Resolution Copper Project and Land Exchange Environmental Impact Statement

USDA Forest Service Tonto National Forest Arizona

August 6, 2018

Process Memorandum to File

Scenic Resources Analysis: Assumptions; Methodology Used; Relevant Regulations, Laws, and Guidance; and Key Documents

This document is deliberative and is prepared by the third-party contractor in compliance with the National Environmental Policy Act and other laws, regulations, and policies to document ongoing process and analysis steps. This document does not take the place of any Line Officer's decision space related to this project.

Revision History

Date	Personnel	Revisions Made
08/06/2018	Emily Newell	Process memorandum created
10/29/2018	Emily Newell	Revisions to memorandum title, revision history table added, edits to purpose of process memorandum section, references and key documents section added
11/24/2018	Emily Newell	Information added from technical report
1/14/2019	Jill Grams	Information added to the technical report
6/10/2019	Jill Grams	Information added to the technical report
8/6/2019	Donna Morey	Updated process memorandum to draft environmental impact statement (EIS) section
6/28/2020	Jill Grams/Chris Bockey	Updated process memorandum and draft EIS following DEIS comment period
8/13/2020	Jill Grams/Chris Bockey	Updated process memorandum and draft EIS following U.S. Forest Service review of comment response
12/30/2020	Chris Garrett	Final update for consistency prior to final EIS release

Purpose of Process Memorandum

In order to provide a concise and accessible summary of resource impacts, certain detailed information has not been included directly in the environmental impact statement (EIS). The purpose of this process memorandum is to describe additional supporting resource information in detail. The Scenic Resources section of chapter 3 of the EIS includes brief summaries of the information contained in this process memorandum. This process memorandum covers the following topics:

- Resource analysis area
- Analysis methodology
 - Viewshed analysis
 - Key observation points (KOPs) and contrast rating analysis
 - Visual simulations
 - o Additional detail for scenery resources in the analysis area
- Regulations, laws, and guidance
- Key documents and references cited
- Appendix A: Viewshed analyses for each alternative
- Appendix B: Contrast rating worksheets for each KOP
- Appendix C: Visual simulations

- Appendix D: Additional visual simulations for Skunk Camp
- Appendix E: Visual impact of fog plume at East Plant Site

Detailed Information Supporting Environmental Impact Statement Analysis

Resource Analysis Area

The analysis area is defined by buffers around project components, which vary in size:

- 6 miles tailings facility alternatives
- 2 miles slurry pipeline corridors
- 2 miles East Plant Site and subsidence area
- 2 miles West Plant Site
- 2 miles transmission lines
- 1 mile Magma Arizona Railroad Company corridor
- 1 mile filter plant and loadout facility

The most expansive buffer is that for the tailings facilities, which will be visible from a larger area than most other project components. The 6-mile visual resource analysis buffer was chosen based on the location of sensitive viewing locations, regional topography, and the potential for viewing the proposed tailings facilities in the regional landscape. Based upon U.S. Forest Service (Forest Service) and Bureau of Land Management (BLM) methodologies, background viewing distance ranges from 4 to 15 miles; using the information listed above and the viewshed analysis, 6 miles was determined to represent potential background views of the proposed tailings facilities from sensitive viewing locations. The 6-mile buffer around the tailings facilities represents the modeled potential visibility within the landscape from sensitive viewpoints identified through review and coordination with agencies as to the locations where people gather, travel, recreate, or live in the vicinity of the proposed project. Although the viewshed analyses (described below) for the tailings facilities illustrate modeled visibility beyond 6 miles, the modeling process is considered bare earth and does not incorporate landscape features such as vegetation and structures on the landscape or atmospheric conditions such as sun angle, haze and shadow, which are influencing factors when considering degree of visibility. Based on observed visibility conditions during the analysis phase, it was determined that views of the casual observer would be influenced by atmospheric conditions and intervening vegetation in relation to viewer distance. At a distance beyond 6 miles it is not anticipated that the tailings facilities would be discernible to the casual observer and would begin to be absorbed visually into the surrounding landscape as viewing distance increases beyond 6 miles.

Analysis Methodology

Viewshed Analysis

Viewsheds of the proposed action and alternative tailings facilities were developed for the analysis area by modeling the approximate heights of the tailings facilities and determining, based upon landform and elevation, the locations in the surrounding landscape where the facilities could theoretically be visible. The viewshed model is based on elevation and landform and does not account for vegetation, structures, and other landscape elements that could obstruct views. The viewsheds provide an approximation of the facility visibility within the analysis area. The viewshed analyses for each alternative are included in appendix A of this memorandum. The map key illustrates the range of visibility of the tailings facility across the landscape. The model contains 20 "viewpoints" placed on the top elevation of each facility. The range of visibility in the map legends represent how many of these viewpoints would be potentially visible from any given location. The ranges are 1 to 5, 6 to 10, 11 to 15 and 16 to 20, with the higher numbers representing more visible viewpoints at the top of the facility.

Key Observation Points and Contrast Rating Analysis

Portions of the scenic resources impact assessment is based upon the BLM Visual Resource Management (VRM) system, as outlined in BLM Manual 8400, "Visual Resource Management" (Bureau of Land Management 1984, 1986a, 1986b). Specific techniques used to assess visual impacts are described below.

The visual resource contrast rating system, as outlined in BLM Manual 8431, "Visual Resource Contrast Rating" (Bureau of Land Management 1986a), is a project-level planning and analysis tool used for systematically assessing project scenery impacts. The system determines the degree that a proposed project would affect the scenic quality of a landscape based upon the visual contrast created between the proposed project and the existing landscape. Contrast is measured by comparing the proposed project features with the major features in the existing landscape using basic design elements of form, line, color, and texture.

The contrast rating analysis was conducted for 31 KOPs (see figure 3.11-1 in the final EIS [FEIS]) representing sensitive views of the proposed action and alternative tailings facilities from residential areas, travel routes, and recreation areas. The contrast rating worksheets for each KOP are provided in appendix B.

Visual Simulation

Photographs or Google Earth images taken from each KOP that illustrate the current landscape view are provided in appendix C. The KOPs represent a sample of casual observers, including local, sensitive, and transitory observers. The observers differ in their distance from the project area and dominance and duration of view.

To support the contrast rating analysis and disclose potential visibility of the proposed action and alternative tailings facilities, photographic simulations of the theoretical views of the proposed action

and alternatives from the KOPs were developed (see appendix C). The simulations are intended to provide a theoretical view of the tailings facilities post reclamation. Most of the simulations were completed using on-site photography. Some simulations were completed using a "block model" process in Google Earth that illustrates the model of the tailings facility within Google Earth imagery.

Simulation color, vegetation, and contrast were completed using representative analog conditions found at similar reclamation areas in the region. Resolution Copper has completed reclamation and revegetation of several legacy tailings facilities at the West Plant Site. These areas were used to present the vegetation density, color, and scale in the visual simulations (figure 1).



Figure 1. Tailings facility reclamation and revegetation at West Plant Site used to inform visual simulation of proposed tailings facilities.

Appendix D contains additional simulations that were completed for the FEIS analysis and documentation. Simulations for Skunk Camp, the preferred alternative, were added to illustrate the visualization of the tailings facility and the impact of concurrent reclamation activities over time at 15-, 20-, and 30-year mine-life intervals. Simulations that illustrate the fog plume in the area of the East Plant Site were also added.

Appendix E contains additional analyses, including visual simulations, that were completed for the FEIS to present the potential impacts of fog plumes in the East Plant Site area.

Additional Detail for Scenic Resources in the Analysis Area

Arizona National Scenic Trail Passage Scenery Description

The analysis area contains approximately 55 miles of the Arizona National Scenic Trail (Arizona Trail) in four "passages" described below.

Passage 15 Tortilla Mountains. The Tortilla Mountains passage is approximately 28 miles long with the northern portion falling within the analysis area. Scenery along the trail in the scenic resources analysis area includes views of Ripsey Wash, the Gila River, and a background view of the White Canyon Wilderness.

Passage 16 Gila River Canyons. The Gila River Canyon passage is approximately 26 miles long and extends from the Gila River crossing at Kelvin Bridge to the Tonto National Forest boundary. A majority of this passage presents views of the Gila River riparian habitat with typical Sonoran Desert vegetation, canyons, and rock outcrops on the northern end.

Passage 17 Alamo Canyon. The Alamo Canyon trail passage is approximately 12 miles long. Views along this passage, within the analysis area, include Picketpost Mountain along the northern portion of the trail and the Superstition Mountains in the northern background. The scenic passage ends at the Picketpost Trailhead and contains typical Sonoran Desert vegetation. Picketpost Trailhead, located at the southern end of Passage 17, is a popular trailhead and access point for the Arizona Trail. Located approximately 0.5 mile from U.S. Route 60, the developed area contains an information kiosk, restrooms, and parking and allows for Arizona Trail access to the north and south. Views from the heavily used trailhead include the Superstition Mountains to the north and Picketpost Mountain.

Passage 18 Reavis Canyon. The scenic Reavis Canyon trail passage runs from the valley floor at the Picketpost Trailhead to near the top of the Superstition Mountains. Views along this passage are dominated by mountains and high-point features of Picketpost Mountain, Apache Leap Escarpment, Montana Mountain, and the Superstition Mountains. U.S. Route 60, dirt roads, and railroad and pipeline crossings dominate the foreground views at the southern end of the passage near the Picketpost Trailhead. Rogers Canyon Trailhead lies at the northern end of Passage 18 and provides access to the Superstition Wilderness and the northern segment of Passage 18 near Montana Mountain.

Regulations, Laws, and Guidance

Federal

Forest Service Visual Management System

The Tonto National Forest Land and Resource Management Plan uses the Visual Resource Management system (U.S. Forest Service 1974) for management of forest scenic resources. The Visual

Resource Management system establishes Visual Quality Objectives for the forest and designates an acceptable degree of alteration of the characteristic landscape (table 1). This method measures the degree of alteration in terms of visual contrast with the surrounding landscape generated by introduced changes in form, line, color, and texture.

Table 1. Forest Service Visual Quality Objective Classification Descriptions

Visual Quality Objective Category	Description
Preservation	Allows ecological change only and management activities that are not noticeable to observers. Applies to wilderness areas, primitive areas, other special classified areas.
Retention	Allows management activities that are not evident to the casual forest visitor. Under Retention, activities may only repeat form, line, color, and texture that are frequently in the characteristic landscape. Changes in the qualities of size, amount, intensity, direction, pattern, etc., should not be evident.
Partial Retention	Allows management activities that may be evident to the observer but must remain subordinate to the characteristic landscape. Activities may repeat form, line, color, or texture common to the characteristic landscape but changes in their qualities of size, amount, intensity, direction, pattern, etc., remain visually subordinate to the characteristic landscape.
Modification	Allows management activities that may dominate the characteristic landscape but that must, at the same time, use naturally established form, line, color, and texture. Activities that are predominantly introduction of facilities such as buildings, signs, roads, etc., should borrow naturally established form, line, color, and texture so completely and at such scale that their visual characteristics are compatible with the natural surroundings.
Maximum Modification	Allows management activities of vegetative and landform alterations that dominate the characteristic landscape. When viewed as foreground or middle ground, they may not appear to borrow completely from naturally established form, line, color, or texture.

