding's willow, Fremont's cottonwood, and Arizona sycamore. Velvet mesquite, Arizona walnut, baccharis, and Arizona alder are also present. Upland vegetation surrounding the transect is characteristic of the Arizona Upland Subdivision of Sonoran Desertscrub vegetation biotic community (Turner & Brown 1994). Species observed include: saguaro, prickly pear, cholla, agave, catclaw acacia (*Senegalia greggii*), and ocotillo (*Fouquieria splendens*).

Habitat summary forms and representative photographs of vegetation along each transect are provided in **Appendix B** and **Appendix C**, respectively.

4. METHODS

4.1. SURVEY VISITS AND TIMING

Following the general outline for timing of YBCU surveys provided by Halterman et al. (2016), WestLand planned to visit the Survey Transects a total of four times each, to survey for YBCU during the 2016 survey season. As described by Halterman et. al. (2016), survey visits are to be conducted throughout three survey periods between mid-June and mid-August; the first and third survey period requiring one visit each, and the second survey period requiring two visits (**Table 1**), with a minimum of 12 days and a maximum of 15 days between each visit.

With the exception of the Middle and Lower Devils Canyon transects, all of the Survey Transects were surveyed a total of four times throughout the 2016 YBCU survey. Unfortunately, due to hazardous conditions caused by a combination of unforeseen weather conditions,[3] rugged terrain, and limited accessibility of the Devils Canyon survey transects, only 2 of the 4 required surveys could be conducted there during the 2016 survey season (**Table 1**).

Table 1. 2016 Yellow-Billed Cuckoo Survey Dates Along the Whitlow Ranch Dam, Middle Devils Canyon, Lower Devils Canyon, and Mineral Creek Survey Transects, Pinal County, Arizona

Survey Periods*	Survey Visit	Survey Dates(s) by Location			
		Whitlow Ranch Dam	Middle Devils Canyon	Lower Devils Canyon	Mineral Creek
Period 1 – June 15 to June 30 (One survey required)	Visit 1	June 22	--	--	June 23-24
Period 2 – July 1 to July 31 (Two surveys required)	Visit 2	July 8	July 8	July 6-7	July 6-7
	Visit 3	July 21	July 21	July 19-20	July 19-20
Period 3 – August 1 to August 15 (One survey required)	Visit 4	August 5	--	--	August 6-7

* Halterman et al. 2016

[3] Extreme temperatures during the first planned survey visit; heavy rain and flash flood warnings during the fourth planned survey visit.

4.2. SURVEY METHODS

WestLand biologists conducted surveys for YBCU following the methods described in the 2016 YBCU survey protocol (Halterman et al. 2016) under WestLand's USFWS Permit No. TE-834782-4 and Arizona Game Fish Department (AGFD) Scientific Collecting License No. SP740564. A biologist from AtoZ Environmental Consulting accompanied by a WestLand biologist conducted survey under USFWS Permit No. TE-23162B-2.

Survey points were spaced approximately 328 ft (100 m) apart along each of the transects. Halterman et al. (2016) suggest conducting survey along parallel transects (also referred to as a survey grid or a block survey) through areas exceeding 656 ft (200 m) in width. Riparian vegetation throughout the Middle Devils Canyon, Lower Devils Canyon, and Mineral Creek transects was less than 656 ft (200 m), allowing for coverage with a single survey transect (**Figures 3** through **5**). The Whitlow Ranch Dam transects were located in an area that exceeded 200 m in width (**Figure 2**), thus requiring six parallel transects to ensure complete coverage.

Survey efforts generally began at sunrise and continued until the survey was completed, or until 11:00 AM, whichever occurred first. Surveys were not conducted in inclement weather conditions including temperatures of 104 ºF (40 ºC) or greater. At each survey point, surveyors broadcast a series of recorded YBCU contact calls. Following a 1-minute listening period, five YBCU contact calls were broadcast at 1 minute intervals, while surveyors listened and watched for YBCU. Surveyors also actively listened for YBCU while walking between calling points. If YBCU was detected spontaneously or in response to the playback, the next broadcast-point was moved approximately 984 ft (300 m) from the estimated location of the detected bird to reduce the risk of drawing it away from a potential nesting area. Therefore, the total number of calling points differed among survey periods.

4.3. INTERPRETING SURVEY RESULTS

Halterman et al. (2016) describe methods for interpreting survey detection data to estimate the number of different YBCU detected during each day of survey, the breeding status of YBCUs detected, and the number of possible, probable, and confirmed breeding territories in an area; however, they do not quantify the dimensions for an area containing repeat detections.

WestLand considered cuckoos that were located greater than 300 m apart during the same survey visit, to be different individuals. To determine if detections in successive surveys were in sufficient proximity to be indicative of a breeding territory, WestLand used a buffer of 984 ft (300 m). Definitions of the breeding territories (Halterman et al. 2016) followed by WestLand's interpretation are provided below.

Possible breeding territory: "Two or more total detections in an area during two survey periods and at least 10 days apart. For example, within a certain area, one detection made during Survey Period 2 coupled with another cuckoo detection made 10 days later, also during Survey Period 2, warrants a possible breeding territory designation." WestLand's interpretation is that possible breeding territories are areas where two or more total detections occurred during two survey visits (rather than survey periods), that were at least 10 days apart.

Probable breeding territory: "Three or more total detections in an area during at least three survey periods and at least 10 days between each detection. Possible breeding territory plus YBCUs observed carrying food (single observation), carrying a stick (single observation), traveling as a pair, or exchanging vocalizations." WestLand's interpretation is that probable breeding territories are areas where three or more total detections have occurred during at least three survey visits (rather than survey periods), with at least 10 days between each detection. A possible breeding territory coupled with at least one of the previously stated observations also qualifies an area as a probable breeding territory.

Confirmed breeding territory: "Observation of copulation, stick carry to nest, carrying food (multiple observations), distraction display, nest, or fledgling." WestLand's interpretation is that confirmed breeding territories are areas where at least one of these observations has been made.

5. RESULTS

A total of nine YBCU detections were recorded during the 2016 survey: three from the Whitlow Ranch Dam transect, and six from the Mineral Creek transect. WestLand did not detect YBCU within the Middle and Lower Devils Canyon transects (**Figures 2** and **5**). It should be noted however, that survey conducted within the Middle and Lower Devils Canyon transects do not constitute a complete survey season (Halterman et al. 2016), since only two of the required survey visits were conducted. As described in **Section 4.1**, survey visits 1 and 4 were missed in these areas due to hazardous conditions caused by a combination of adverse weather conditions, rugged terrain, and limited accessibility of the transects.

According to the survey protocol (Halterman et al. 2016), detection locations can be compared to estimate the total number of cuckoos detected at a site. Surveyors considered YBCU movements, compass bearings, and estimated distance, as well as the timing of detections to estimate the number of individual YBCUs detected. Thus, according to the guidance for interpreting results provided in the 2016 survey protocol (Halterman et al. 2016), five individual YBCU were likely detected along the Mineral Creek transect, and one individual YBCU was likely detected along the Whitlow Ranch Dam transects (**Appendix B**).[4] At Mineral Creek, two different YBCUs were detected during the first

[4] Based on the location and timing of calls, two of the detections from the Mineral Creek transect on June 23, 2016 are believed to have been the same YBCU. It is for this same reason that all three of the detections from the Whitlow Ranch Dam transects on July 21, 2016 are believed to be the same YBCU.

survey visit; one on June 23rd, and the other on June 24th. Three individual YBCU's were detected during the second survey visit; two on July 6th, and one on July 7th. The YBCU at the Whitlow Ranch Dam transect was detected during the third survey visit (July 21st) (**Appendix B**).

The estimated locations of YBCUs detected during the 2016 survey are presented in **Figures 2** and **5**. Additional information about the detections, including transect name, survey period, visit number, date, number of detections, estimated YBCU coordinates, and detection type, is included in **Table 2**. WestLand did not observe any YBCU breeding behavior to confirm breeding or the presence of breeding territories during this survey. However, using the method of inference described in Halterman et al. (2016), detections made during the 2016 survey indicate there is likely one possible breeding territory along the Mineral Creek transect (**Figure 2**, **Appendix B**). There are no probable breeding territories located along any of the Survey Transects (**Appendix B**).

Table 2. 2016 Yellow-Billed Cuckoo Detections Whitlow Ranch Dam, Middle Devils Canyon, Lower Devils Canyon, and Mineral Creek, Pinal County, Arizona

Survey Period	Survey Visit	Date of Survey	Number of YBCU Detections	Estimated Location of YBCU (NAD83 UTM Zone 12S)		Detection Type (A,V,B)*
				Easting	Northing	
Whitlow Ranch Dam						
1	1	June 22	--	--	--	--
2	2	July 8	--	--	--	--
	3	July 21	3	475178	3684633	A
				474883	3684596	A
				474725	3684513	A
3	4	August 5	--	--	--	--
Middle Devils Canyon						
1	1	--	--	--	--	--
2	2	July 8	0	--	--	--
	3	July 21	0	--	--	--
3	4	--	--	--	--	--
Lower Devils Canyon						
1	1	--	--	--	--	--
2	2	July 6-7	0	--	--	--
	3	July 19-20	0	--	--	--
3	4	--	--	--	--	--
Mineral Creek						
1	1	June 23-24	3	501052	3678750	B
				501124	3678586	A
				501122	3677628	B
2	2	July 6-7	3	502063	3679457	A
				501123	3678546	A
				500808	3676992	A
	3	July 19-20	0	--	--	--
3	4	August 6-7	0	--	--	--

* Detection types: A – audio, V – visual, and B – both

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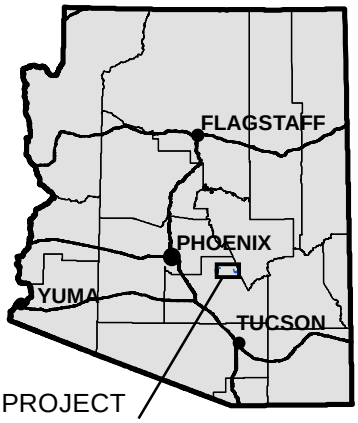
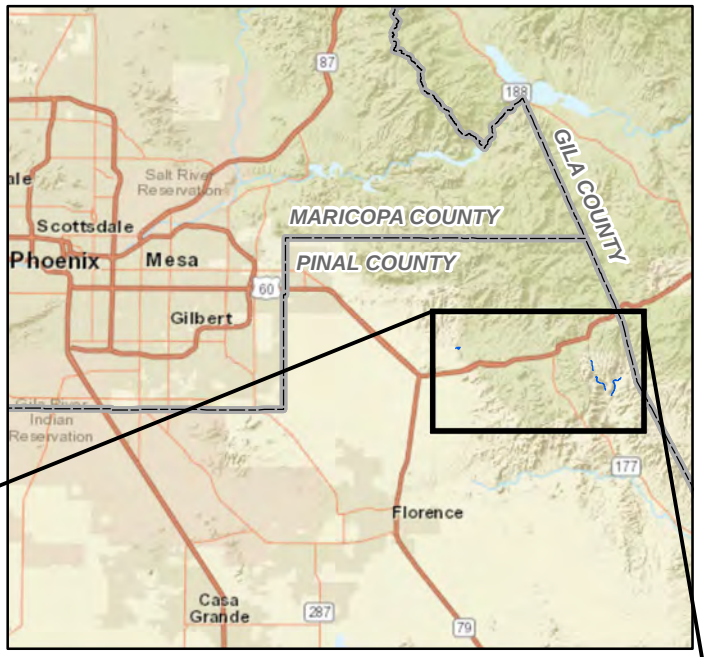
FIGURES

ARIZONA



PORTION OF PINAL COUNTY



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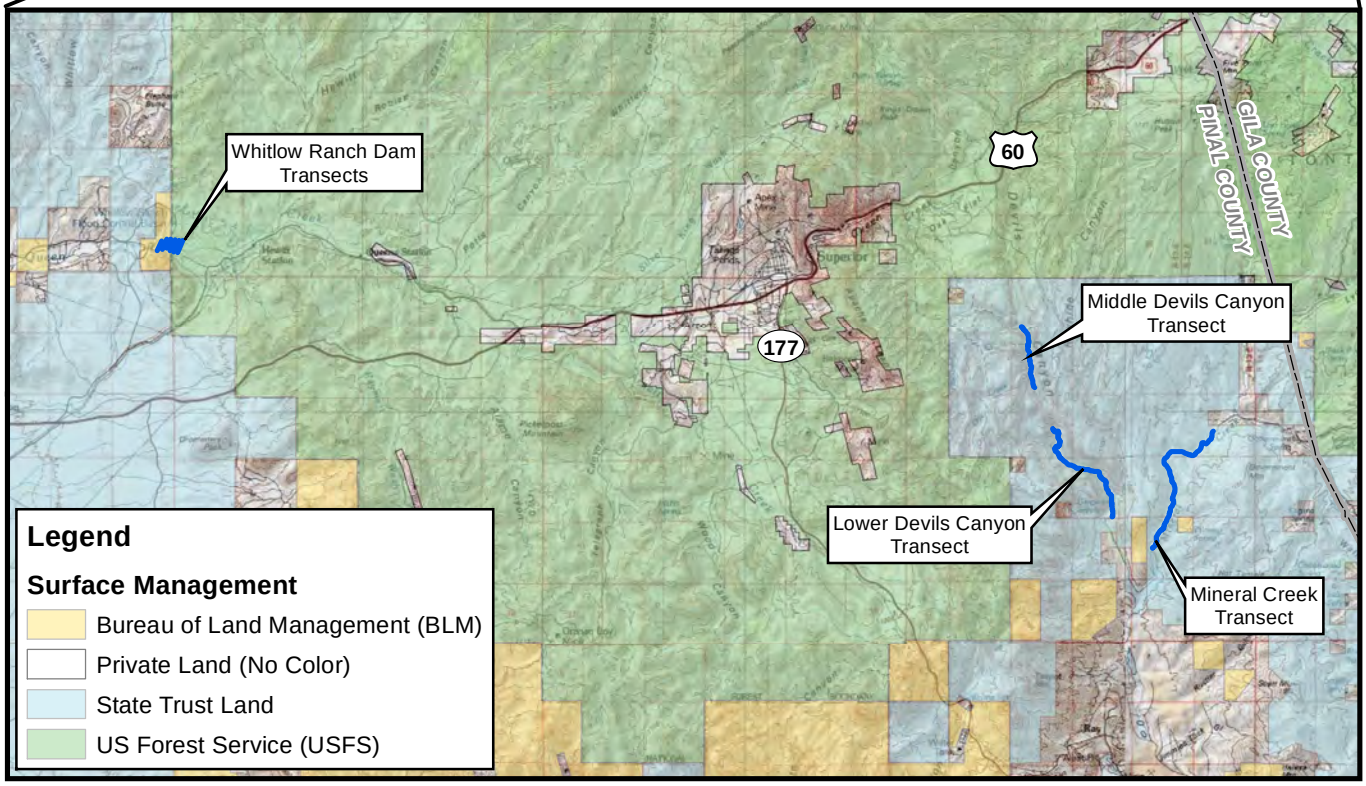


Survey Transects in:
T1S, R10E, Portion of Section 36
T1S, R11E, Portions of Protracted Blocks 51 and 52 (Sections 31 and 32)
T2S, R13E, Portions of Sections 4, 9, 13, 14, 16 , 21-23, and 26,
Pinal County, Arizona,
Mesa and Globe 1:100,000 USGS Quadrangles
Image Source: ArcGIS Online USA Topo, and World Street Map
Surface Mangement: BLM 2012 (WRI modified 2015)

WestLand Resources

N

0 1.5 3 Miles

0 2.5 5 Kilometers

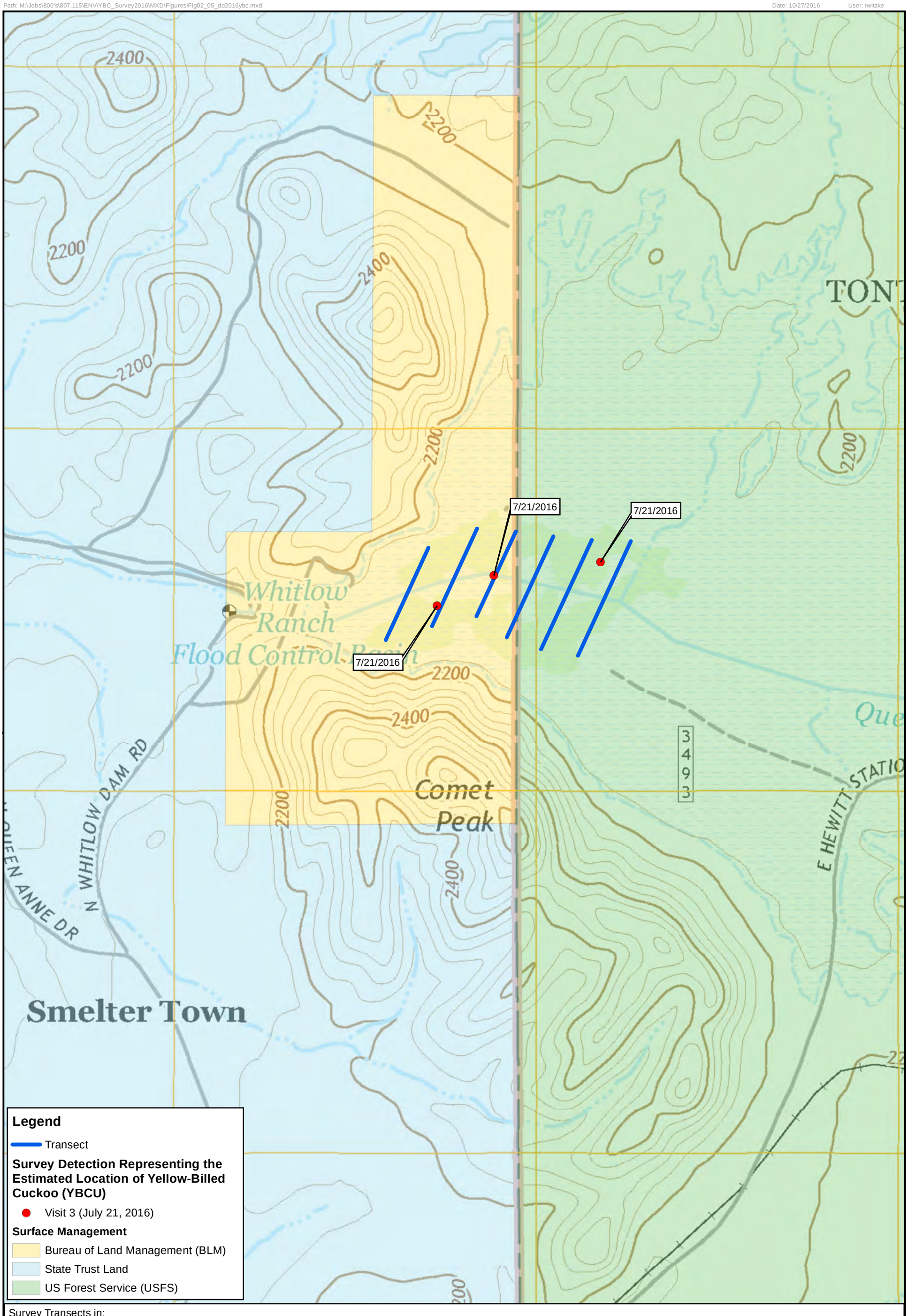
RESOLUTION COPPER MINING, LLC

2016 Yellow-Billed Cuckoo Survey
Whitlow Ranch Dam, Devils Canyon, and Mineral Creek, Pinal County, Arizona

VICINITY MAP

Figure 1

Path: M:\Jobs\800's\807.115\ENV\YBC_Survey2016\MXD\Figures\Fig02_05_dd2016ybc.mxd Date: 10/27/2016 User: rwitzke



Survey Transects in:
T1S, R10E, Portion of Section 36,
T1S, R11E, Portions of Protracted Blocks 51 and 52 (Sections 31 and 32),
Pinal County, Arizona,
Florence Junction USGS 7.5' Quadrangle (2014)
Surface Mangement: BLM 202 (WRI modified 2015)

N

0 400 800 Feet

0 150 300 Meters

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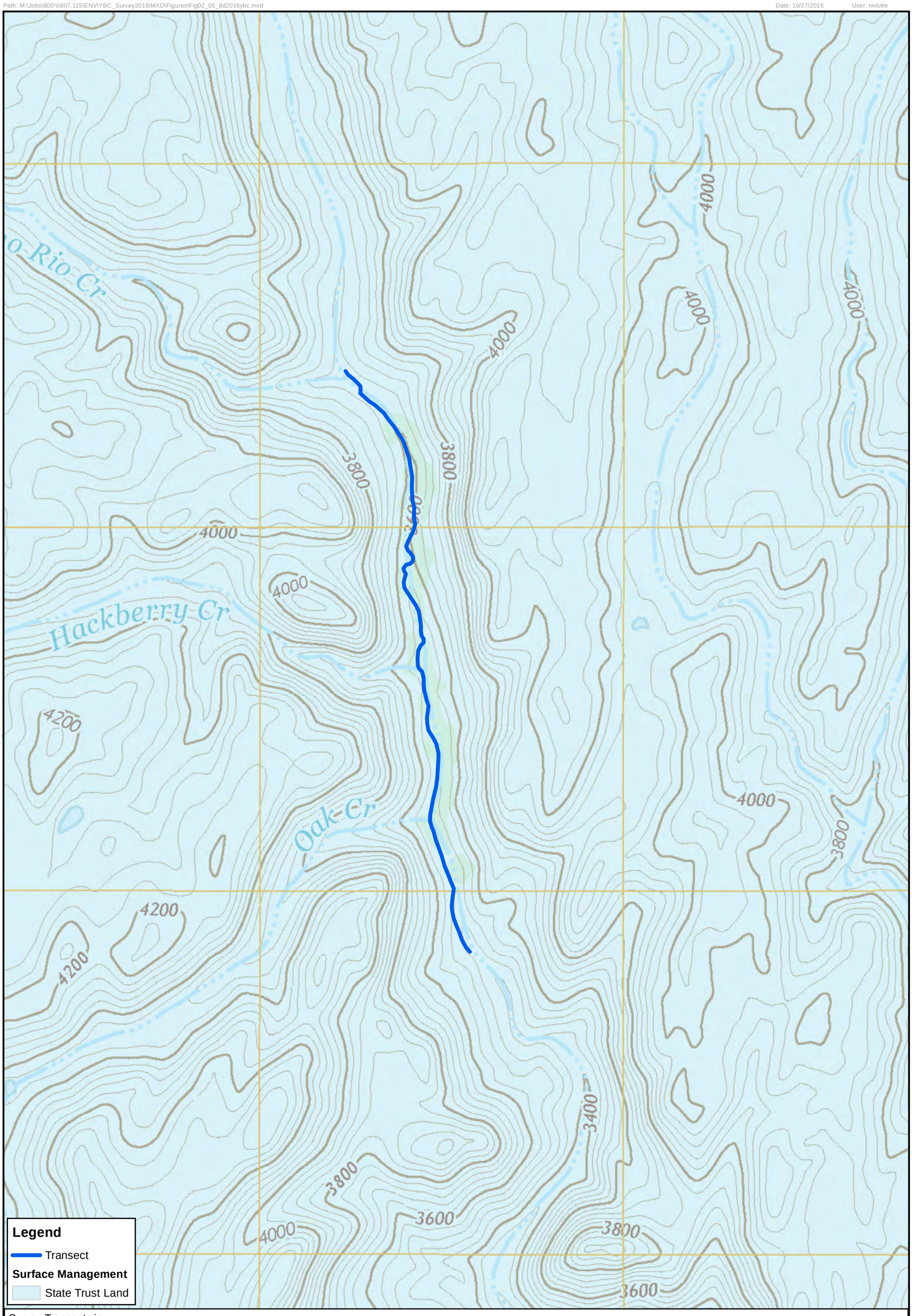
RESOLUTION COPPER MINING, LLC

2016 Yellow-Billed Cuckoo Survey
Whitlow Ranch Dam, Devils Canyon,
and Mineral Creek, Pinal County, Arizona

WHITLOW RANCH DAM TRANSECTS

Figure 2



Survey Transects in:
T2S, R13E, Portions of Sections 4 and 9,
Pinal County, Arizona,
Superior USGS 7.5' Quadrangle (2014)
Surface Mangement: BLM 202 (WRI modified 2015)