Bureau of Land Management Visual Resource Management

The BLM uses the VRM system to manage visual resources on public lands (Bureau of Land Management 1984, 1986a, 1986b). The VRM system provides a framework for managing visual resources on BLM-administered lands. The four VRM class objectives describe the different degrees of modification allowed to the basic elements of the landscape (i.e., line, form, color, and texture) (table 2).

Table 2. Visual Resource Management Class Descriptions

VRM Class	Description
	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and should not attract attention.

VRM Class	Description
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the landscape.

State of Arizona Scenic Road Designation

Arizona Revised Statutes 41-512 through 41-518 provide for the establishment of parkways, historic roads, and scenic roads. The Arizona Department of Transportation implements and administers the law. The "Scenic Road" designation includes a roadway (or segment of a roadway) that offers a memorable visual impression, is free of visual encroachment, and forms a harmonious composite of visual patterns. The analysis area contains the Gila-Pinal Scenic Road and the Copper Corridor Scenic Road West, described in section 3.11.3.2 of the FEIS.

Local Lighting Ordinances

The Pinal County Outdoor Lighting Code and the Gila County Outdoor Light Control Ordinance contain guidelines and lighting requirements for projects that are proposed in the counties.

Key Documents and References Cited for Scenic Resources

The following list is meant to highlight key process or analysis documents available in the project record. It should not be considered a full list of all available documentation considered within this process memorandum or the EIS analysis.

Arizona Department of Transportation. 2018. Scenic Roads. Available at: https://www.azdot.gov/about/historic-roads/scenic-roads/list-of-scenic-roads. Accessed January 2, 2019.

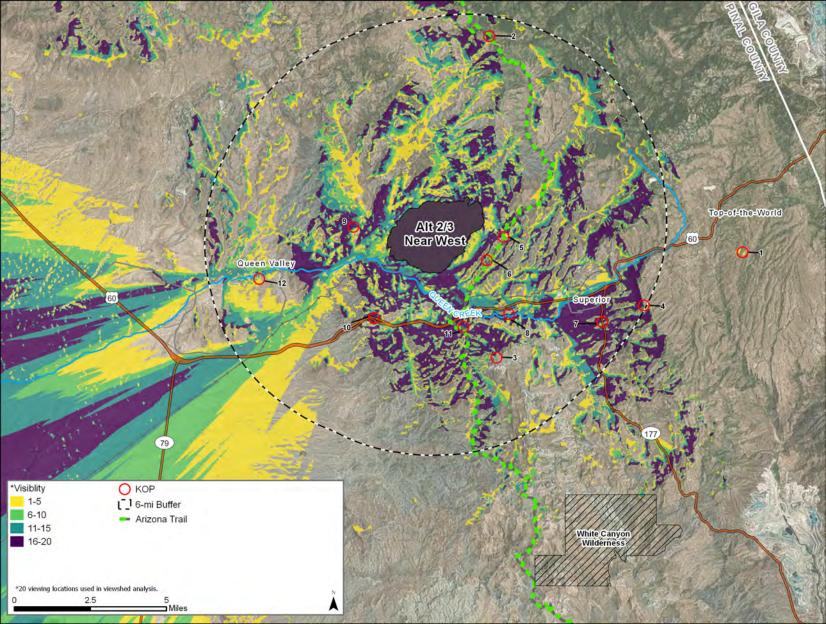
Bureau of Land Management. 1984. *Manual 8400 - Visual Resource Management*. Rel. 8-24. Washington D.C.: Department of the Interior, Bureau of Land Management. April 5.

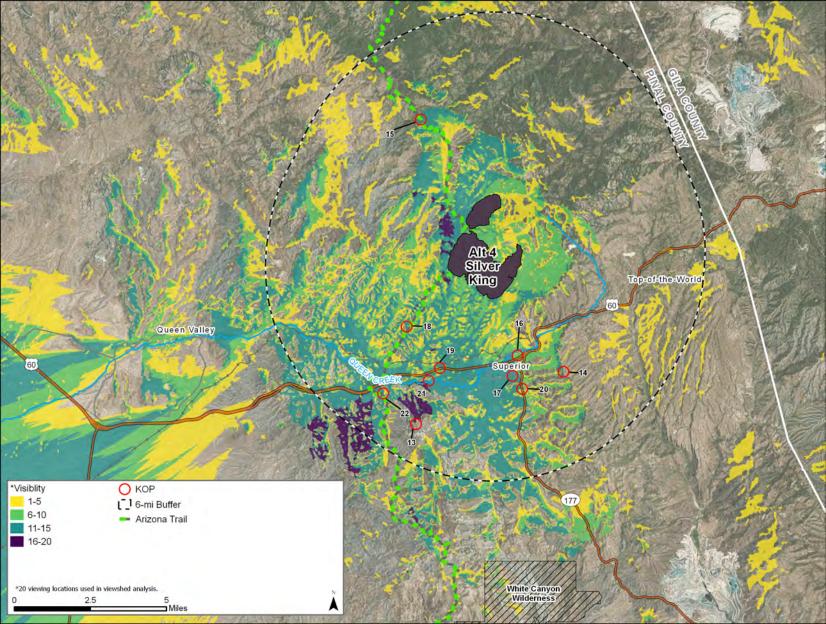
—. 1986a. *Manual 8431 - Visual Resource Contrast Rating*. Rel. 8-30. Washington D.C.: Bureau of Land Management. January 17.

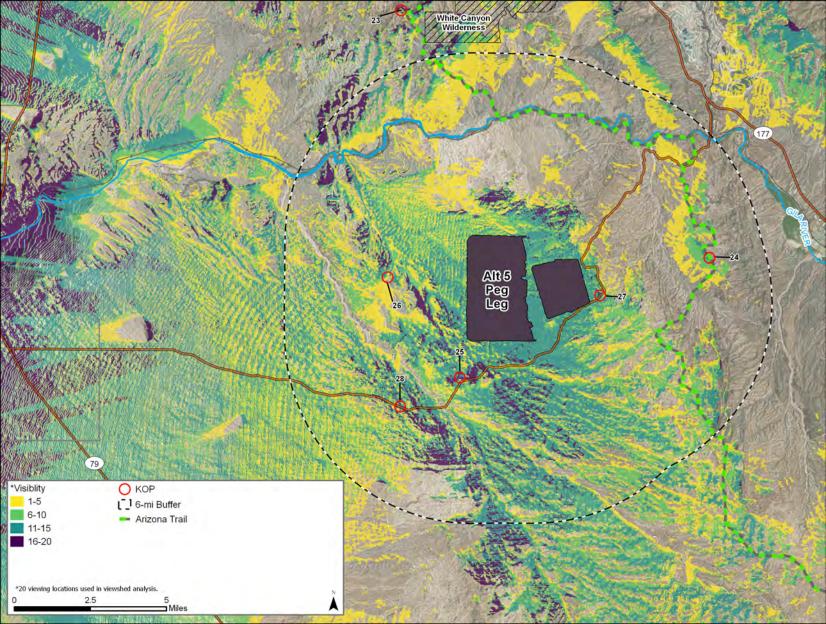
- —. 1986b. *Manual H-8410-1 Visual Resource Inventory*. Rel. 8-28. Washington, D.C.: Department of the Interior, Bureau of Land Management. January 17.
- Dark Sky Partners LLC. 2018. Impact Assessment of the Proposed Resolution Copper Mine on Night Sky Brightness: Final Report. Prepared for Resolution Copper. Tucson, Arizona: Dark Sky Partners LLC. February.
- M3 Engineering and Technology Corporation. 2018. *Outdoor Lighting and Pinal County Outdoor Lighting Code*. M3-PN140023.605. Revision 3. Technical Memo. Chandler, Arizona: M3 Engineering. July 23.
- Resolution Copper. 2016. General Plan of Operations Resolution Copper Mining. Superior, Arizona. May 9.
- Tipple, N. 2020. *Visual Impact of Fog Plume*. Response to Data Request #4 VR-1. Technical Memorandum. Denver, Colorado: Air Basics, Inc. June 25.
- Truescape. 2019. *Aerial Visual Simulation of Skunk Camp Pipeline in Vicinity of U.S. 60*. Christchurch, New Zealand: Truescape. July 10.
- —. 2019. *Alternative TSF KOPs: Block Models Existing and Proposed*. Christchurch, New Zealand: Truescape. February 19.
- —. 2019. EPS Transmission and Skunk Pipeline Simulations: TrueView Photo Simulations Existing and Proposed. Christchurch, New Zealand: Truescape. June 17.
- U.S. Forest Service. 1974. *National Forest Landscape Management. Vol. 2, Chapter 1, The Visual Management System*. Agriculture Handbook 462. Washington, DC: U.S. Forest Service. April.
- —. 2018. Arizona National Scenic Trail. Available at: https://www.fs.usda.gov/main/azt/home. Accessed January 2, 2019.

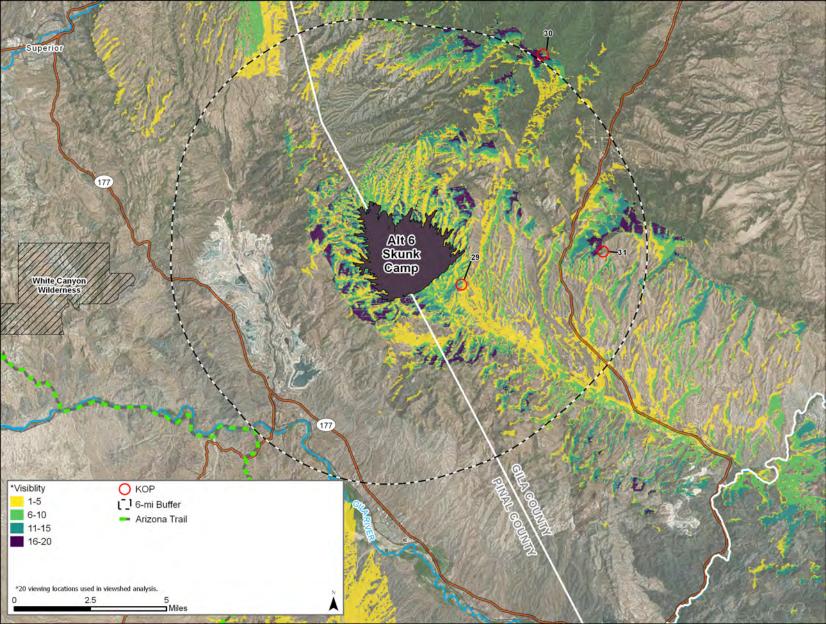
Appendix A.

Disclaimer: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The U.S. Forest Service has made every effort to ensure that the information in the Process Memorandum Scenic Resources Analysis is accessible. However, these appendices are not fully compliant with Section 508, and readers with disabilities are encouraged to contact John Scaggs by phone at 602-225-5292 or by email at john.scaggs@usda.gov if they would like access to the information.