WestLand Resources

Protocol level survey was not completed for this transect

N

0 400 800 Feet

0 150 300 Meters

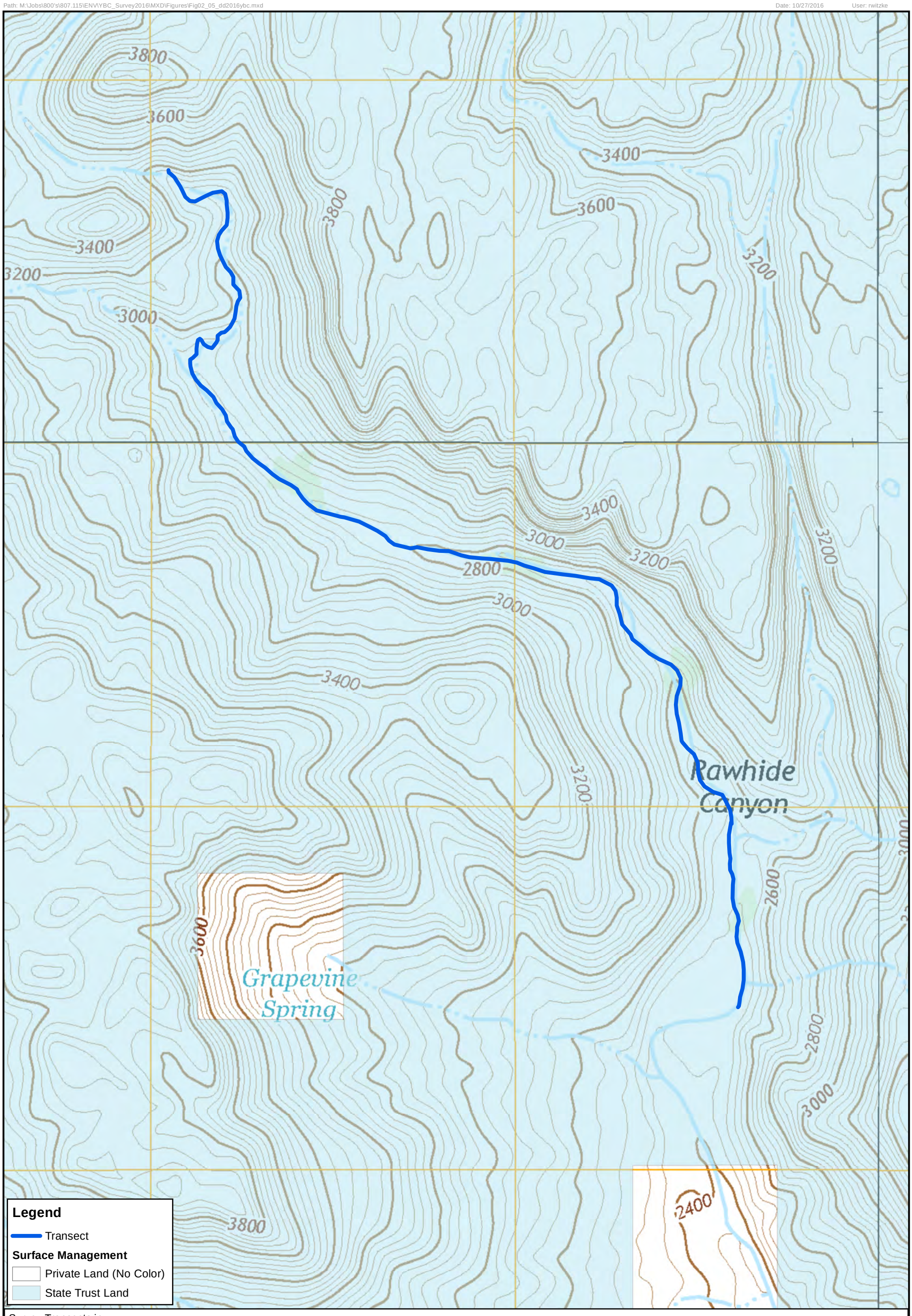
RESOLUTION COPPER MINING, LLC

2016 Yellow-Billed Cuckoo Survey
Whitlow Ranch Dam, Devils Canyon,
and Mineral Creek, Pinal County, Arizona

MIDDLE DEVILS CANYON TRANSECT

Figure 3

Path: M:\Jobs\800's\807.115\ENV\YBC_Survey2016\MXD\Figures\Fig02_05_dd2016ybc.mxd Date: 10/27/2016 User: rwitzke



Survey Transects in:
T2S, R13E, Portions of Sections 16, 21, and 22,
Pinal County, Arizona,
Superior and Teapot Mountain USGS 7.5' Quadrangles (2014)
Surface Mangement: BLM 202 (WRI modified 2015)

WestLand Resources

Protocol level survey was not completed for this transect

N

0 400 800 Feet

0 150 300 Meters

RESOLUTION COPPER MINING, LLC

2016 Yellow-Billed Cuckoo Survey
Whitlow Ranch Dam, Devils Canyon, and Mineral Creek, Pinal County, Arizona

LOWER DEVILS CANYON TRANSECT

Figure 4

Path: M:\Jobs\800's\807.115\ENV\YBC_Survey2016\MXD\Figures\Fig02_05_dd2016ybc.mxd Date: 10/27/2016 User: rwitzke

7/6/2016
6/23/2016
6/23/2016
7/6/2016
6/24/2016
7/7/2016

Legend

Transect

Survey Detection Representing the Estimated Location of Yellow-Billed Cuckoo (YBCU)

Visit 1 (June 23-24, 2016)

Visit 2 (July 6-7, 2016)

Surface Management

Bureau of Land Management (BLM)

Private Land (No Color)

State Trust Land

Survey Transects in:
T2S, R13E, Portions of Sections 13, 14, 23, and 26,
Pinal County, Arizona,
Pinal Ranch and Hot Tamale Peak USGS 7.5' Quadrangles (2014)
Surface Mangement: BLM 202 (WRI modified 2015)

N

0 400 800 Feet

0 150 300 Meters

WestLand Resources

RESOLUTION COPPER MINING, LLC

2016 Yellow-Billed Cuckoo Survey
Whitlow Ranch Dam, Devils Canyon,
and Mineral Creek, Pinal County, Arizona

MINERAL CREEK TRANSECT

Figure 5

APPENDIX A

Western Yellow-Billed Cuckoo (*Coccyzus americanus*) 2016 Yellow-Billed Cuckoo Surveys on Queen and Arnett Creeks, Audubon Arizona

Western Yellow-billed Cuckoo (*Coccyzus americanus*)

2016 Yellow-billed Cuckoo surveys on Queen and Arnett Creeks

Audubon Arizona
3131 S. Central Avenue
Phoenix, AZ 85040

Recommended Citation:

Prager, S and Wise, C. 2016. 2016 Yellow-billed Cuckoo surveys on the Queen and Arnett Creeks. Audubon Arizona, Phoenix, Arizona.

Photo Credit: Steven Prager, Audubon Arizona

Acknowledgements:

Audubon Arizona thanks Resolution Copper Mining for funding this effort and for providing logistical help in the field. Our thanks also goes out to our field surveyors Daniel Hite, Alisha Cropper, Tyler Dennis, and Jacob Plant. Additionally, we thank Paul Wolterbeek and the Boyce Thompson Arboretum for providing us with lodging on the evenings prior to surveys. Lastly, we thank Audubon Arizona volunteer Terry Michl for helping us organize and enter all of the data collected this season.

Executive Summary:

In October 2013, the United States Fish and Wildlife Service proposed listing the Yellow-billed Cuckoo (*Coccyzus americanus*) in western portions of the United States, Canada, and Mexico (the Western Yellow-billed Cuckoo) as a threatened distinct vertebrate population segment under the Endangered Species Act of 1973, as amended in 1998 (Federal Register, October 3, 2013). The final rule designating this population segment was published on October 3, 2014 and went into effect in November (Federal Register, October 3, 2014). Probable factors contributing to the birds' population decrease are the loss, alteration and fragmentation of native riparian habitats (Franzreb 1987 and Milhous, 1994). Over five-hundred thousand acres of critical habitat have been proposed for this population segment across Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah and Wyoming, with the majority of habitat within Arizona (Federal Register, August 15, 2014).

To follow-up on surveys conducted in 2015, Audubon Arizona organized and conducted standardized surveys on three reaches of Queen and Arnett creeks near Superior, Arizona in the summer of 2016. The goal of this effort were to document Yellow-billed Cuckoo occurrence, abundance, and timing along these drainages in order to provide a basis for management recommendations. Results of the 2016 survey efforts are summarized in this report.

Yellow-billed Cuckoo detections and habitat:

No cuckoos were detected on any of the three Arnett or Queen Creek transects during the 2016 survey season. The narrowness of these drainages largely excludes mesquite bosque habitat and limited surface water allows for only short stringers of native broad-leaf riparian forest. Of the areas surveyed, the most promising habitat was found at the eastern most portion of the Arnett Creek transect at the mouth of the canyon, at the eastern portion of the Upper Queen Creek transect through the area referred to by Superior locals as "the Jungle" and at the western portion of the Upper Queen Creek transect after exiting the canyon near Boyce Thompson Arboretum.

Fifty-nine other species were encountered during the 2015 survey season including six that are listed by the Arizona Game and Fish Department as Species of Greatest Conservation Need. (Golden Eagle, Common Black-Hawk, Gilded Flicker, Gila Woodpecker, Abert's Towhee, and Bell's Vireo)

Management Recommendations:

In the areas identified as having the highest potential for breeding Yellow-billed Cuckoos, activities that encourage the recruitment of native-broad leaf trees and adjacent mesquite bosque habitat should be supported. Similarly, activities that prevent the recruitment and survivorship of native broad-leaf trees and adjacent mesquite bosque habitat should be avoided. In addition, the species encountered during these surveys that are identified by the Arizona Game and Fish Department as Species of Greatest Conservation need should be considered priority species within these drainages.

Table of Contents:

Introduction:

The U. S. Fish and Wildlife Service (USFWS) petitioned to list the Western Yellow-billed Cuckoo (*Coccyzus americanus*; hereafter cuckoo) as an endangered species in 1998, but the bird was precluded due to other priority species. In October 2013, the cuckoo population in the western portions of the United States, Canada, and Mexico was proposed to be listed as a threatened distinct vertebrate population segment (Federal Register, October 3, 2013). The final rule designating this population segment was published on October 3, 2014 and went into effect in November (Federal Register, October 3, 2014). Over five-hundred thousand acres of critical habitat have been proposed for this population segment across Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah and Wyoming. (Federal Register, August 15, 2014).

In Arizona, the cuckoo was historically widespread and locally common. Although western populations have precipitously declined, Arizona still contains the largest remaining cuckoo population among the States west of the Rocky Mountains (Federal Register, October 3, 2013). The decline of cuckoo populations throughout the western United States has been largely attributed to habitat destruction (Franzreb 1987), inappropriate grazing, and lowered water tables (Milhous 1994). Current information on the distribution and abundance of cuckoos is necessary for the proper management of the species and its preferred habitats.

The 2016 surveys on Queen and Arnett Creeks were a follow-up to surveys conducted in 2015 along the same reaches that aimed to answer several questions: Are cuckoos using these drainages, when are they present, what is their distribution, and what features support or exclude them?

Natural History:

Two distinct populations of Yellow-billed cuckoos exist in North America, separated by the continental divide. The population in the west, including the cuckoos in Arizona, are known as the Western yellow-billed cuckoo (Federal Register, August 15, 2014). This population was formerly recognized as a subspecies by the American Ornithological Union as a subspecies (AOU, 1998) with a breeding range that included portions of Arizona, California, western New Mexico, western Texas, southern Utah, and the Mexican states of Sonora and Zacatecas (Russell and Monson 1998).

North of the Gila River in Arizona, cuckoos are riparian obligates found primarily in cottonwood-willow associations. In southern Arizona however, the birds have been found breeding in mesquite bosques and in areas dominated by non-native tamarisk (Corman and Magill 2000). In addition, cuckoos are known to use oak woodlands, oak/mesquite drainages within grasslands, and thornscrub habitats (Federal Register, October 3, 2013). Cuckoos arrive on their Arizona breeding grounds in mid-June, after most other neotropical migrants. As a result, cuckoos nest later than most other birds, typically from early July through early August (Hamilton and Hamilton 1965, Corman and Magill 2000, Corman 2005). Nesting activities continue through August and into September, especially in southeastern Arizona.

Cuckoos have an accelerated breeding cycle, with young able to climb from the nest at one week of age, and fledging within 12 days post hatch (Hamilton and Hamilton 1965). This trait makes nest-finding difficult, as the birds spend relatively little time in the natal area and tend to be secretive at the nest. Cuckoo surveyors must typically revisit study areas several times to verify the birds' presence.

Methods:

Audubon Arizona conducted surveys along three reaches – one on Arnett Creek, one on Queen Creek upstream of Superior and one on Queen Creek between Superior and Boyce Thompson Arboretum (Table 2 & Appendix A). Surveys were conducted starting on June 28, 2016 and ending on August 12, 2016. Surveyors followed the protocol described by Halterman et al. and released by the USFWS in May of 2016 (Halterman et al., 2016). The protocol instructs surveyors to use taped playback calls to elicit responses. The protocol requires that playback calls are played at 100 meter intervals unless a detection is made. If a cuckoo is detected, surveyors travel 300 meters to avoid double-counting. The protocol also requires surveyors to make four visits to predetermined sites in three prescribed survey windows. The first window is from June 15 to June 30, the second, during which two surveys are conducted, is from July 1 to July 31, and the third is from August 1 to August 15. (Table 1). Surveys must be conducted at least 10 days apart. For a site to be designated "occupied", surveyors must detect cuckoos two or more times during two or more survey periods. Areas can be further designated as containing possible, probable, and confirmed breeding cuckoos (Table 3) (Halterman et al., 2015).

In addition to surveying for cuckoos, surveyors kept an all-species list. Surveyors added species to the list both at call points and while in transit between points. Individual birds were not tallied.

Results/Discussion:

No cuckoos were detected on any of the three Arnett or Queen Creek transects during the 2015 survey season.

These drainages do not contain suitable cuckoo breeding habitat. While stretches of riparian forest dominated by native broad-leaf trees such as Goodding's willow, Freemont cottonwood, and Arizona ash exist, these stringers are too short to support breeding cuckoos. This is likely due to a very limited amount of surface water. In addition, the majority of the habitat along these drainages is confined within narrow canyons rarely exceeding 200 meters in width. The steep canyon walls result in a rapid transition from riparian habitat to upland Sonoran desert scrub and leaves little room for adjacent mesquite bosque. This arrangement results in habitat patches that are much smaller than the 80 hectare patches in which cuckoos are typically found (Halterman et al., 2015). While cuckoos can be found in patches as small as 20 hectares (Halterman et al., 2015), the patches would have to exhibit extremely robust insect productivity to support them and this level of productivity was not encountered.

Of the areas surveyed, the most promising sections were the eastern most portion of the Arnett Creek transect at the mouth of the canyon, the eastern portion of the Upper Queen Creek transect through the area referred to by Superior locals as "the Jungle" and the western portion of the Upper Queen Creek transect after exiting the canyon and entering Boyce Thompson Arboretum. The eastern ends of both canyons contain significant stands of native broad-leaf trees and are wide enough to potentially support adjacent mesquite bosque. The western end of the Lower Queen Creek transect is adjacent to Boyce Thompson Arboretum which contains many large non-native broadleaf trees that could potentially support cuckoos. However, it is more likely that the birds would utilize the irrigated Arboretum rather than the creek itself.

Fifty-nine other species were encountered during the 2016 survey season (Appendix B). This is an increase of 14 species from the forty-four encountered in 2015. Six of these species (Golden Eagle, Common Black-Hawk, Gilded Flicker, Gila Woodpecker, Abert's Towhee, and Bell's Vireo) are included by the Arizona Game and Fish Department on their list of Species of Greatest Conservation Need.

Table 1: Recommended number and timing of visits during each survey period for Yellow-billed Cuckoo surveys (Halterman et al, 2016)

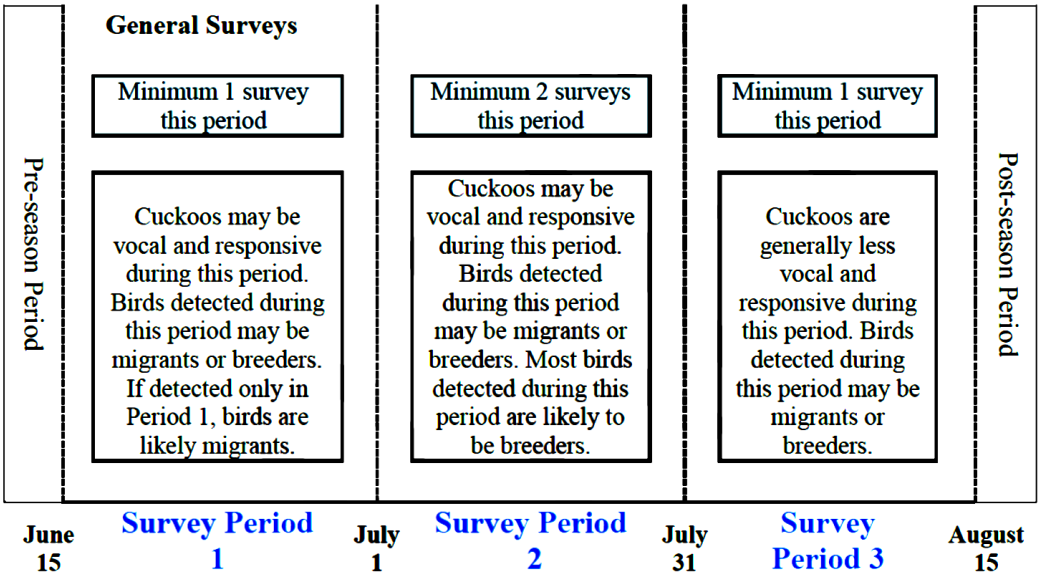


Table 2: 2016 Yellow-billed Cuckoo Transects on Queen and Arnett Creeks

Transect	UTM Start	UTM End
Arnett Creek	12 S 488133 3680158	12 S 486363 3681080
Lower Queen Creek	12 S 487309 3681918	12 S 485746 3682099
Upper Queen Creek	12 S 492045 3684699	12 S 491494 3683826

Table 3: Interpretation of results to estimate Yellow-billed Cuckoo breeding status (Halterman et al. 2015. Originally from Holmes et al. 2008 and McNeil et al. 2013)

Estimation Type	Term	Definition
Breeding Territory Estimation	Possible breeding territory (PO)	Two or more total detections in an area during two survey periods and at least 10 days apart. For example, within a certain area, one detection made during Survey Period 2 coupled with another cuckoo detection made 10 days later, also during Survey Period 2, warrants a PO territory designation.
	Probable breeding territory (PR)	Three or more total detections in an area during at least three survey periods and at least 10 days between each detection. PO territory plus YBCUs observed carrying food (single observation), carrying a stick (single observation), traveling as a pair, or exchanging vocalizations.
	Confirmed breeding territory (CO)	Observation of copulation, stick carry to nest, carrying food (multiple observations), distraction display, nest, or fledgling.
Population estimation	Minimum breeding territory	The observed number of confirmed breeding territories (CO).
Occupancy estimation	Site occupancy	Occupancy is based on two or more total survey detections during two or more survey periods and at least 10 days apart. Multiple detections in an area over an extended period of time suggest that the area may have been used for breeding.

Management Recommendations:

While much of Queen and Arnett Creeks is too canyon bound to support habitat for breeding cuckoos, three areas (the eastern most portion of the Arnett Creek transect at the mouth of the canyon, the eastern portion of the Upper Queen Creek transect through the area referred to by Superior locals as "the Jungle" and the western portion of the Upper Queen Creek transect after exiting the canyon near Boyce Thompson Arboretum) are wide enough to contain both the riparian habitat and adjacent foraging habitat that the birds require. In these areas, activities that encourage the recruitment of native-broad leaf trees and adjacent mesquite bosque habitat should be supported. Similarly, activities that prevent the recruitment and survivorship of native broad-leaf trees and adjacent mesquite bosque habitat should be avoided in these areas.

Though much of the habitat surveyed does not support cuckoos, fifty-nine additional species were encountered including six listed by the Arizona Game and Fish Department as Species of Greatest Conservation Need. These species (Golden Eagle, Common Black-Hawk, Gilded Flicker, Gila Woodpecker, Abert's Towhee, and Bell's Vireo) should be considered priority species within these drainages.

Literature Cited:

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Appendix A: Queen and Arnett Creek transects surveyed during the 2016 Yellow-billed Cuckoo season