Appendix B.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	
August 15, 2018	
8:43AM	

District

Tonto National Forest

ResourceArea

Activity (program)

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								SEC	71101					NFORMATION
]	. ProjectName Resolution Cop	oper	Mine	е							4. Loc Town			5. LocationSketch Represents vies of the subsidence zone from the east looking west. OHV users and recreationists accessing
2	2. KeyObservation 1 - FSR 2466 F Medium Simu	East o		bside	ence	Zone	:							the Devil's Canyon area. This image also represents the view of the Skunk Camp Pipeline - South.
	/IClass - Partial Retention	serv	ation	, Mo	difica	ation				3004				
					\mathbf{S}	ECTI	ON	B. CI	IAR/	ACT	ERIS	STIC	LAN	NDSCAPE DESCRIPTION
	1. LANDWATER									2	.VEC	ETA	TION	N 3. STRUCTURES
FORM	Dayah angulan and polling								rical	, asy	ymm	etri	cal,	Simple, bold, curving (road, transmission lines)
LINE	Rugged, bold,	Rugged, bold, and irregular									, dif	fuse	d	Curving, hard, and smooth (road, transmission lines)
COLOR	Foreground la pastel yellows dull, light red	s. Mi	idgr	ound			s h	arm	onio	us s	econ	dar	y col	rated, Monotone dull warm and cool grey (road, transmission lines)
TEX	Course, spars			N	Medi	um,	dens	se, g	rada	ation	Fine, ordered, subtle (road, transmission lines)			
	-1				S	SECT	TON	C. P	ROI	POSI	EDA	CTIV	VITY DESCRIPTION	
	1. L					2	.VEC	ETA	TION	N 3. STRUCTURES				
FORM	N/A	N	V/A						Solid, linear, contrasting (pipeline) Simple, dimensional shape, curving (subsidence)					
LINE	N/A						N	N/A						bold, simple, hard, continuous (pipeline) flowing, continuous, concave (subsidence)
COLOR	N/A						N	N/A						Bright cool silver (pipeline) light bright grey with harmonious deep reds and deep greens(subsidence)
TEX	N/A						N	N/A						Uniform, smooth (pipeline) Fine, gradational, subtle (subsidence)
				SEC	CTIO	ND.	CO	NTR	AST	RA	TING	; D	SH	ORT TERM ☑ LONG TERM
1.								URE						2. Does project design meet visual resource
	DEGREE	L	BC	WATI ODY	ER		EGET	EATIC 2)		SI	TRUC	TUR 3)	ES	management objectives? □ Yes ☑ No (Explain on reverse side)
(OF CONSTRAST Strong Woderate Strong S								эг	Strong	Moderate	ak	Je	3. Additional mitigating measures recommended? ☑ Yes □ No (Explain on reverse side)
Strong Weak None Strong							Moderate	Weak	None	Str	Mo	Weak	None	Evaluator's Names Date
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E	Line										X			
ELEMENIS	Color									X				1
Texture											X			1

Comments from item 2.

Changes in this viewshed are noticeable to observers and these alterations will be long term contrasting structures and landform changes. The land form, pipelines, and transmission lines have smooth, regular lines and forms that are not subordinate or have characteristics of the natural surroundings. The color and form of the subsidence area is in a scale and color that is not compatible with natural surroundings.

Preservation class allows for ecological changes with no alterations of management activities, except for very low visual-impact recreation facilities. Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Use Non-reflective Materials, Coatings, and/or Paint
- Colors for paints, stains, coatings, and other surface color treatments to be used on structures should be selected from the BLM Standard Environmental Colors Chart. Paint structures to match the surroundings as directed by the Forest Service.
- Develop a color treatment plan as directed by the Forest Service. Test Color Selections
- Color treat grouped structures using the same color
- Paint or specify pipeline colors with a BLM Standard Environmental Colors Chart paint to match surroundings as recommended by the Forest Service
- Painted, stained, or coated surfaces should be kept in good repair, and the surface treatment should be reapplied when necessary, as the surface color fades or the coating flakes or otherwise deteriorates
- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
- Minimize the project footprint and associated disturbance during construction, operations, and closure.
- The report Impact Assessment of the Proposed Resolution Copper Mine on Night Sky Brightness (Dark Sky Partners 2018) contains the following mitigation recommendations:
- Perform a critical examination of where lighting is needed for operational effectiveness and safety. For example, lighting along roadways where only vehicular traffic exists with no potential pedestrian conflicts, may provide no safety benefit.
- Perform a critical examination of where color perception is needed for operational effectiveness and safety. Replace lighting in non-critical
 areas with lower-impact lighting such as PC amber (providing some color discrimination) or direct-emission (also called "narrowband" or
 "limited wavelength" or "580 nm") amber LEDs.
- Perform a critical examination of illumination levels and reduce where appropriate. Many specific illumination recommendations provided for typical community applications (e.g. roadways, parking lots, etc.) may not be applicable to needs at industrial sites such as a mine. Further, lighting recommendations included in MSHA publications (CFR Title 30 Part 56) do not require specific illumination levels, suggesting only that the illumination "sufficient to provide safe working conditions" is needed.
 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Form 8400-4 (September 1985)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

${\bf VISUAL\,CONTRAST\,RATING\,WORKSHEET}$

Date
11-01-2018
District
Tonto National Forest
ResourceArea
Activity (program)

												Activit	y(program)						
								SEC	TIO	NA.	PRO)JE(TI	NFORMATION 1					
1	L. ProjectName Resolution Con	non.	Mina							4	4. Loc	ation			Location	nSketch nts views from the Arizona Trail from higher			
	Resolution Cop	oper .	wine	;						,	Town	ship	001N	el	elevation as the trail approaches from the north.				
	2. KeyObservation I	of Mo	nton									Tisible in background. This segment of the Arizona sheavily used. The KOP is located at a pull-							
	KOP 2- Arizona Trail northwest of Montana Mountain										Section	n 10		O	ut/view	point area above the tailings facility nately 0.5 miles northwest of Montana			
	Block Model														Iountai				
3 VRMCass Forest Service VQO - Partial Retention, Preservation, Modification																			
					SI	ECTI	ONI	B. CI	IAR	ACT	ERIS	STIC	LAN	NDSCAPE DES	CRIPT	ION			
		AND										2.VE	GET	ATION		3. STRUCTURES			
FORM	Irregular, diverse, pyramidical background. Simple, horizontal, smooth midground. Complex, diagonal foreground.									ole, s	strip	, asy	mm	netrical, divers	e	Curving, low, compatible, asymmetrical(roads)			
INE	Complex, bol	te ed	lge			,	Simp	ole, l	Diffu	ısed	edg	e		Flowing, simple, soft (roads)					
COLOR	Warm, subtle	Warm, subtle, yellow-reds											, gre	ey greens	Contrasting cool greys(roads)				
TEX	Coarse, contrasting, medium density										atch ınd.	y, fo	regi	ound and spai	rse	Sparse, contrasty, matte (roads)			
	•					S	ECI	ION	C. P	ROI	POSI	EDA	CTI	VITY DESCRIP	TION				
1. LANDWATER												2.VF	GET	ATION		3. STRUCTURES			
FOR	N/A								N/A							Flattened, simple, contrasting, bold (tailings)			
LINE	N/A]	N/A							Bold, horizontal, smooth, geometric (tailings)			
<u> </u>	N/A]	N/A							Light dull, warm contrasting gray (tailings)			
HEX :	N/A]	N/A						Smooth uniform ordered contrasting (tailings)				
[<u> </u>			SEC	OITO	ND.	CO	NTR	AST	RA	TING	; 	SH	ORT TERM	☑ LO	NG TERM			
1.						I	EAT	URE	\mathbf{s}							design meet visual resource			
	DEGREE	L		VATI DY 1)	ER	VI		ATI(ON	SI	TRUC	TUR 3)	ES			nent objectives? \square Yes \square No on reverse side)			
(OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None		Additional mitigating measures recommended? ☑ Yes □ No (Explain on reverse side) aluator's Names Date				
	Form X X												J. Grams		11-01-2018				
ELEMENIS	Line									X				E. Hunt					
LEM	Color									X									
Texture x							x				1								

Comments from item 2.

The structural change in the landscape would be noticeable to observers and would be greater than an ecological change. The alteration of the landscape will contrast with the surrounding form, line, and color of the landscape. The smooth and geometric form and line of the tailings are not borrowing from the surrounding complex and irregular forms. Tailings will not be borrowing from the area in a scale that would be compatible with the surrounding landscape.

Preservation class allows for ecological changes with no alterations of management activities, except for very low visual-impact recreation facilities. Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
- Minimize the project footprint and associated disturbance during construction, operations, and closure.
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- Perform a critical examination of where lighting is needed for operational effectiveness and safety. For example, lighting along roadways where only vehicular traffic exists with no potential pedestrian conflicts, may provide no safety benefit.
- Perform a critical examination of where color perception is needed for operational effectiveness and safety. Replace lighting in non-critical
 areas with lower-impact lighting such as PC amber (providing some color discrimination) or direct-emission (also called "narrowband" or
 "limited wavelength" or "580 nm") amber LEDs.
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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	
11-01-2018	
District	
Tonto National Forest	
ResourceArea	
Activity (mocrom)	

	A SOAD CONTRAST NATION WORKSHEET																
														Activity(pa	ogram)		
								SEC	OIT	NA.	PRO)JE(TI	NFORMATION			
]	Resolution Co	pper	Mine)							4. Loc Town			Represent v	5. LocationSketch Represent views from a high point in the region that is frequently visited by recreationists. Also represents tribal concerns. Not access via an		
	2. KeyObservation	Point								Π.	_		100				
	3- Picket Post	1							Range	e 0.	12E_		signated Forest Service trail. However, as a lot of recreation use as exhibited by				
	Block Model									Sectio	n 18	3		og at the top of the mountain. Tailings			
	VRMClass Forest Service Preservation,		Rete	entio	n, Re	etent	ion,					facility visib	acility visible from top of mountain and along the niking route.				
					SI	ECTI	ON	B. CI	IAR.	ACT	ERIS	STIC	LA	NDSCAPE DESCRIPTION	N		
	1. LANDWATER											EGE	TAT	ON	3. STRUCTURES		
FORM	Rough, irregular, concave, asymmetrical									ılar,	indi	istin	ct, r		Curving, low, compatible, asymmetrical(roads)		
LINE	Diagonal mid			nd.		5	Smo	oth,	cont	inuc	ous,	flowing Flowing	Flowing, simple, soft (roads)				
	a substitution of the subs		0	,_ 5 41													
%	Warm, soft, r	eddi	sh b	rowi	1			(Cool	, pal	e, bl	ue g	reei	ns Contras	sting cool greys(roads)		
COLOR																	
* 5	Gradation of smooth, fine grain to									n, me		m de	ensi	ty with slight Sparse,	contrasty, matte (roads)		
H H	clumped, coarse, and rough terrain										11						
SECTION C. PROPOSED ACTIVITY DE												VITYDESCRIPTION					
	1. I	AND	WAT	ER							2.V	EGE	TAT	ON	3. STRUCTURES		
FORM	N/A]	N/A					smooth, (tailings	bold, geometric, simple, contrasting s)		
LINE	N/A]	N/A					Hard, h	orizontal, straight, regular (tailings)		
٠,	N/A							ו	N/A					Bright s	Bright glaring warm grays (tailings)		
COLOR														21.g.iv §			
TEX . F	N/A]	N/A					Fine, sr (tailings	nooth, uniform, ordered, contrasting		
				SEC	CTIO	ND.	CO	NTR	AST	RA	rinc	- -	SH	ORT TERM ☑ LONG	TERM		
1.						J	FEAT	URE	\mathbf{s}						sign meet visual resource		
	DEGREE	L		WATI DDY 1)	ER	VI	EGET	TATI(ON	S	TRUC	TUR 3)	ES	management ob (Explain on revo	ojectives? □ Yes ☑ No erse side)		
	OF													3. Additional mitig	rating measures recommended?		
(CONSTRAST		ate				ate				ate				(Explain on reverse side)		
								Weak	None	Strong	Moderate	Weak	None	The Lead 2 N	D :		
									Z		2	×	Z	Evaluator's Names J. Grams	Date 11-01-2018		
AIS	Form									X				11 01 2010			
ELEMENIS	Line									x							
ELE	Color									X							
	F Touton										1						

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the surrounding landscape. It's large scale with a color and form contrast the surrounding area will dominate the viewshed.