Figure 1A: Queen and Arnett Creek 2016 Transects

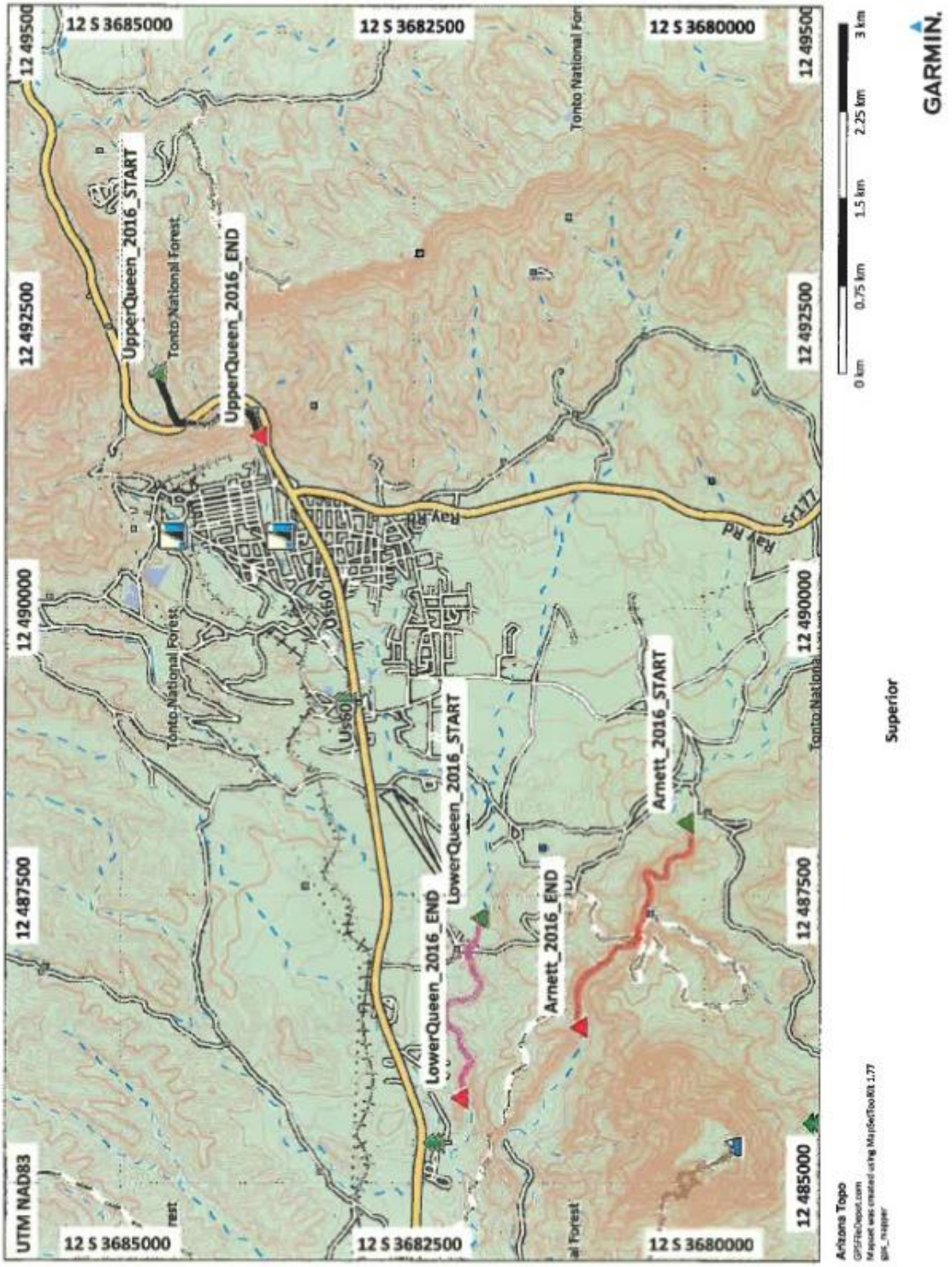


Figure 2A: Upper Queen Creek 2016 Transect

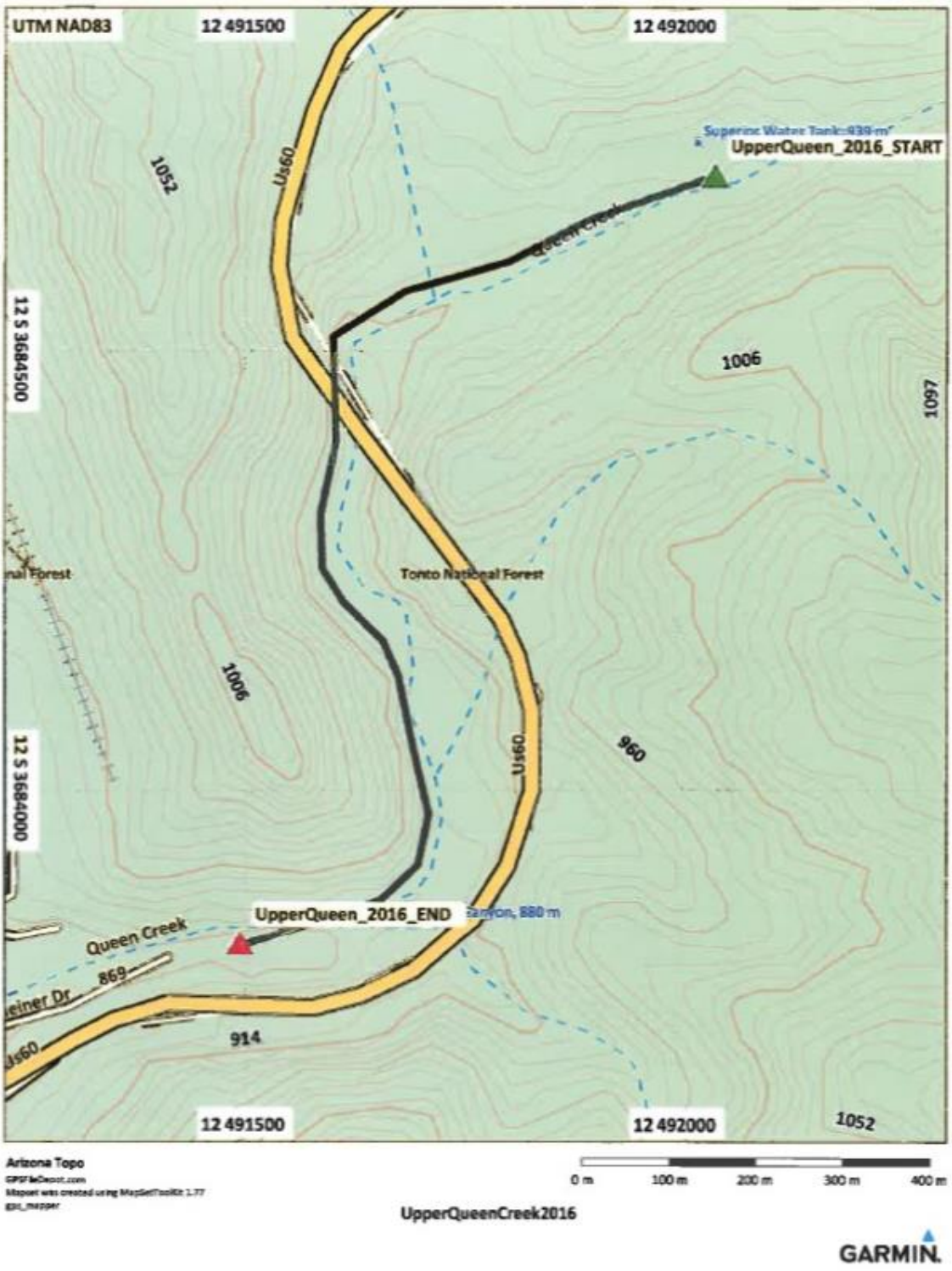


Figure 3A: Lower Queen Creek 2016 Transect

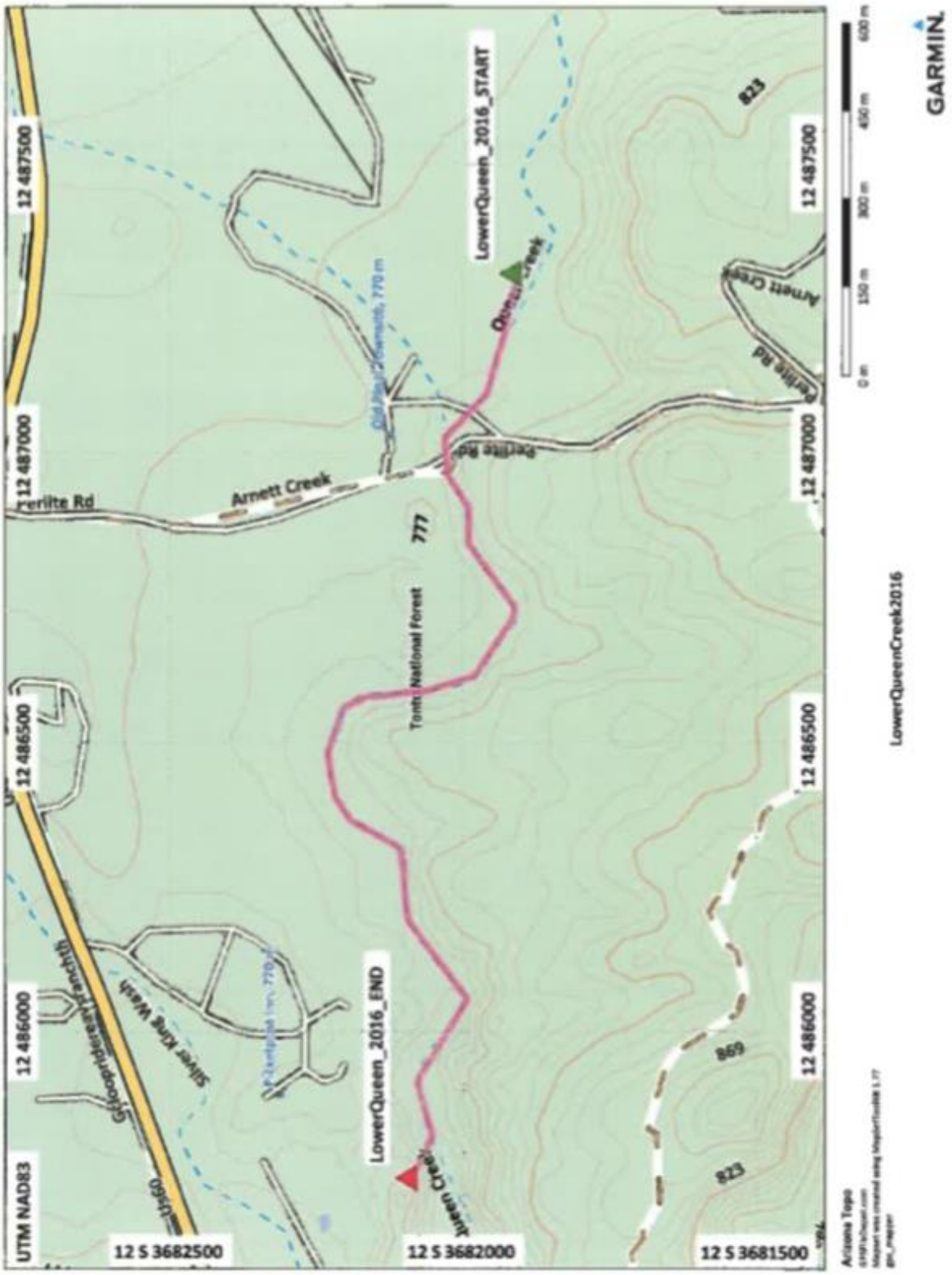
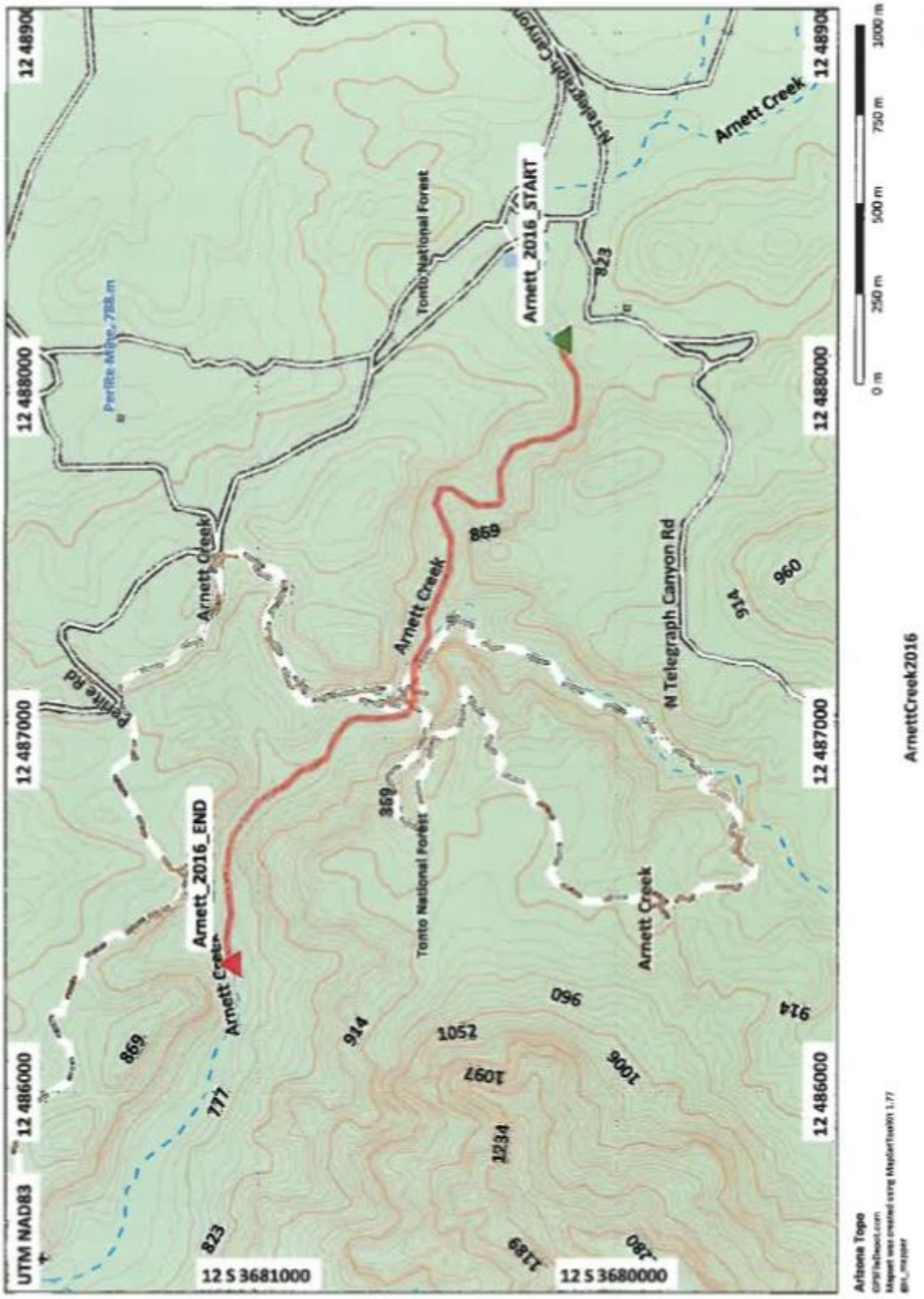


Figure 4A: Arnett Creek 2016 Transect



Appendix B: Other species encountered during 2016 Yellow-billed Cuckoo surveys on Queen and Arnett Creeks

Turkey Vulture	Verdin
Cooper's Hawk	Bewick's Wren
Common Black-Hawk	Rock Wren
Red-tailed Hawk	Canyon Wren
Golden Eagle	Cactus Wren
Gambel's Quail	Black-tailed Gnatcatcher
White-winged Dove	Blue-gray Gnatcatcher
Mourning Dove	Northern Mockingbird
Eurasian Collared-Dove	Curve-billed Thrasher
Inca Dove	Phainopepla
Common Ground-Dove	Lucy's Warbler
Greater Roadrunner	Yellow Warbler
Great-horned Owl	Wilson's Warbler
Broad-billed Hummingbird	Yellow-breasted Chat
Black-chinned Hummingbird	Western Tanager
Anna's Hummingbird	Summer Tanager
Gilded Flicker	Northern Cardinal
Gila Woodpecker	Blue Grosbeak
Ladder-backed Woodpecker	Black-headed Grosbeak
Western Wood-Peewee	Abert's Towhee
Black Phoebe	Canyon Towhee
Vermillion Flycatcher	Rufous-crowned Sparrow
Ash-throated Flycatcher	Black-throated Sparrow
Brown-crested Flycatcher	Song Sparrow
Western Kingbird	Hooded Oriole
Bell's Vireo	Scott's Oriole
Western Scrub-Jay	Great-tailed Grackle
Common Raven	House Finch
Violet-green Swallow	Lesser Goldfinch
Purple Martin	