Preservation class allows for ecological changes with no alterations of management activities, except for very low visual-impact recreation facilities. Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
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 "limited wavelength" or "580 nm") amber LEDs.
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 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Form 8400-4 (September 1985)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

${\bf VISUAL\,CONTRAST\,RATING\,WORKSHEET}$

Date	
11-01-2018	
District	
Tonto National Forest	
ResourceArea	
Activity (program)	

												Activity	Activity (program)					
								SEC	ТЮ	NA.	PRO).JE(TIN	NFORMATION 1				
1	. Project Name Resolution Cop	oper	Proje	ct E	IS					4	4. Loc	ation		5 . Re		Sketch Its recreationists and tribal concerns from where future public access and recreation is		
2	KOP 4- Apach	y Observation Point DP 4- Apache Leap ock Model Simulation (Simulation PDF pag										-	12E_			ed to continue.		
3. VRMClass Forest Service VQO - Modification, Partial Retention, Preservation																		
					SI	ECTI	ONI	3. CI	HAR	ACT	ERIS	STIC	LAN	NDSCAPE DESC	CRIPT	ON		
1. LANDWATER														ATION		3. STRUCTURES		
FORM	Rough, irreguasymmetrical concave midg	, wit	h st	rips		moot	h		Regu	ılar,	indi	stin	ct, r	olling		Regular and asymmetric (buildings, roads)		
LINE	Horizontal and simple with a digitate edge midground, jagged, undulating background, rugged irregular diagonal foreground.										cont	inuc	ous,	flowing		Bold, complex, transitional edge (buildings, roads)		
COL		Warm, soft, pale yellow to deep reddish										ue g	reer	ns		Cool contrasting very light greys (buildings, roads)		
TEX	Gradation of rough to smooth in patchy horizontal striped contrasting pattern									i, me atio		m de	ensit	ty with slight		Clumped, contrasting, uniform (buildings, roads)		
L	SECTION C. PROPOSED ACTIVITY DESCRIPTION																	
1. LANDWATER												2.VE	GET	ATION		3. STRUCTURES		
FORM	N/A							N/A							Definite, flattened, contrasting, geometric (tailings)			
LINE	N/A]	N/A							Horizontal, hard, converging, simple (tailings)		
COLOR	N/A]	N/A							Bright glaring warm grays (tailings)		
TEX	N/A]	N/A							Fine, smooth, uniform, ordered, clumped (tailings)		
				SEC	TTO	ND	CO	NTR	AST	RA	ring	<u> </u>	SH	ORT TERM	MIUN	NG TERM		
1.							EAT									lesign meet visual resource		
	DEGREE	L	ANDA BO	DY	ER		EGET			SI	TRUC	TUR 3)	ES	manag	ement	objectives? □ Yes ☑ No everse side)		
C	OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigating measures recommended? ☑ Yes □ No (Explain on reverse side)				
		J ₂	ľ	·^	4	J	-	``	4	J 2	x	À	4	Evaluator's N J. Grams	varries	Date 11-01-2018		
SIS	Form													E. Hunt				
ELEMENTS	Line										X			_				
E	Color										X			-				

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the surrounding landscape. It's large scale, roughly the size of the surrounding community, with a color and form that contrasts the natural landforms and dominate the viewshed.

Preservation class allows for ecological changes with no alterations of management activities, except for very low visual-impact recreation facilities. Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
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 "limited wavelength" or "580 nm") amber LEDs.
- Perform a critical examination of illumination levels and reduce where appropriate. Many specific illumination recommendations provided
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 Further, lighting recommendations included in MSHA publications (CFR Title 30 Part 56) do not require specific illumination levels,
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 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the
 ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

TITLE CO	$\bigcap M \cap M \cap M$	RATINGWA	DIZCHEE

Date	
August 13, 2018 14:25 PM	
District	
Tonto National Forest	
ResourceArea	
A 45 4 6	

	Activity (program)														
	SECTIONA. PROJECT INFORMATION 1. ProjectName 4. Location 5. LocationSketch														
	Resolution Co KeyObservation	Point								,		ation ship		5. LocationSketch Represents views from Arizona Trail, a National	
	5- Arizona Tra Medium Simu		t Ca	mp						Sectio			infrastructure (pipeline, roads, bridge, etc.)		
é	VRMClass Forest Service Modification	VQC) - P	artia	ıl Ret	enti	on,								
					SI	ECTI	ONI	3. CI	IAR.	ACT	ERIS	STIC	LAN	NDSCAPE DESCRIPTION	
	1. I	AND	WAT	ER		ON 3. STRUCTURES									
FORM	Rough, jagge Rolling, pyra Asymmetrica	mida	l (m	idgr	oun	d)					netri siona			N/A	
LINE	Complex, ang Simple, flowi Simple and c	old ((mid	groi	ınd)					ed, s uous			ar N/A		
COLOR	Hazey blues a Subtle red br Light and sof	with	ı ligl	ht gr	ey (mid)		Viv	vid y	ello	w gr	een	N/A		
TEX	Coarse and community Medium dense continuous as	grou	nd)					ediu nsity		en a	nd r	andom N/A			
	SECTION C. PROPOSED ACTIVITY DESCRIPTION														
		AND	WAT	ER					27/		2.V	EGE	[ATIO		
FORM	N/A								N/.	A				Geometric, cubic, vertical and horizontal, contrasting, flat and angular (tailings and pipe bridge)	
LINE	N/A								N/.	A				Bold and simple, angular, hard and converging. Tall vertical element dominates the horizon. (tailings and pipe bridge)	
COL	N/A								N/.	A				Cool, muted, flat, blue grey (tailings and pipe bridge)	
TEX	N/A								N/.	A				ordered, fine, smooth, uniform, matte (tailings and pipe bridge)	
				SEC	CTIO	ND.	CO	NTR	AST	RA	TINC	÷ 🗆	SH	ORT TERM ☑ LONG TERM	
1.]	FEAT	URE	\mathbf{s}					2. Does project design meet visual resource	
	DEGREE LANDWATER BODY (1) VEGETA (2)										TRUC	TUR 3)	ES	management objectives? □ Yes ☑ No (Explain on reverse side)	
(OF CONSTRAST None None Strong Moderate None None None None None None None Non									Strong	Weak	None	3. Additional mitigating measures recommended? ☑ Yes □ No (Explain on reverse side)		
		№	M	Weak	None	₽.	M	Weak	None		M	W	N	Evaluator's Names Date	
NIS	Form									X				J. Grams 11-01-2018 E. Hunt	
LEMENIS	Line									X					
	Color	1	l		1	l	1	l	l	X	1	l	l		

Comments from item 2.

The bridge in the simulation dominates the view and would be a long-term contrasting structure in the view. The dominating cool grey colors of the structure clearly stand out against the warm colors and nongeometric forms of the landscape. The new structures in the landscape are not subordinate to the existing landscape characterizations or borrow form or colors from the surrounding view.

Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

Mitigation measures that can be used to reduce the visual impact are the following:

- Use Non-reflective Materials, Coatings, and/or Paint
- Colors for paints, stains, coatings, and other surface color treatments to be used on structures should be selected from the BLM Standard Environmental Colors Chart. Paint structures to match the surroundings as directed by the Forest Service.
- Develop a color treatment plan as directed by the Forest Service. Test Color Selections
- Color treat grouped structures using the same color
- Paint or specify pipeline colors with a BLM Standard Environmental Colors Chart paint to match surroundings as recommended by the Forest Service
- Painted, stained, or coated surfaces should be kept in good repair, and the surface treatment should be reapplied when necessary, as the surface color fades or the coating flakes or otherwise deteriorates
- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
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 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the

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Form 8400-4 (September 1985)

Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTR.	AST RATING	WORKSHEET

Date
August 13, 2018 16:11pm
District
Tonto National Forest
ResourceArea
Activity (program)

	A Ti	JUA		OINI	TV) I I	M711	110	WO.	ш	11111										
															Activi	ity (program)					
								SEC	OIT	NA.	PRO)JE(TIN	FORMATION							
1	. Project Name Resolution Co	nnar	Mine							4	4. Loc	ation			5. Location	n Sketch ils follow a ridgeline east and in near					
	nesolution Co	pper	WITHE	3						,	Town	ship	001S		proximi	oximity of the tailings. A viewpoint from this					
2											Ronar		19F			represents the closest view of the tailings loccur continuously for approximately 1.5					
	6- Arizona Tra Medium Simu								mil							trail in this vicinity.					
		140101								;	Sectio	n 3	<u> </u>								
Fores	R VRMClass t Service VQO - M	Iodifi	catio	n , P	artia	l Ret	entic	on													
					SI	ECTI	ON	B. CI	HAR.	ACT	ERIS	STIC	LAN	DSCAPE DE	SCRIP1	TION					
	1. I	AND	WAT	ER								2.VF	GET	ATION	3. STRUCTURES						
M	rugged, jagge)	1	Asyr	nme	trica	ıl, lo	w, d	imensional sl	nape	N/A					
FORM	Rolling, mode Asymmetrica																				
E	Complex, ang]	Diffu	ısed.	, wea	ak co	ontir	nuous, flowin	g	N/A					
LINE		Simple, horizontal, bold (midground)																			
		Bold horizontal(foreground) Hazey blues and browns (background) Vivid yellow green to deep saturated														N/A					
COLOR	Subtle red br								gree	-	10W	gree	en to	deep saturat	eu	IV/A					
100	Light and sof																				
	Coarse and contrasty (background) Medium even and random density															N/A					
TEX	Medium dens					una	.)	1	vieu	IUIII	evei	ı an	u rai	naom aensity	IV/A						
T.	continuous a					oun	d)														
	SECTION C. PROPOSED ACTIVITY DESCRIPTION																				
	1. LANDWATER 2. VEGETATION 3. STRUCTURES																				
M	N/A							1	N/A						Bold, flattened, contrasting (tailings)						
FORM																					
	N/A							-	N/A						Bold, horizontal, simple, smooth, hard,						
LINE	IN/A							1	N/A							geometric (tailings)					
П																					
R	N/A							1	N/A							Subtle red brown with light grey					
OLOR																(tailings)					
ω																					
TEX TUR	N/A								N/A							Smooth, ordered, contrasting, uniform (tailings)					
I																(tallings)					
				SEC	OIT	ND.	CO	NTR	AST	RA	TING	-	SH	ORT TERM	☑ LO	NG TERM					
1.]	FEAT	URE	\mathbf{S}							design meet visual resource					
	DEGREE	L	ANDA	WATI DDY	ER	V	EGET	CATIC)N	SI	TRUC	TUR	ES			t objectives? □ Yes ☑ No reverse side)					
				וענ 1)			(2)			(3)		(
	OF													3. Additi	ional m	nitigating measures recommended?					
(CONSTRAST		ate				ate				ate			☑ Yes		No (Explain on reverse side)					
·	-	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None												
		Strong	Moderate	Weak	None	3	Mc	We	ž	₹	Mc	We	Ž	Evaluator's	Names						
SO	Form									x				J. Grams E. Hunt		11-01-2018					
ENI	Line									x				<u> </u>							
LEMENIS	Color									x				_							

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the surrounding landscape. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings. The horizontal form of the tailings alters by breaking up the existing horizon with a contrasting simple line.

Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project as proposed would not meet this requirement.

Additional Mitigating Measures (See item 3)

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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
August 13, 2018 16:11pm
District Highway 177
ResourceArea

														ty(program)					
								SEC	OIT	NA.	PRO)JE(TI	NFORMATIO					
1	Resolution Co		Mine)							4. Loc			002S		nSketch nts views from the approach to Superior and erior area.			
2	KeyObservation 7- Highway 17 Medium Simu	77 fro		earny	7				Range 012E										
	VRMClass Forest Service Retention, Pre				icatio	on , P	artia	ıl											
					SI	ECTI	ONI	B. CI	HAR.	ACT	ERIS	STIC	LAI	NDSCAPE DI	ESCRIPI	ION			
	1. IANDWATER 2. VEGETATION															3. STRUCTURES			
FORM	jagged, asym diverse, rugg dimensional	ed (n	nidg	rour	nd)		und)	á	Cont			vert	tical	and rounde	d,	Simple, angular, low(road) Amorphous geometric and low (buildings)			
LINE	jagged, comp Rugged, comp Simple, rollin	ken ((mid	grou	ind)				r, un , con			g, complex,		Bold, straight, regular(road) Angular, geometric, irregular (buildings)					
COLOR	Flat, muted, Cool dull blue Soft light yel	e bro	wns	(mid	lgroi	ind)								green, vibra ellow	nt	Cool blue-grey(road) Cool, light greys (buildings)			
TEX	Uneven, coar midground) Smooth, med		egro	und		Medi	ium	dens	sity,	con	trasting, rai	ndom	Continuous, contrasting, directional(road) Patchy, contrasting, scattered (buildings)						
	SECTION C. PROPOSED ACTIVITY DESCRIPTION																		
	1. LANDWATER 2. VEGETATION															3. STRUCTURES			
FORM	N/A								N/A							Simple, flattened, compatible (tailings)			
LINE	N/A]	N/A							Horizontal, continuous, geometric(tailings)			
COL	N/A]	N/A							Bluegreen, cool, (tailings)			
XAL	N/A							1	N/A							Smooth, subtle, matte (tailings)			
				SEC	OTTO	ND.	CO	NTR	AST	RA	rinc	; D	SH	ORT TERM	☑ LO	NG TERM			
1.								URE						2. Does	project	design meet visual resource			
	DEGREE	L	BC	WATI DDY 1)	ER	VI		[ATI(ON	SI	TRUC	TUR 3)	ES			t objectives? □ Yes ☑ No reverse side)			
(OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	☑ Y	es □	nitigating measures recommended? No (Explain on reverse side) Date			
Г										Ŋ	2		Z		Evaluator's Names J. Grams 1				
SI	Form											X		E. Hunt		11-01-2018			
ELEMENTS	Line											X		_					
ELF	Color																		

Comments from item 2.

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Form 8400-4 (September 1985)

Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
March 9, 2016 11:27am
District
Boyce Thompson Arboretum
ResourceArea

	A													Activity (program)			
	SECTIONA. PROJECT INFORMATION														Auvily (Inogram)		
								SEC	TIO	NA.	PRO)JE(TIN	IFORMATION			
]	L. ProjectName Resolution Co	pper	Mine	9							4. Loc			F	LocationSketch Represents view from Boyce Thompson Arboretum.		
	2. Key Observation 8- Picket Post Medium Simu	Boyce	Tho	mpsc	on)]	Range Section	e 0	12E_						
	R VRMClass Forest Service Retention, Pre				icatio	on , P	artia	ıl									
	SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION 1. LANDWATER 2. VEGETATION 3. STRUCTURES																
	1. I	AND	WAT	ER							2,7	ÆGE	ТАТ	ION	3. STRUCTURES		
FORM	Amorphous, l convex, cyline			low,	, div	erse,	,	1	Dive	rse,	irreş	gula	r, fe	w, patchy	Linear, vertical and diagonal, geometric, numerous (trail and structures) Asymmetrical, bold, angular (building)		
LINE	Undulating, 1	rugg	ed,						Weal conv		regu ng	lar,	brok	cen,	Irregular, angular and curving (trail and structures) Hard, diverging, geometric (building)		
COLOR	Light, warm harmonious	s an	d br	own	S,			Blue narn			nd y	ello	w-green, cool,	Warm grey browns (trail and structures) Contrasting orange and white with harmonious warm browns (building)			
TEX	Random, clur	adat	iona	l, coa	arse							trasting, us, patchy	Patchy, scattered and stippled (trail and structures) Clumped, uniform, fine texture (building)				
<u> </u>	SECTION C. PROPOSED ACTIVITY DESCRIPTION																
	1. IANDWATER 2. VEGETATION														3. STRUCTURES		
FORM	N/A							1	N/A						Smooth, large, strip (tailings)		
LINE	N/A							1	N/A						Bold, hard, parallel, geometric (tailings)		
COLO	N/A							1	N/A						Warm brown grey with cool greens (tailings)		
TEX	N/A							1	N/A						Uniform, directional, continuous, contrasting, clumped (tailings)		
				SEC	CTIO	ND.	CO	NTR	AST	RA	ΓING	÷ 🗆	SH	ORT TERM	☑ LONG TERM		
1.						I	FEAT	URE	\mathbf{s}					_	roject design meet visual resource		
	DEGREE	L		WATI DDY 1)	ER	VI		CATIC 2)	ON	SI	TRUC	TUR 3)	ES		gement objectives?		
(OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	☑ Yes	· · ·		
		₹	M	Ř	ž	₹	M	Ä	ž		M	Ň	ž	Evaluator's I J. Grams	Names Date 11-01-2018		
\mathbf{z}	Form									X				E. Hunt	11-01-2010		
LEMENTS	Line									X							
	Color									X							

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the surrounding landscape. This structure will partially alter the horizon line in this viewscape from rugged and coarse to uniform and smooth. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

Preservation class allows for ecological changes with no alterations of management activities, except for very low visual-impact recreation facilities. Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
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 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the
 ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Form 8400-4 (September 1985)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

${\bf VISUAL\,CONTRAST\,RATING\,WORKSHEET}$

Date
March 8, 2016 11:10am
District
Tonto National Forest
ResourceArea
Activity (program)

															Activi	ty(program)
								CEC	ALIO.	NT A	DDC) TEV	VT II	NFORMATION		
1	. ProjectName							SEC	110		4. Loc				Locatio	nSketch
	Resolution Co	pper	Mine)							т	.1.:	0016			nts views from OHV roads in the vicinity of
2	. KeyObservation	Point														ngs facility.
-	9- FSR 172]	Range	e 1	1E_			
	Medium Simu	Medium Simulation														
3	VRMClass Forest Service Retention, Pre				catio	on , P	artia	ıl								
					SI	ECTI	ONI	3. CI	HAR.	ACT	ERIS	STIC	LA	NDSCAPE DESC	CRIPT	ION
	1. I	AND	WAT	ER								2.VE	GET	TATION		3. STRUCTURES
FORM	Bold, rough, a	asyn	ımet	rica	l, pa	tchy]	Patc	hy, i	rreg	ular	, an	nd amorphous		Linear, contrasting, gentle (road)
LINE	Irregular, an	r, un	ıdula	ating	g		1	Diffu	ısed	edge	e, we	eak,	and undulatin	ıg	Bold, simple, continuous (road)	
COLOR	Warm deep b monotone blu		ns, h	arm	onio	us					lue g eens		ns w	vith dark deep		Muted warm grey (road)
TEX	Uneven and 1	roug	h ar	nd sp	arse	e 1	Dens	se-m	ediu	m d	ens	ity with gradat	ion	Matte, stiped, ordered, gradation, directional (road)		
	SECTION C. PROPOSED ACTIVITY DESCRIPTION															
	1. I	ER								2.VE	ŒI	TATION		3. STRUCTURES		
FORM	N/A							1	N/A							Geometric bold, smooth, flattened(tailings)
LINE	N/A							1	N/A							Horizontal, simple, continuous (tailings)
COLOR	N/A							1	N/A							Cool deep soft greens(tailings)
	N/A							1	N/A							Fine, ordered, matte, smooth (tailings)
TEX	10/11								. 1/11							Thic, ordered, matter, smooth (tallings)
				SEC	OIT	ND.	CO	NTR	AST	RA	ring	; _□	SH	ORT TERM	☑ LO	NG TERM
1.]	FEAT	URE	s							design meet visual resource
	DEGREE	L		WATI DDY 1)	ER	V	EGET	ATIC 2)	ON	SI	TRUC	TUR 3)	ES			t objectives? □ Yes ☑ No reverse side)
C	OF ONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	☑ Yes		itigating measures recommended? No (Explain on reverse side)
		₹	ME	We	ž	%	ME	We	Ž	%	ME	We	ž		Vames	Date
_δ Ω	Form									x				J. Grams E. Hunt		11-01-2018
ELEMENIS	Line									x				1		
LEW	Color									x				1		
H		1	 		—	 	 	 	1	+						

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the surrounding landscape. This structure will completely alter the background horizon in this viewscape from rugged and coarse to uniform and smooth. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

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Additional Mitigating Measures (See item 3)

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 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Form 8400-4 (September 1985)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

Date March 8, 2016 09:55am
District US 60
ResourceArea
Activity (program)