APPENDIX B

2016
Yellow-billed
Cuckoo
Survey Forms

Yellow-Billed Cuckoo Survey Summary Form

Site Name: **Whitlow Ranch Dam Transects** County: **Pinal** State: **AZ**

USGS Quad Name: **Florence Junction** Elevation: **635 m**

Creek, River, Wetland, or Lake Name: **Queen Creek**

Site Coordinates: Start: **E 475093** **N 3684389** UTM Zone: **12S**

Stop: **E 474581** **N 3684457** Datum: **NAD83**

Ownership: **BLM X** Reclamation NPS USFWS **USFS X** Tribal State Private Other (Municipal/County)

Was site surveyed in Previous year? **Yes X** No Unknown If yes, what site name was used? **Whitlow Ranch Dam**

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinated	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date:												0	0
	6/22/2016												0	0
Observer(s):	Start:												0	0
M.Blais	0522												0	0
& T.Embrey	Stop												0	0
	0906												0	0
	Total hrs:	Total:											0	0
	3.7	0											0	0
Survey Period #2	Date:												0	0
	7/8/2016												0	0
Observer(s):	Start:												0	0
M.Blais	0800												0	0
& T.Embrey	Stop												0	0
	1055												0	0
	Total hrs:	Total:											0	0
	2.9	0											0	0
Survey Period #3	Date:		0642	P: A	CO + OT - Knock	1	NV	475172	3684593	40	8	1	475178	3684633
	7/21/2016		0725	I : A	CO	0	NV	474812	3684525	100	45	2	474883	3684596
Observer(s):	Start:		0734	P: A	CN + CO	1	NV	474714	3684503	15	50	3	474725	3684513
M.Blais	0627												0	0
& T.Alvarez	Stop												0	0
	0750												0	0
	Total hrs:	Total:											0	0
	1.5	1											0	0
Survey Period #4	Date:												0	0
	8/5/2016												0	0
Observer(s):	Start:												0	0
E.Herman	0555												0	0
& T.Embrey	Stop												0	0
	0936												0	0
	Total hrs:	Total:											0	0
	3.7	0											0	0
Survey Period #5	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0
Survey Summary:		# Det	#NO	#NR	#CO		#Nests found		Total Survey Hours:					
Total YBCUs*	**1**	3	0	0	0		0		11.8					

Notes (refer to Cuckoo # associated with individual detections)

*Total of 1 unique YBCU, and 3 YBCU detections

Based on the location and timing of calls, the surveyor believed detections 1-3 during the third survey visit to be the same bird.

*Include justification for these designations.

VOCALIZATION	CODE	BEHAVIOR	CODE	BEHAVIOR	CODE	BREEDING	CODE
Contact	CON	No visual	NV	Catches Prey	CP	Copulation	COP
Coo	COO	Sitting	ST	Carry Food	CF	Feeds Mate	FM
Knock/Alarm	ALA	Foraging	FO	Eats Food	EF	Carry Nest Material	CN
Juvenile Calls	JUVC	Preening	PRE	At Nest	AN	Brooding/Incubating	BI
Other Vocalization	OV	Flying	FLY	Juvenile	JUV	Feeds Nestling	FN
		Distraction Display	DD	Vocal Exchange	VEX	Feeds Fledgling	FF

NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, US = used, inactive nest with blue-green eggshells.

Yellow-Billed Cuckoo Survey Site Description Form

This form is intended to provide a general descrition of the habitat surveyed at a site. More detailed vegetation analysis requires precise measurements, and is outside the scope of this survey protocol. Please check your permit for additional requirements.

Fill in the following information completely		**Date Report completed:** 12-Oct-16
Site Name: **Whitlow Ranch Dam Transects**	State: AZ	County: Pinal
Name of Reporting Individual: James A. Tress, Jr., Eric Herman	Affiliation: WestLand Resources, Inc.	
Phone # (520) 206-9585	Email: jtress@westlandresources.com , eric.herman@atozec.com	
USFWS Permit # TE-834782-4 and TE-23162B-2	State Permit # SP740564	

Site Coordinates:	Start: **E 475093**	**N 3684389**	UTM Zone: 12 S	
	Stop: **E 474581**	**N 3684457**	NAD: 83	
USGS Quad Name(s): Florence Junction	Length of area surveyed (in kilometers) 45 acres		Elevation: 635 m	
Name of nearest Creek, River, Wetland, or Lake: Queen Creek				
Ownership: **BLM X** Reclamation NPS USFWS **USFS X** Tribal State Private Other (Municipal/County)				
Was site surveyed in previous year? **Yes X** No Unknown		If yes, what site name was used? Whitlow Ranch Dam		
Did you survey the same general area during each visit this year?		**Yes X** / No	If no, summarize in comments below	
If "Yes", was the same general area surveyed this year?		**Yes X** / No	If no, summarize in comments below	

Native/Exotic: The species in tree/shrub layer at this site are comprised predominantly of (check one):			
Native broadleaf plants (>75% native)		Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic) **X**		Mixed native and exotic plants (mostly exotic 51%-75%)	

List up to 5 species of overstory vegetation and percent canopy cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. Tamarix spp.	**% cover: 75**	**2. Populus fremontii**	**% cover: < 1**	**3. Salix gooddingii**	**% cover: < 1**
4.	**% cover:**	**5.**	**% cover:**		
Average height of overstory (m)(do not include a range) 5 m		Estimated Overall Canopy Cover (percent)		75%	

List up to 5 species of understory/shrub vegetation (not all sites will have a separate understory) and estimate percent understory cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. Tamarix spp.	**% cover: 25**	**2. Baccharis spp.**	**% cover: < 1**	**3. Lupinus spp.**	**% cover: < 1**
4.	**% cover:**	**5.**	**% cover:**		
Average height of understory (m)(do not include a range) 1.5 m		Estimated Overall Cover (percent)		25%	

Describe adjacent habitat (e.g. upland vegetation; desert scrub; urban/residential; agriculture/orchard; oak woodland) Upland vegetation surrounding the Whitlow Ranch Dam transects is characteristic of the Arizona Upland Subdivision of Sonoran Desertscrub (AZ Upland SDS) vegetation biotic community.

List up to five categories of adjacent habitat, and estimate percent cover. Use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. AZ Upland SDS	**% cover: 25**	**2.**	**% cover:**	**3.**	**% cover:**
4.	**% cover:**	**5.**	**% cover:**		

Was surface water or saturated soil present at or adjacent to site within 300 meters?	**Yes X** No (circle one)	
Was surface water or saturated soil present at or adjacent to all patches surveyed?	Yes **No X** (circle one)	

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

Surveyors did not check for water at the Dam. Assume small amount of water is there.

Site Name: Whitlow Ranch Dam Transects	Name of Reporting Individual: James A. Tress, Jr., Eric Herman
Phone # (520) 206-9585	Email: jtress@westlandresources.com , eric.herman@atozec.com

Attach the following: 1) Copy of USGS 7.5 minute quad/topographical map(s) of survey area, outlining survey site and location of YBCU detection; 2) Sketch or aerial photo showing site location, patch shape,openings, survey route, and location of any detected YBCU or their nests; 3) Photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments. Check your permits for required documentation.

Yellow-Billed Cuckoo Survey Summary Form

Site Name: **Middle Devils Canyon Transect** County: **Pinal** State: **AZ**

USGS Quad Name: **Superior** Elevation: **1,080 m**

Creek, River, Wetland, or Lake Name: **Devils Canyon**

Site Coordinates: Start: **E 497236** **N 3682427** UTM Zone: **12S**

Stop: **E 497583** **N 3680834** Datum: **NAD83**

Ownership: BLM Reclamation NPS USFWS USFS Tribal **State X** Private Other (Municipal/County)

Was site surveyed in Previous year? **Yes X** No Unknown If yes, what site name was used? **SameX**

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinated	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0
													0	0
Survey Period #2	Date:												0	0
	7/8/2016												0	0
Observer(s):	Start:												0	0
M.Wendell	0622												0	0
& T.Alvarez	Stop												0	0
	1014												0	0
	Total hrs:	Total:											0	0
	3.9	0											0	0
Survey Period #3	Date:												0	0
	7/21/2016												0	0
Observer(s):	Start:												0	0
J.Bates	0644												0	0
& T.Embrey	Stop												0	0
	0943												0	0
	Total hrs:	Total:											0	0
	3.0	0											0	0
Survey Period #4	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0
													0	0
Survey Period #5	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0

Survey Summary:	# Det	#NO	#NR	#CO	#Nests found	Total Survey Hours:
Total YBCUs* **0**	0	0	0	0	0	6.9

Notes (refer to Cuckoo # associated with individual detections)

*No YBCU were detected.

Survey Period 1, Visit 1 was not completed due to extreme heat wave at the end of the period. This survey visit was not made up.

Survey Period 3, Visit 4 was not completed due to risk of flash flooding. This survey visit was not made up.

*Include justification for these designations.

VOCALIZATION	CODE	BEHAVIOR	CODE	BEHAVIOR	CODE	BREEDING	CODE
Contact	CON	No visual	NV	Catches Prey	CP	Copulation	COP
Coo	COO	Sitting	ST	Carry Food	CF	Feeds Mate	FM
Knock/Alarm	ALA	Foraging	FO	Eats Food	EF	Carry Nest Material	CN
Juvenile Calls	JUVC	Preening	PRE	At Nest	AN	Brooding/Incubating	BI
Other Vocalization	OV	Flying	FLY	Juvenile	JUV	Feeds Nestling	FN
		Distraction Display	DD	Vocal Exchange	VEX	Feeds Fledgling	FF

NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, US = used, inactive nest with blue-green eggshells.

Yellow-Billed Cuckoo Survey Site Description Form

This form is intended to provide a general descrition of the habitat surveyed at a site. More detailed vegetation analysis requires precise measurements, and is outside the scope of this survey protocol. Please check your permit for additional requirements.

Fill in the following information completely		**Date Report completed:** 14-Oct-16	
Site Name: **Middle Devils Canyon Transect**		State: AZ	County: Pinal
Name of Reporting Individual	James A. Tress, Jr.	Affiliation WestLand Resources, Inc.	
Phone #	(520) 206-9585	Email: jtress@westlandresources.com	
USFWS Permit # TE-834782-4		State Permit # SP740564	

Site Coordinates:	Start: **E**	**497236**	**N**	**3682427**	UTM Zone: 12S
	Stop: **E**	**497583**	**N**	**3680834**	NAD: 83
USGS Quad Name(s): Superior		Length of area surveyed (in kilometers) 1.8			Elevation: 1,080 m

Name of nearest Creek, River, Wetland, or Lake: Devils Canyon

Ownership: BLM Reclamation NPS USFWS USFS Tribal **State X** Private Other (Municipal/County)

Was site surveyed in previous year? **Yes X** No Unknown	If yes, what site name was used? **Middle Devils Canyon**	
Did you survey the same general area during each visit this year?	**Yes X** / No	If no, summarize in comments below
If "Yes", was the same general area surveyed this year?	**Yes X** / No	If no, summarize in comments below

Native/Exotic: The species in tree/shrub layer at this site are comprised predominantly of (check one):			
Native broadleaf plants (>75% native)	**X**	Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic)		Mixed native and exotic plants (mostly exotic 51%-75%)	

List up to 5 species of overstory vegetation and percent canopy cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. Alnus oblongifolia	**% cover: 75**	**2. Fraxinus velutina**	**% cover: 10**	**3. Platanus wrightii**	**% cover: 10**
4. Salix gooddingii	**% cover: < 1**	**5.**	**% cover:**		
Average height of overstory (m)(do not include a range) **15**		Estimated Overall Canopy Cover (percent) **90**			

List up to 5 species of understory/shrub vegetation (not all sites will have a separate understory) and estimate percent understory cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. Cephalanthus occidentalis	**% cover: 50**	**2. Alnus oblongifolia**	**% cover: 25**	**3. Fraxinus velutina**	**% cover: 10**
4. Salix gooddingii	**% cover: < 1**	**5. Baccharis spp.**	**% cover: < 1**		
Average height of understory (m)(do not include a range) **2.5**		Estimated Overall Cover (percent) **80**			

Describe adjacent habitat (e.g. upland vegetation; desert scrub; urban/residential; agriculture/orchard; oak woodland) Upland vegetation in the vicinity of the transect is representative of an ecotone of the Arizona upland subdivision of Sonoran desertscrub (AZ Upland SDS) and interior chaparral (IC) biotic communities. Steep canyon walls and rocky ridges present in uplands surrounding much of the canyon.