	VISUAL CONTRAST RATING WORKSHEET													THEOREM THE				
															Activity (program)			
SECTION A. PROJECT INFORMATION																		
1. ProjectName Resolution Copper Mine														5	LocationSketch			
						,	Town	shin	002S		Represents sensitive views from US60 in the vicinity of Gonzales Pass.							
2										-								
	10- US60 Mile Medium Simu								Range	e 0.	HE <u> </u>							
									Sectio	n 09	<u> </u>							
	VRMClass t Service VQO - M rvation	n, Pa	ırtial	Rete	entio	n,												
					SI	ECTI	ONI	3. CI	IAR.	ACT	ERIS	STIC	LAN	IDSCAPE DES	CRIPTION			
			WAT								,VEC				3. STRUCTURES			
FORM	Bold, high, st (background) Conical, irreg			/fore	1	Gent ow	le, r	node	rat€	e, ro		Irregular, low, concave (dirt road) Bold, linear, contrasting (paved road)						
LINE	Bold, angular Simple, surve]	Diffu	ısed	, sim	ple,	soft		Curving and broken (dirt road) Smooth, diagonal, straight (paved road)					
COLOR	(background)	Warm monotone yellow-brown greys										vith	vibr	De	Warm grayish, dull (dirt road) Deep grey with warm vibrant brown (paved road)			
TEX	Coarse, contin) 1	Doffe	ed, n	nedi	um,	gra		Contrast, sparse, matte, uniform (dirt road) Smooth, directional, uniform (paved road)					
	•					S	SECT	NOI	C. P	ROI	POSI	EDA	CTI	VITY DESCRIP	TION			
		AND	WAT	ER					N/A	2	2.VEC	ETA	TION		3. STRUCTURES			
FORM	N/A														at, large, geometric, trapezoid, smooth ilings)			
LINE	N/A	N/A												Во	Bold, horizontal, simple, geometric (tailings)			
COLOR	N/A							1	N/A					Lig	Light warm grey with vivid blue greens (tailings)			
	N/A							1	N/A					Fir	Fine, smooth, contrasting, ordered (tailings)			
TEX									,,,,,						io, sinoton, contrasting, oracioa (tallings)			
				SEC	OIT	ND.	CO	NTR	AST	RA	ring	; _□	SH	ORT TERM	☑ LONG TERM			
1.						J	FEAT	URE	S						roject design meet visual resource			
DEGREE LANDWATER BODY (1) VEGETATI (2)									ON	SI	TRUC	TUR 3)	ES		gement objectives? Yes No in on reverse side)			
C	OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additio	` •			
	Ti.				- 1				- 1	X	x		-	J. Grams	11-01-2018			
NIS	Form													E. Hunt				
ME	Line		1							X								
豆	G 1										v							
ELEMENIS	Color Texture									X	X							

Comments from item 2.

The addition of the structures (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the surrounding landscape. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

Preservation class allows for ecological changes with no alterations of management activities, except for very low visual-impact recreation facilities. Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

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 ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

Date
October 14, 2015 14:23pm
District
Tonto National Forest
Resource Area
Activity (program)

														Activi	Activity (program)		
SECTIONA. PROJECT INFORMATION																	
	Project Name Resolution Cop Key Observation						<u></u>	4. Loc	ship	002S		5. Location Sketch Represents views from a popular recreation staging area for the Arizona Trail. Heavily used area, popular trailhead. Visible in mid-ground. ATA has said this is their most popular trailhead for the whole Arizona Trail.					
	11- Arizona Tı Medium Simu	ost T	Γrailh	nead				Range Section			_						
	R VRMClass Forest Service Retention, Pre				icatio	on , P	'artia	ıl									
					Sl	ECTI	ONI	3. CI	IAR.	ACT	ERIS	STIC	LAN	IDSCAPE D	ESCRIPT	ION	
1. LANDWATER												2,	VEGI	ETATION		3. STRUCTURES	
FORM	Angular, amorphous, jagged(background) Small, moderate, rolling (mid/foreground)										gular rical		ntra	sting, vertic	al and	Geometric, diagonal, symmetrical, strip (road, parking lot, fence)	
LNE		Jagged, complex, broken (background) Broken, simple, curving (mid/foreground)											con	verging, irre	egular	Diagonal, straight, parallel, geometric (road, parking lot, fence)	
COLOR	(background)	Dark blue with blue brown, monotone (background) Warm red grey, dull (mid/foreground)												deep warm o ed golden w		Warm deep grey, deep saturated brown/black (road, parking lot, fence)	
TEX	Rough, coarse, contrasting (background) Smooth, gradational, medium (mid/foreground)													patchy, ium, and clu	ımped	Fine, uniform, ordered, contrasting (road, parking lot, fence)	
						S	ECT	NOL	C. F	PROPOSED ACTIVITY DESCRIPTION							
		AND	WAT	ER						2 VEGETATION						3. STRUCTURES	
FORM	N/A								1	N/A						Flattened, gentle, simple, contrasting, high (tailings)	
LINE	N/A	N/A														Horizontal, smooth, simple, geometric (tailings)	
COLOR	N/A								1	N/A						Muted blue green with warm grey (tailings)	
TEX	N/A					1	N/A						Smooth, uniform, ordered (tailings)				
	•			SEC	CTIO	ND.	CO	NTR	AST	RAT	ring	; _□	SH	ORT TERM	☑ LO	NG TERM	
1.						I	EAT	URE	\mathbf{s}							design meet visual resource	
	DEGREE	LANDWATER BODY (1) VEGETATION (2)								SI	TRUC	TUR 3)	ES		nagement objectives? Yes No plain on reverse side)		
(OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	☑ Y	es □	itigating measures recommended? No (Explain on reverse side)	
		\mathbf{z}	M	W	ž	S	M	W	ž	S.	M	M	ž	Evaluator		Date	
$\mathbf{\bar{x}}$	Form										X			J. Grams E. Hunt	•	11-01-2018	
ELEMENIS	Line										x	x		1			
EE	Color										X	X]			

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the surrounding landscape. This structure will alter the background horizon in this viewscape's focal point, the terminus of the road, from rugged and coarse to predominantly uniform and smooth. It's large scale with a color and form contrasting the natural landforms, this structure is not compatible with the natural surroundings.

Preservation class allows for ecological changes with no alterations of management activities, except for very low visual-impact recreation facilities. Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

Mitigation measures that can be used to reduce the visual impact are the following:

- Implement dust and wind erosion control measures
- · Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

${\bf VISUAL\,CONTRAST\,RATING\,WORKSHEET}$

Texture

Date
October 15, 2015, 10:13am
District
Town of Queen Valley
Resource Area
Activity (nmoram)

															Acti	vity(program)	
								SEC	OITO	NA.	PRO)JE(TIN	FORMATIO	N		
]	l. ProjectName Resolution Co		Mine)							4. Loc Town				5. LocationSketch Need a KOP that represents where facility is most visible in Queen Valley and assume that the		
2	2 KeyObservation 12- Queen Val Medium Simu	ley, l		n Cha	ırlott	e Sti	reet				Range Section		10E	_	meets	inary one provided by Resolution Copper these criteria. The viewpoint on Charlotte appears to be in the highpoint area for Queen	
	R VRMClass Forest Service Retention) - M	Iodifi	catio	on, P	artia	l										
-					SI	ECT	ONI	B. CI	HAR.	ACT	ERIS	STIC	LAN	DSCAPE DI	ESCRIE	TION	
	1. I	AND	WAT	ER									2.VE	GETATION		3. STRUCTURES	
FORM	Rugged, angurolling, amorflattened, hor	phou	is, ja	gged	d(mi	dgro			nd)	V	ertic	al, r	num	erous, conica	al	Geometric, asymmetrical, simple (buildings, roads, power lines)	
LINE	Irregular, cor Rugged, undu Simple, horiz	ılati	ng, h	nard	(mic	d)	k)			Iı	regu	ılar,	dia	gonal, broke	n	Linear converging geometric straight lines (buildings, roads, power lines)	
COLOR	Monotone cool blue-browns (back) Warm browns (mid) Cool dull, light grey (fore)										righ	t vik	oran	t yellow gree	ens	Muted yellows, cool deep greys, cool light greys (buildings, roads, power lines)	
TEX	Nondirection Rough, patch Uniform, smo	y, co	ntra	stin	g (m		k)							mped, , patchy		Scattered, random, medium (buildings, roads, power lines)	
<u>I</u>	'					5	SECT	ION	C. F	PROI	POSE	EDA	CTIV	/ITY DESCR	IPTION	1	
	1. I	AND	WAT	ER									2.VE	GETATION		3. STRUCTURES	
FORM	N/A									N	Ī/A					Flat, small, linear (tailings)	
LINE	N/A									N	I/A					Regular, horizontal, continuous, geometric (tailings)	
COLOR	N/A									N	Ī/A					Light monotone muted warm browns and dull greys(tailings)	
TEX	N/A									N	I/A					Smooth, ordered, uniform (tailings)	
	1			SEC	OIT	ND.	CO	NTR	AST	'RA	TING		SH	ORT TERM		ONG TERM	
1.																et design meet visual resource	
	DEGREE LANDWATER BODY (1) VEGETATION (2)									S	TRUC	TUR 3)	ES	man	ageme	nt objectives? □ Yes ☑ No n reverse side)	
OF CONSTRAST DO BE DO BE								None	Strong	Moderate	Weak	None	☑ Y	es 🗆	mitigating measures recommended? l No (Explain on reverse side)		
Strong Model Wealk None Strong Model Weak								ž	₹	M	M	ž	Evaluator J. Grams		Date 11-01-2018		
\mathbf{z}	2 Form											X		E. Hunt		11-01-2018	
LEMENIS	Line											X					
E E	Color											X					

Comments from item 2.

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Date
11-01-2018
District
Tonto National Forest
ResourceArea
Activity (program)

	VI	SUA	LC	UNI	KA	STR	AH	NG	WO	KKS	SHE	ET.							
															Activ	Activity (program)			
							SEC	OIT	NA.	PRO)JE(TI	IFORMATION	N					
1	l. ProjectName									4	4. Loc	ation				onSketch			
	Resolution Cop	oper .	Mıne	9						,	Town	ship	002S		Represent views from a high point in the region that is frequently visited by recreationists. Also represents tribal concerns. Not access via an				
	2. KeyObservation1	Point										-							
	13- Picket Post	t Mou	untai	in							Range	e 0	12E_		officially designated Forest Service trail. However, the route has a lot of recreation use as exhibited by				
	Block Model Simulation												3		the visi	the route has a lot of recreation use as exhibited by the visitor log at the top of the mountain. Tailings			
	R. VRMClass													facility	visible from top of mountain and along the				
VQO-	VQO- Retention, partial retention, modification														hiking	route.			
					S	ECTI	ONI	3. CF	HAR	ACT	ERIS	STIC	LAN	IDSCAPE DE	SCRIP	TION			
	1 I	AND	WAT	ER	~		0111	 0.						ETATION	201411	3. STRUCTURES			
	Jagged, horiz				idic	al			5	Shor	t. lov			atible		Definite, amorphous, curving, and			
FORM	(background)									,,,,,	0, 10	,	,111p.	201010		contrasting (roads)			
F	Angular, bold	, lin	ear ((fore	and	mid	l gro	und))										
	Bold, irregula	ır, rı	ıgge	d, co	mpl	ex,			1	Weal	k, iri	regu	lar,	simple		Bold, curving, subangular, soft,			
LINE	continuous (b															flowing (roads)			
	Bold straight	, sim	ple	(fore	and	l mio	d)												
R	Warm greys v	vith	red	brov	vns				7	Vibra	ant c	cool	gree	ns		Warm light grey, monotone			
COLOR																			
TEX	Coarse, rough								I	Medi	ium,	gra	dati	onal, continu	ious	Smooth, nondirectional, contrasting			
	Smooth, digit	ate e	eage	(tex	ture	e)										(roads)			
												EDA	CTI	VITY DESCRI	PTION				
	1. L	AND	WAT	ER										ETATION		3. STRUCTURES			
ı	N/A								1	N/A						Bold, flat, smooth simple, regular,			
FORM																geometric, contrasting (tailings)			
E.																			
(- 7)	N/A								1	N/A						Bold, straight, horizontal, simple,			
EE																angular (tailings)			
8	N/A								1	N/A						Bright glaring pastel warm grays			
COLOR																(tailings)			
	27/4									. T / A						T: (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
TEX	N/A								1	N/A						Fine, smooth, ordered, contrasting, uniform (tailings)			
E E																amorin (tanings)			
				OT:	TTT-C	AIT	CC.	. 1777	A COTT	D 4 2	nn r		CTT			NATO (TENDA)			
		1		SE(J11U					KA'	LING	, Ц	SH	ORT TERM		ONG TERM			
1.		L_	4370-	T74		<u> </u>	EAT	URE	<u>s</u>	ı						t design meet visual resource nt objectives? Yes No			
	DEGREE	L		WATI DDY	EK	VI		ATIC	ON	S	TRUC		ES			reverse side)			
(1)										(3)		` •		•				
	OF													3. Addit	tional r	nitigating measures recommended?			
(CONSTRAST										ge ige			☑ Ye		No (Explain on reverse side)			
								ne	Strong	Moderate	ak	ne De							
Strong Mode None Strong None Model Weak								None	S.	Mo	Weak	None	Evaluator's	s Name					
70 Form									X				J. Grams		11-01-2018				
							v				E. Hunt								
ME	Line									X				_					
ELF	Color									X									
	Texture									X									

Comments from item 2.