List up to five categories of adjacent habitat, and estimate percent cover. Use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. AZ Upland SDS / IC	**% cover: 50**	**2. Steep canyon walls**	**% cover: 10**	**3.**	**% cover:**
4.	**% cover:**	**5.**	**% cover:**		

Was surface water or saturated soil present at or adjacent to site within 300 meters?	Yes **X** No (circle one)	
Was surface water or saturated soil present at or adjacent to all patches surveyed?	Yes **X** No (circle one)	

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

Site Name: Middle Devils Canyon Transect	Name of Reporting Individual: James A. Tress, Jr.
Phone # (520) 206-9585	Email: jtress@westlandresources.com

Attach the following: 1) Copy of USGS 7.5 minute quad/topographical map(s) of survey area, outlining survey site and location of YBCU detection; 2) Sketch or aerial photo showing site location, patch shape,openings, survey route, and location of any detected YBCU or their nests; 3) Photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments. Check your permits for required documentation.

Yellow-Billed Cuckoo Survey Summary Form

Site Name: **Lower Devils Canyon Transect** County: **Pinal** State: **AZ**

USGS Quad Name: **Superior and Teapot Mountain** Elevation: **870 m**

Creek, River, Wetland, or Lake Name: **Devils Canyon**

Site Coordinates: Start: **E 498050** **N 3679767** UTM Zone: **12S**

Stop: **E 499598** **N 3677427** Datum: **NAD83**

Ownership: BLM Reclamation NPS USFWS USFS Tribal **State X** Private Other (Municipal/County)

Was site surveyed in Previous year? **Yes X** No Unknown If yes, what site name was used? **Lower Devils Canyon**

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinated	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0
													0	0
Survey Period #2	Date:												0	0
	7/6/16- 7/7/16												0	0
Observer(s):	Start:												0	0
M.Blais	0555/ 0542												0	0
& T.Embrey	Stop												0	0
	1024/ 0632												0	0
	Total hrs:	Total:											0	0
	5.3	0											0	0
Survey Period #3	Date:												0	0
	7/1916- 7/20/16												0	0
Observer(s):	Start:												0	0
M.Blais	0600/ 0620												0	0
& T.Alvarez	Stop												0	0
	1046/ 0742												0	0
	Total hrs:	Total:											0	0
	6.1	0											0	0
Survey Period #4	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0
													0	0
Survey Period #5	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0

Survey Summary:	# Det	#NO	#NR	#CO	#Nests found	Total Survey Hours:
Total YBCUs* **0**	0	0	0	0	0	11.5

Notes (refer to Cuckoo # associated with individual detections)

*No YBCU were detected.

Survey Period 1, Visit 1 was not completed due to extreme heat wave at the end of the period. This survey visit was not made up.

Survey Period 3, Visit 4 was not completed due to risk of flash flooding. This survey visit was not made up.

*Include justification for these designations.

VOCALIZATION	CODE
Contact	CON
Coo	COO
Knock/Alarm	ALA
Juvenile Calls	JUVC
Other Vocalization	OV

BEHAVIOR	CODE
No visual	NV
Sitting	ST
Foraging	FO
Preening	PRE
Flying	FLY
Distraction Display	DD

BEHAVIOR	CODE
Catches Prey	CP
Carry Food	CF
Eats Food	EF
At Nest	AN
Juvenile	JUV
Vocal Exchange	VEX

BREEDING	CODE
Copulation	COP
Feeds Mate	FM
Carry Nest Material	CN
Brooding/Incubating	BI
Feeds Nestling	FN
Feeds Fledgling	FF

NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, US = used, inactive nest with blue-green eggshells.

Yellow-Billed Cuckoo Survey Site Description Form

This form is intended to provide a general descrition of the habitat surveyed at a site. More detailed vegetation analysis requires precise measurements, and is outside the scope of this survey protocol. Please check your permit for additional requirements.

Fill in the following information completely		**Date Report completed:**	14-Oct-16
Site Name:	**Lower Devils Canyon Transect**	State: AZ	County: Pinal
Name of Reporting Individual	James A. Tress, Jr.	Affiliation WestLand Resources, Inc.	
Phone #	(520) 206-9585	Email: jtress@westlandresources.com	
USFWS Permit # TE-834782-4		State Permit # SP740564	

Site Coordinates:	Start: **E**	**498050**	**N**	**3679767**	UTM Zone: 12S
	Stop: **E**	**499598**	**N**	**3677427**	NAD: 83
USGS Quad Name(s):	Superior and Teapot Mountain		Length of area surveyed (in kilometers)	3.4	Elevation: 870 m

Name of nearest Creek, River, Wetland, or Lake: Devils Canyon

Ownership: BLM Reclamation NPS USFWS USFS Tribal **State X** Private Other (Municipal/County)

Was site surveyed in previous year?	**Yes X** No Unknown	If yes, what site name was used?	**Lower Devils Canyon**
Did you survey the same general area during each visit this year?	**Yes X** / No	If no, summarize in comments below	
If "Yes", was the same general area surveyed this year?	**Yes X** / No	If no, summarize in comments below	

Native/Exotic: The species in tree/shrub layer at this site are comprised predominantly of (check one):

Native broadleaf plants (>75% native)	**X**	Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic)		Mixed native and exotic plants (mostly exotic 51%-75%)	

List up to 5 species of overstory vegetation and percent canopy cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. Populus fremontii	**% cover: 25**	**2. Platanus wrightii**	**% cover: 25**	**3. Salix gooddingii**	**% cover: 10**
4. Fraxinus velutina	**% cover: 10**	**5. Juglans major**	**% cover: <1**		
Average height of overstory (m)(do not include a range) **2 m**		Estimated Overall Canopy Cover (percent)		**75**	

List up to 5 species of understory/shrub vegetation (not all sites will have a separate understory) and estimate percent understory cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1.Cephalanthus occidentalis	**% cover: 25**	**2. Baccharis spp.**	**% cover: 10**	**3. Populus fremontii**	**% cover: < 1**
4. Salix gooddingii	**% cover: < 1**	**5. Fraxinus velutina**	**% cover: 10**		
Average height of understory (m)(do not include a range) **2 m**		Estimated Overall Cover (percent)		**45**	

Describe adjacent habitat (e.g. upland vegetation; desert scrub; urban/residential; agriculture/orchard; oak woodland) Upland vegetation in the vicinity of the transect is representative of an ecotone of the Arizona upland subdivision of Sonoran desertscrub (AZ Upland SDS) and interior chaparral (IC) biotic communities. Steep canyon walls and rocky ridges present in uplands surrounding much of the canyon.

List up to five categories of adjacent habitat, and estimate percent cover. Use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. AZ Upland SDS / IC	**% cover: 50**	**2. Steep canyon walls**	**% cover: 10**	**3.**	**% cover:**
4.	**% cover:**	**5.**	**% cover:**		

Was surface water or saturated soil present at or adjacent to site within 300 meters?	Yes **X** No (circle one)
Was surface water or saturated soil present at or adjacent to all patches surveyed?	Yes No **X** (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

Site Name: Lower Devils Canyon Transect	Name of Reporting Individual: James A. Tress, Jr.
Phone #: (520) 206-9585	Email: jtress@westlandresources.com

Attach the following: 1) Copy of USGS 7.5 minute quad/topographical map(s) of survey area, outlining survey site and location of YBCU detection; 2) Sketch or aerial photo showing site location, patch shape,openings, survey route, and location of any detected YBCU or their nests; 3) Photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments. Check your permits for required documentation.

Yellow-Billed Cuckoo Survey Summary Form

Site Name: **Mineral Creek Transect** County: **Pinal** State: **AZ**

USGS Quad Name: **Pinal Ranch and Hot Tamale Peak** Elevation: **800 m**

Creek, River, Wetland, or Lake Name: **Mineral Creek**

Site Coordinates: Start: **E 502219** **N 3679646** UTM Zone: **12S**

Stop: **E 500669** **N 3676633** Datum: **NAD83**

Ownership: BLM Reclamation NPS USFWS USFS Tribal **State X** Private Other (Municipal/County)

Was site surveyed in Previous year? **Yes X** No Unknown If yes, what site name was used? **Mineral Creek**

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinated	
								UTM E	UTM N				**UTM E**	**UTM N**
Survey Period #1	Date:		0951	P: B	OT - ALA	5	ST, FLY	501059	3678751	7	260	1	501052	3678750
	6/23/16- 6/24/16		1011	P: A	OT - ALA	1	NV	501187	3678450	150	335	2	501124	3678586
Observer(s):	Start:		0742	P: B	CN	1	ST, FLY	501128	3677630	6	252	3	501122	3677628
M.Blais	0618/ 0658												0	0
& T.Embrey	Stop												0	0
	1050/ 0926												0	0
	Total hrs:	Total:											0	0
	7.0	2											0	0
Survey Period #2	Date:		0651	P: A	CO	3	NV	502163	3679457	100	270	4	502063	3679457
	7/6/16- 7/7/16		1019	P: A	CN	4	NV	501133	3678547	10	265	5	501123	3678546
Observer(s):	Start:		0904	P: A	CN	3	NV	500791	3676982	20	60	6	500808	3676992
M.Wendell	0608/ 0643												0	0
& T.Alvarez	Stop												0	0
	1102/ 0937												0	0
	Total hrs:	Total:											0	0
	7.8	3											0	0
Survey Period #3	Date:												0	0
	7/19/16- 7/20/16												0	0
Observer(s):	Start:												0	0
J.Bates	0651/ 0709												0	0
& T.Embrey	Stop												0	0
	1023/ 1013												0	0
	Total hrs:	Total:											0	0
	6.6	0											0	0
Survey Period #4	Date:												0	0
	08/6-7/16												0	0
Observer(s):	Start:												0	0
E.Herman	0638/ 0601												0	0
& T.Embrey	Stop												0	0
	1037/ 0852												0	0
	Total hrs:	Total:											0	0
	6.8	0											0	0
Survey Period #5	Date:												0	0
													0	0
Observer(s):	Start:												0	0
													0	0
	Stop												0	0
													0	0
	Total hrs:	Total:											0	0
Survey Summary:		# Det	#NO	#NR	#CO		#Nests found	Total Survey Hours:						
Total YBCUs*	**5**	6	1	0	0		0	28.2						

Notes (refer to Cuckoo # associated with individual detections)

*Total of 5 unique YBCUs, and six YBCU detections

Detections 1 and 2 occurred on 6/23/16. Detection 3 occurred on 6/24/16. Based on the location and timing of calls, the surveyor believed detections 1 and 2 to be the same bird. The two detections were approximately 185 meters apart, and came from the same general direction.

Detections 4 and 5 both occurred on 7/6/16. Detection 6 occurred on 7/7/16.

*Include justification for these designations.

VOCALIZATION	CODE	BEHAVIOR	CODE	BEHAVIOR	CODE	BREEDING	CODE
Contact	CON	No visual	NV	Catches Prey	CP	Copulation	COP
Coo	COO	Sitting	ST	Carry Food	CF	Feeds Mate	FM
Knock/Alarm	ALA	Foraging	FO	Eats Food	EF	Carry Nest Material	CN
Juvenile Calls	JUVC	Preening	PRE	At Nest	AN	Brooding/Incubating	BI
Other Vocalization	OV	Flying	FLY	Juvenile	JUV	Feeds Nestling	FN
		Distraction Display	DD	Vocal Exchange	VEX	Feeds Fledgling	FF

NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, US = used, inactive nest with blue-green eggshells.

Yellow-Billed Cuckoo Survey Site Description Form

This form is intended to provide a general descrition of the habitat surveyed at a site. More detailed vegetation analysis requires precise measurements, and is outside the scope of this survey protocol. Please check your permit for additional requirements.