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Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	
11-01-2018	
District	
Tonto National Forest	
ResourceArea	
Activity (program)	

	VE	SUA	TC	UNI	KA	21. K	AII	NG	WO.	KKS	HE	ET.							
															Activity (program)				
								CEC	ALIO.	NI A	DDC) TEV	TIN	FORMATION					
1	. ProjectName							SEC	/110			ation		•	LocationSketch				
	Resolution Co	pper	Mine	9							ı ıx	audi			Represents recreationists and tribal concerns from				
										7	Town	ship	002S		ocation where future public access and recreation is				
2											Range	. 0	12E	a	anticipated to continue.				
	14- Apache Le Block Model S									1	nange	.	12C <u> </u>						
	block Model S	ımuı	ation	l						5	Sectio	n 0	<u> </u>						
:	. VRMClass																		
VQO-	Retention, partial	rete	ntion	ı, Mo	difica	ation	-												
					SI	ECTI	ON I	B. CI	IAR.	ACT	ERIS	STIC	LAN	DSCAPE DES	CRIPTION				
	1. I	AND	WAT	ER						2,	VEG	ETA	NOI		3. STRUCTURES				
M	Definite, rugg	ged,	steej	p, so	lid, i	irreg	gulaı						itible		ving, rolling (road and trails)				
FORM	diagonal							1	nond	lirec	tion	al		Geo	metric, cubic, asymmetrical (buildings/town)				
	Rugged, diag	onal.	, irre	egula	ar (b	ack)		7	Weal	k, si	mple	9		Bolo	d, curvilinear, undulating (road and trails)				
LINE	Digitate edge													Bro	ken, geometric, complex (buildings/town)				
Τ	Angular, irre	gula	r, co	mple	ex (fo	ore)													
2	Warm yellow	orai	nge g	grey	s wit	h so	ft	(Cool	vibr	ant	gree	ens	Ligi	nt monotone grey (road and trails)				
COLOR	greens														te greys and warm browns, (buildings/town)				
ω																			
	Gradational,	roug	sh, st	triat	ed, a	ınd]	Patc	hy a	nd g	rada	ation	nal, smo	oth, random, matte, subtle (road and trails)				
TEX	contrasting									inuo					nped, ordered, contrasting (buildings/town)				
T								1	nedi	ium	text	ure							
						S	SECI	ION	C. F	PROF	POSI	EDA	CTIV	/ITY DESCRIP	TION				
	1. I	AND	WAT	ER						2.	VEG	ETA	ΓΙΟΝ		3. STRUCTURES				
I	N/A]	N/A					Defi	inite, angular, flattened, horizontal, smooth				
FORM														(tail	lings)				
F																			
	N/A]	N/A					Reg	Regular, smooth, hard, simple (tailings)				
LINE																			
Ι																			
R	N/A]	N/A					dull	dull harmonious warm grays (tailings)				
COLOR															and natinomous warm grays (varinings)				
Ω																			
	N/A]	N/A					Smo	ooth, contrasting, uniform, striped (tailings)				
TEX																			
L L																			
	•			SEC	OIT	ND.	CO	NTR	AST	RA'	TING	} □	SH	ORT TERM	☑ LONG TERM				
1.]	FEAT	URE	\mathbf{s}					2. Does p	roject design meet visual resource				
		L	AND/	WATI	ER					CT	TOTAC	vii ii	T C		gement objectives? Yes No				
	DEGREE		BC	DDY		l VI		EATIC 2)	JIN .			TUR 3)	es:	(Expla	in on reverse side)				
	OF (1)							, 	1			, 							
														onal mitigating measures recommended?					
(CONSTRAST \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \									ate			☑ Yes	\square Yes \square No (Explain on reverse side)					
							Weak	None	Strong	Moderate	Weak	ne							
		2	Mc	Weak	None	₽.	Mc	We	Ž	%	Mo	We	None		valuator's Names Date				
	Form										X			J. Grams					
SIS	Form													E. Hunt					
LEMENIS	Line										X								
E	Color										X								

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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
11-01-2018
District
Tonto National Forest
ResourceArea
Activity(program)

	V II	JO1 1	ЦС			J = = .									
															Activity(program)
								SEC	TIO	NA.	PRO).TEC	TIN	FORMATION	
1	. ProjectName Resolution Cop	oper	Mine	·				SEC.	110	1111	4	4. Loc	ration ship		5. LocationSketch Represents views from the Arizona trail from a higher elevation as the trail passes Montana
2	KeyObservationl 15- Arizona Tr Block Model S	ail –			Mou	ıntai	n (Si	lver l	King	view	7)	Rang	-	2E	Mountain.
3	VRMClass Forest Service) – M	lodifi	catio	n an	d Pa	rtial	Rete	ntior	n					
					SI	ECTI	ONI	3. CI	IAR	ACT	ERIS	STIC	LAN	DSCAPE DES	CRIPTION
	1. L	AND	WAT	ER							2.V	EGE	TATI	ON	3. STRUCTURES
FORM	Diverse, irreg flattened, con						d	(Cont	inuc	ous,	rolli	ng, a	morphous	Strip and patchy, amorphous, rolling and flat (roads, buildings)
LINE	Rugged and u						ıg	I	rreg	gulai	r, flo	wing	g, so:	čt	Curving and converging, flowing (roads, buildings)
COLOR	Warm yellow-brown and red-brown shades from light muted to deep darks.								Vibra	ant t	to m	uted	coo	blue greens	Light muted cool grey (roads, buildings)
TEX	Medium, uneven, random, and dotted								Jnev	en a	and	grad	atio	nal	Directional, contrasting, patchy, matte (roads, buildings)
	•					S	SECT	NOI	C. P	ROI	POSI	EDA	CTIV	TTY DESCRIP	TION
		AND	WAT	ER							2.V	EGE	TATI	ON	3. STRUCTURES
FORM	1. L	AND	WAT	ER				1	N/A		2.V	EGE	TATI	<u>ON</u>	3. STRUCTURES Angular, flattened, solid, smooth, moderate (tailings)
LINE FORM		AND	WAT	ER					N/A N/A		2.V	EGE	TATI	<u>ON</u>	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings)
	N/A	AND	WAT	ER				1			2.V	ÆŒ	TATI	ON	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric
LINE	N/A N/A	AND	WAT	ER				1	N/A		2.V	ÆGE	TATI	ON	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings)
COLOR LINE	N/A N/A	AND	WAT		TIO	ND.	CO	1	N/A N/A	RAT				ORT TERM	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings) Bright glaring warm grays (tailings) Smooth, ordered, uniform, clumped
COLOR LINE	N/A N/A	AND	WAT		THO		CO	n n	N/A N/A N/A AST	RA				ORT TERM 2. Does p	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings) Bright glaring warm grays (tailings) Smooth, ordered, uniform, clumped (tailings) ZLONG TERM roject design meet visual resource
TEX COLOR LINE	N/A N/A N/A N/A DEGREE		ANDA BO	SEC]	FEAT EGET	1 1 1 1 NTR	N/A N/A N/A SST		TING	, –	SHO	ORT TERM 2. Does promanag	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings) Bright glaring warm grays (tailings) Smooth, ordered, uniform, clumped (tailings)
TEX COLOR LINE	N/A N/A N/A N/A	I	AANDM BO	SEC WATI	ER	V	FEAT EGEI	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N/A N/A N/A ST S DN	SI	TING ()	TUR	SHO	DRT TERM 2. Does primanag (Explainage) 3. Addition ✓ Yes	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings) Bright glaring warm grays (tailings) Smooth, ordered, uniform, clumped (tailings) ZLONG TERM roject design meet visual resource ement objectives? Yes No in on reverse side) onal mitigating measures recommended? No (Explain on reverse side)
TEX COLOR LINE	N/A N/A N/A N/A DEGREE OF CONSTRAST		ANDA BO	SEC WATI]	FEAT EGET	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N/A N/A N/A SST		Moderate (₽ □	SHO	ORT TERM 2. Does properties of the properties	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings) Bright glaring warm grays (tailings) Smooth, ordered, uniform, clumped (tailings) ZLONG TERM roject design meet visual resource ement objectives? Yes No in on reverse side) onal mitigating measures recommended? No (Explain on reverse side)
TEX COLOR LINE	N/A N/A N/A N/A DEGREE OF CONSTRAST	I	AANDM BO	SEC WATI	ER	V	FEAT EGEI	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N/A N/A N/A ST S DN	55 Suang	TING ()	TUR	SHO	ORT TERM 2. Does promanag (Explain 3. Addition ✓ Yes Evaluator's N	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings) Bright glaring warm grays (tailings) Smooth, ordered, uniform, clumped (tailings) ZLONG TERM roject design meet visual resource ement objectives? Yes No in on reverse side) onal mitigating measures recommended? No (Explain on reverse side)
TEX COLOR LINE	N/A N/A N/A N/A DEGREE OF CONSTRAST	I	AANDM BO	SEC WATI	ER	V	FEAT EGEI	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N/A N/A N/A ST S DN	SI	Moderate (TUR	SHO	ORT TERM 2. Does properties of the properties	Angular, flattened, solid, smooth, moderate (tailings) Regular, smooth, hard, simple, geometric (tailings) Bright glaring warm grays (tailings) Smooth, ordered, uniform, clumped (tailings) ZLONG TERM roject design meet visual resource ement objectives? Yes No in on reverse side) onal mitigating measures recommended? No (Explain on reverse side)