Fill in the following information completely		**Date Report completed:** 12-Oct-16	
Site Name: **Mineral Creek Transect**	State: AZ		County: Pinal
Name of Reporting Individual James Tress, Eric Herman	Affiliation WestLand Resources, Inc.		
Phone # (520) 206-9585	Email: jtress@westlandresources.com , eric.herman@atozec.com		
USFWS Permit # TE-834782-4 and TE-23162B-2	State Permit #SP740564		

Site Coordinates:	Start: **E 502219**	**N**	**3679646**	UTM Zone: 12S
	Stop: **E 500669**	**N**	**3676633**	NAD: 83
USGS Quad Name(s): Pinal Ranch and Hot Tamale Peak	Length of area surveyed (in kilometers) 4.5			Elevation: 800 m

Name of nearest Creek, River, Wetland, or Lake: Mineral Creek

Ownership: BLM Reclamation NPS USFWS USFS Tribal **State X** Private Other (Municipal/County)

Was site surveyed in previous year? **Yes X** No Unknown	If yes, what site name was used? **Mineral Creek**		
Did you survey the same general area during each visit this year?	**Yes X** / No	If no, summarize in comments below	
If "Yes", was the same general area surveyed this year?	**Yes X** / No	If no, summarize in comments below	

Native/Exotic: The species in tree/shrub layer at this site are comprised predominantly of (check one):

Native broadleaf plants (>75% native)	**X**	Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic)		Mixed native and exotic plants (mostly exotic 51%-75%)	

List up to 5 species of overstory vegetation and percent canopy cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. Fraxinus velutina % cover: 25	**2. Salix gooddingii % cover: 25**	**3. Populus fremontii % cover: 10**
4. Platanus wrightii % cover: 10	**5. Juglans major % cover: < 1**	
Average height of overstory (m)(do not include a range) **15**	Estimated Overall Canopy Cover (percent) **80**	

List up to 5 species of understory/shrub vegetation (not all sites will have a separate understory) and estimate percent understory cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. Fraxinus velutina % cover: 75	**2. Populus fremontii % cover: < 1**	**3. Salix gooddingii % cover: < 1**
4. Platanus wrightii % cover: < 1	**5. Baccharis spp. % cover: < 1**	
Average height of understory (m)(do not include a range) **3.5**	Estimated Overall Cover (percent) **75**	

Describe adjacent habitat (e.g. upland vegetation; desert scrub; urban/residential; agriculture/orchard; oak woodland) Upland vegetation surrounding the transect is characteristic of the Arizona Upland Subdivision of Sonoran Desertscrub (AZ Upland SDS) vegetation biotic community. Rocky ridges in uplands surround much of the canyon.

List up to five categories of adjacent habitat, and estimate percent cover. Use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1. AZ Upland SDS % cover: 25	**2. Rocky Ridges % cover: 10**	**3. % cover:**
4. % cover:	**5. % cover:**	

Was surface water or saturated soil present at or adjacent to site within 300 meters?	Yes **X** No (circle one)	
Was surface water or saturated soil present at or adjacent to all patches surveyed?	Yes **X** No (circle one)	

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

The first ~1/3 of the transect is narrow, and generally surrounded by steep canyon walls. The drainage botton in this area consists of mostly bedrock and contains little riparian vegetation. The remainder of the transect is more open and contains relatively dense riparian vegetation.

Site Name: Mineral Creek Transect	Name of Reporting Individual: James A. Tress, Jr.
Phone #: (520) 206-9585	Email: jtress@westlandresources.com

Attach the following: 1) Copy of USGS 7.5 minute quad/topographical map(s) of survey area, outlining survey site and location of YBCU detection; 2) Sketch or aerial photo showing site location, patch shape,openings, survey route, and location of any detected YBCU or their nests; 3) Photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments. Check your permits for required documentation.

APPENDIX C

Photographs of Representative Vegetation and Habitat

Photo 1.

Photograph taken along the Whitlow Ranch Dam survey transects. Exotic saltcedar *(Tamarix* spp.*)* is the dominant overstory species; however, Goodding's willow (*Salix gooddingii*) and Fremont's cottonwood (*Populus fremontii*), are also interspersed throughout. Many of the overstory species are charred and dead due to the June 2012 Comet Fire.

Photo 2.

Photograph depicting relatively dense stand of saltcedar along the Whitlow Ranch Dam survey transects. Unidentified grass species and saltcedar are the dominant understory species throughout the site, though baccharis (*Baccharis* spp.) and Lupine (*Lupinus* spp.) are also present.

Photo 3.

Photograph depicting a portion of the Queen Creek drainage in the vicinity of the Whitlow Ranch Dam survey transects, where Goodding's willow, saltcedar, and Fremont's cottonwood are the dominant species.

Photo 4.

Photograph taken along the Middle Devils Canyon transect. Arizona alder (*Alnus oblongifolia*), Arizona sycamore (*Platanus wrightii*), velvet ash (*Fraxinus velutina*), and buttonbush (*Cephalanthus occidentalis*) are the dominant species.

Photo 5.

Photograph of alder grove taken along the Middle Devils Canyon transect.

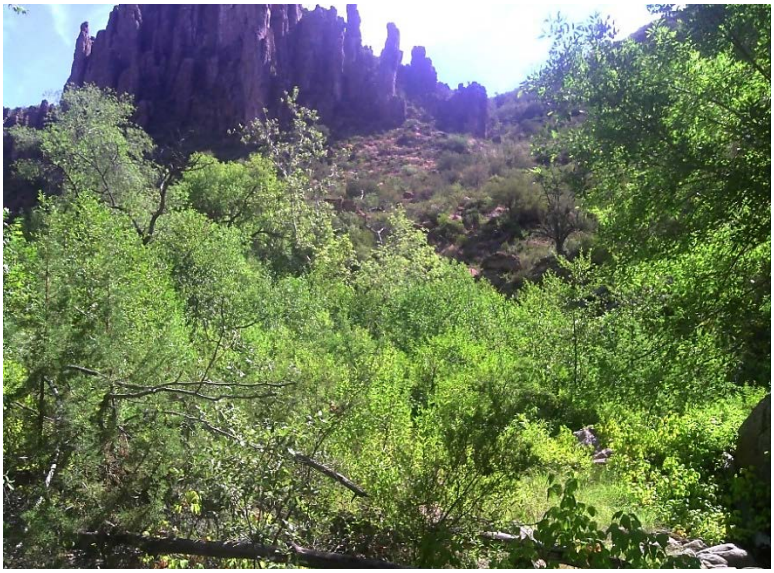


Photo 6.

Photograph of relatively dense riparian vegetation lining the Middle Devils Canyon drainage.

Photo 7.

Photograph taken along the Lower Devils Canyon transect. Dominant riparian species include Arizona sycamore, Fremont's cottonwood, velvet ash, buttonbush, and baccharis.

Photo 8.

Photograph of riparian vegetation along the Lower Devils Canyon transect. Arizona sycamore is the dominant species in this area.

Photo 9.

Photograph taken near the southern end of the Lower Devils Canyon transect. Upland vegetation and steep canyon walls shown in background.

Photo 10.

Photograph of riparian vegetation along the Mineral Creek transect. Velvet ash, Goodding's willow, Fremont's cottonwood, and Arizona sycamore are the dominant species. Velvet mesquite, Arizona walnut, baccharis, and Arizona alder are also present.

Photo 11.

Photograph of riparian vegetation along dry portion of the Mineral Creek transect.

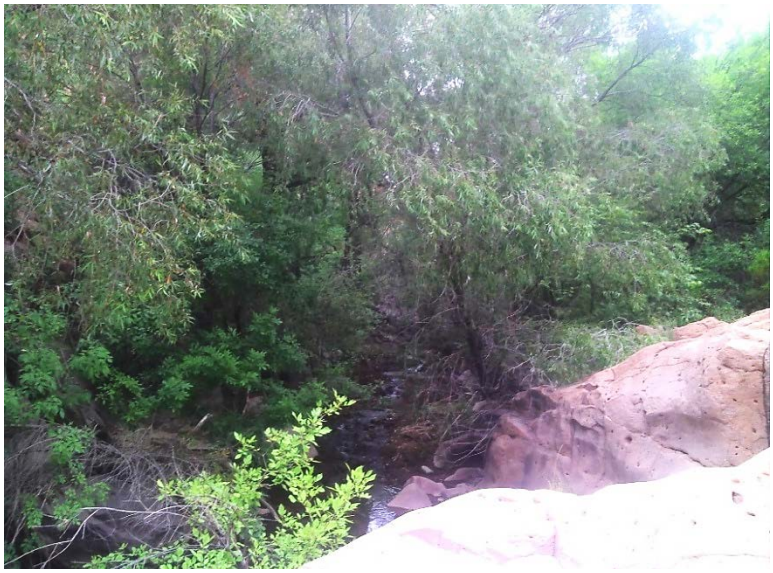


Photo 12.

Photograph of relatively dense riparian vegetation lining the Mineral Creek transect.

Emily Newell

From: Emily Newell
Sent: Wednesday, November 18, 2020 11:35 AM
To: Emily Newell
Subject: Resolution: Westland YBC missing survey reports
Attachments: 2016BIO-007.pdf; 2016BIO-008.pdf

From: Kristina Daley <KDaley@westlandresources.com>
Sent: Monday, June 15, 2020 3:41 PM
To: Donna Morey <dmorey@swca.com>
Cc: Aaron R. Graham <AGraham@westlandresources.com>
Subject: RE: Resolution: Westland YBC missing survey reports

Of course, attached for your use.

Kristina Daley | Executive Assistant for Environmental Services
WestLand Resources, Inc.
4001 E Paradise Falls Drive | Tucson, AZ 85712
Office: (520) 206-9585 | Direct Line: (520) 382-8902

Working remotely for the foreseeable future, I can be reached via Email, MS Teams, or on my cell at 520-256-4336.

From: Donna Morey <dmorey@swca.com>
Sent: Monday, June 15, 2020 3:37 PM
To: Kristina Daley <KDaley@westlandresources.com>
Subject: RE: Resolution: Westland YBC missing survey reports

And these 2 Yellow Billed Cuckoo ones as well pretty please.

a. WestLand Resources, Inc. 2016a. "2016 Yellow-Billed Cuckoo (*Coccyzus Americanus*) Survey Whitlow Ranch Dam, Devils Canyon and Mineral Creek, Pinal County, Arizona." *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
b. WestLand Resources, Inc. 2016b. "2016 Yellow-Billed Cuckoo Survey Baseline Activities Area, Pinal County, Arizona." *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.

Donna Morey

From: Donna Morey
Sent: Monday, June 15, 2020 3:34 PM
To: Kristina Daley <KDaley@westlandresources.com>
Subject: RE: Resolution: Westland AZ Hedgehog Cactus Missing Surveys

Thank you Kristina!

Much appreciated,

Donna Morey
Planner and Project Coordinator

SWCA Environmental Consultants
20 E. Thomas Road, Suite 1700
Phoenix, AZ 85012
P 602.274.3831 | D 480.546.6469

www.swca.com

From: Kristina Daley <KDaley@westlandresources.com>
Sent: Monday, June 15, 2020 1:27 PM
To: Donna Morey <dmorey@swca.com>
Cc: Chris Garrett <cgarrett@swca.com>; Rasmussen, Mary C -FS <mary.rasmussen@usda.gov>; Eleanor Gladding <Egladding@swca.com>; Jeffery Johnson <jeffjohnson@swca.com>; Tyler Loomis <Tyler.Loomis@swca.com>; Peacey, Victoria (RC) <victoria.peacey@riotinto.com>; Taylor, Mark E -FS <mark.e.taylor@usda.gov>; Aaron R. Graham <AGraham@westlandresources.com>; David Cerasale <DCerasale@westlandresources.com>
Subject: Resolution: Westland AZ Hedgehog Cactus Missing Surveys

Hello Donna,

On behalf of Aaron Graham, attached are the 2 request AHC documents for your use.

Please let us know how we can further assist you.

Enjoy your afternoon.

Kristina Daley | Executive Assistant for Environmental Services
WestLand Resources, Inc.
4001 E Paradise Falls Drive | Tucson, AZ 85712
Office: (520) 206-9585 | Direct Line: (520) 382-8902

Working remotely for the foreseeable future, I can be reached via Email, MS Teams, or on my cell at 520-256-4336.