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Texture

•	TOTAL		ACIDID	A PETER TO	TTODI	
١	VISUAL	CONTR	AST K	ATIN(i	WOKK	SHEEL

Date October 12, 2015 15:09pm
District Private/ Town of Superior
ResourceArea
Activity (program)

																	Activity (program)		
	SECTIONA. PROJECT INFORMATION 1. Project Name 4 Location 5 Location Sketch																		
1	. Project Name Resolution Co	pper	Mine)								4. Loc	cation	1			5 LocationSketch Need a KOP in the Superior Town area that best		
2	KeyObservation 16- Town of St Medium Simu	uperi	or, So	outh	Ston	e Av	e	Township <u>002S</u> Range 012E									represents scenery impacts of Silver King facility. I have reviewed the existing photo points and have been unable to determine the best one or if the photography from the point is looking toward Silver King.		
Fores	. VRMClass t Service VQO – M	rtial l	Rete	Section 03_									Silver King.						
					SI	ECTI	ONI	3. CF	IAR	ACT	ERIS	STIC	LA	ND	SCAPE D	ESC	CRIPTION		
	1. I	AND	WAT	ER						2.VE	GET	ATIO	N				3. STRUCTURES		
FORM	Bold, jagged, (background) contrasting, s	Hor	izon	tal,	_				ntra erse		g, ar	norp	ohou	ıs,	strip	s(r	sting, vertical and horizontal, directional, oad and infrastructure) Rectangular, cubic, ric(buildings)		
LINE	Jagged, comp Regular, smo								egul oken							str	raight, angular, vertical, simple (road and ructure) Regular, geometric, straight, hard (gs)		
COLOR		Warm red browns and warm light grey (back) n/a (fore)										reen	to	dul	brow	Deep greys and muted blacks and greys, warm deep browns(road and infrastructure) Warm red browns, dull cool greys (buildings)			
TEX	Coarse, nond matte (back) sparse (fore)								atter arse,				ing,		infra	Striped, ordered, directional, coarse (road and infrastructure) Patchy, coarse, directional, ordered (buildings)			
	•					S	ECI	ION	C. P	ROI	POSI	EDA	CTI	Vľ	YDESCR	IP.	ΠΟΝ		
	1. I	AND	WAT	ER						2.VE	GET	ATIO	N			3. STRUCTURES			
FORM	N/A							N/A	A						Gent	Gentle, simple, horizontal (tailings)			
LINE	N/A							N/A	A						Regu	Regular, smooth, converging, geometric (tailings)			
COL	N/A							N/A	A						warr	warm grey with vibrant green (tailings)			
TEX	N/A							N/A	A						unifo	uniform, smooth, fine (tailings)			
				SEC	CTIO	ND.	CO	NTR	AST	RA	ΓINC	, 0	SH	ЮЕ	T TERM		☑ LONG TERM		
1.						1	EAT	URE	S								roject design meet visual resource		
	DEGREE LANDWATER BODY (1) VEGE								ON	SI		TUR 3)	ES				ement objectives? □ Yes ☑ No in on reverse side)		
C	OF CONSTRAST							Weak	ne	Strong	Moderate	ak	ne ne		3. Addi ☑ Y		onal mitigating measures recommended? □ No (Explain on reverse side)		
Strong Modes None Strong None						Mo	We	None	ģ	Mo	Weak	None		Evaluator's Names					
δα	Form										X				J. Grams 11-01-2018 E. Hunt				
ENI	Line										x								
Line Color											x								

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Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date October	r 12, 2015 16:02pm
District Private	e/ Town of Superior
Resource	eArea

	A												Activ	ity (program)		
								SEC	TIO	NA.	PRO)JE(CTI	NFORMATION		
1	. ProjectName Resolution Con		Mine									4. Lo	cation	l		cationSketch I a KOP in the Superior Town area that best
	Resolution Coj	pper	MIIIE	,								Town	ship	<u>002S</u>	repr	esents scenery impacts of Silver King facility.
2		ъ	,	11 12	. 11						Rang	e (12E		ve reviewed the existing photo points and been unable to determine the best one or if	
	17- Town of Su Medium Simu			aseb	all F	ield									the p	photography from the point is looking toward
	3 VRMClass											Sectio	on 0	3	Silve	er King.
	t Service VQO – M	d Paı	rtial	Rete	ntion	L										
					SI	ECTI	ON	B. CI	HAR.	ACT	ERIS	STIC	LAN	NDSCAPE DESC	CRIP	TION
		AND		-										ETATION		3. STRUCTURES
FORM	Jagged and a Horizontal, re										direc rse, c			asymmetrical,		Asymmetrical, irregular, linear, rectangular (buildings, transmission lines, roads)
丘	Irregular, dia							d)	I	rreg	gulai	r, un	dula	ating, broken		Regular, straight, angular, simple,
LINE	irregular, und simple, horizo				plex	k (m	ıd)									hard, geometric (buildings, transmission lines, roads)
7 .	Muted warm				vell	ow-r	ed		7	Vivid	l sat	urat	ted s	greens, cool flar	ing	Dull blue greys and soft warm browns
SQL QR	browns, and l	harn	onio	ous	deep	blue	es				w gi			,100110, 0001 1101	8	(buildings, transmission lines, roads)
TEX	discontinuous	Coarse, continuous, random (back) discontinuous, clumped (mid) directional, continuous, striped (fore)									direc			ough, medium, ting	,	Patchy, random, contrasting (buildings, transmission lines, roads)
	L					S	ECI	TON	C. F	PROI	POSI	EDA	CTT	VITY DESCRIPT	ION	
	1. LANDWATER											2.	VEGI	ETATION		3. STRUCTURES
FORM	N/A								1	N/A						High, gentle, smooth (tailings)
됴	N/A								1	N/A						Bold, regular, horizontal, simple
INE																(tailings)
- 2	N/A								1	N/A						Warm red-browns with vibrant greens
COLOR																(tailings)
	N/A									N/A						Uniform ordered (tailings)
JEX T RE	IV/A									N/A						Official ordered (tannigs)
	"															
				SEC	CTIO	ND.	CO	NTR	AST	RA	FINC	} □	SH	1		NG TERM
1.	FEATURES								S	1						design meet visual resource t objectives? □ Yes □ No
	DEGREE LANDWATER BODY (1) VEGETATION (2)							ON	SI	TRUC	TUR (3)	ES			reverse side)	
	OF STATE OF												3. Additio	nal m	nitigating measures recommended?	
(CONSTRAST S S S S								ate			☑ Yes		No (Explain on reverse side)		
							None	Strong	Moderate	Weak	None		_			
	8 3 8 2 8 3 5 2						Ž		Z	×	Ž	Evaluator's N J. Grams	lames	Date 11-01-2018		
23	Form							X				E. Hunt		11-01-2010		
EL EMENTS	Line									X						
ME	Color									X						

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the natural landscape. This structure will contrast the surrounding landscape through pattern of color and texture. This structure will block the view of jagged mountains in the background and midground therefore changing the shape of the natural horizon. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

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Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
August 13, 2018 16:00pm
District
Tonto National Forest
ResourceArea
Activity (program)

	V I	SUA	$\mathbf{L}\mathbf{C}$	ONI	. KA	21 V	AII	NG	WO.	KNS	nr	CI					
	Ad														Activity (program)		
	SECTIONA. PROJECT INFORMATION																
1						DLIC	110	1111			ation		5. LocationSketch				
	Resolution Co	pper	Mine	9								Town	shin	0010S	The trails follow a ridgeline east and in near proximity of the tailings. A viewpoint from this		
2	. KeyObservation											•		location represents the closest view of the tailings			
	18- Arizona Tı Medium Simu									Rang	е 0	12E	that will occur continuously for approximately 1.5 miles of trail in this vicinity.				
	Medium Simu	181101	11								- 1	Sectio	n 3	<u> </u>	•		
3. VRMClass Forest Service VQO – Modification and Partial Retenti									Į								
					SI	ECTI	ONI	B. CI	IAR.	ACT	ERIS	STIC	LAN	DSCAPE DESC	CRIPTION		
	1. I	AND	WAT	ER								2.VE	GET	ATION	3. STRUCTURES		
FORM	Bold, rugged, (background) domed, smoot	cont	trast	ing,	sim		nd)]	Rolli	ng, i	num	erou	ıs, co	ompatible	Indistinct, short, patchy (buildings)		
LINE	Bold, angular Flowing, simp						(x]	Flow	ing,	com	plex	x, sof	t, regular	Weak and irregular (buildings)		
COLOR		of matte warm reds, yellows, owns with harmonious blues									yello eks	w gi	reen	s with deep da	rk Light, dull, cool greys (buildings)		
TEX	Coarse, random, rough (back) Smooth, medium, continuous, striated (mid/fore)									latio ium	nal,	con	tinu	ous, ordered,	Dense, contrasting, stippled (buildings)		
						S	SECT	NOI	C. F	PROF	POSI	EDA	CTIV	/ITY DESCRIPT	TION		
1. LANDWATER												2.VE	GET	ATION	3. STRUCTURES		
FORM	N/A								N/A						Long, rectangular, solid, simple (tailings)		
LINE	N/A							1	N/A						Straight, regular, bold, continuous (tailings)		
COLOR	N/A							1	N/A						Muted, soft, hazy, warm browns with soft greens (tailings)		
TEX	N/A	N/A													Smooth, fine, ordered, uniform (tailings)		
	•			SEC	OITO	ND.	CO	NTR	AST	RA	TING	; 	SH	ORT TERM	☑ LONG TERM		
1.						J	FEAT	URE	S						oject design meet visual resource		
	DEGREE LANDWATER BODY (2) (2))N	SI	TRUC	TUR 3)	ES		ement objectives? □ Yes ☑ No n on reverse side)		
C	OF SONSTRAST S S										ate			3. Addition ☑ Yes	nal mitigating measures recommended? □ No (Explain on reverse side)		
1 30 1 33 1 36 1 35 1								Weak	None	Strong	Moderate	Weak	None				
1		<u>w</u>	×	*	Ż	<u>w</u>	×	*	Ż		×	×	Ż	Evaluator's N J. Grams	ames Date 11-01-2018		
E	Form	L	L	L				L		X				E. Hunt	11-01-2010		
LEMENIS	Line									X							
I.E.	Color									X							

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the natural landscape. This structure will contrast the surrounding landscape through pattern of color and texture. This structure will partially change the view of jagged mountains in the background and midground therefore changing the shape of the natural horizon. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

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 ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Texture

Date	
August 14, 2018 15:47pm	
District	
US 60	
ResourceArea	
Activity(program)	

	A T	JUA	LC	ON	·IWW	JI I (W 7 I I	110	WO.	IUL	11111	121			
															Activity (program)
-	SECTIONA. PROJECT INFORMATION 1. Project Name 4 Location 5 Location Sketch														
	. ProjectName													5. Location/Sketch	
	Resolution Co	pper	Mine	е								_			Represents views of the Silver King Alternative
	T7 OL 11	D.t.											ship	002S	tailings from US 60 as it approaches Superior.
2		ilver	King	. Was	sh						Rang	e 0	12E		
	19- US 60 - Near Silver King Wash Medium Simulation												n 0		
	VRM Class											Secuo	n v)	
	3. VRMClass Forest Service VQO – Modification and Partial Retention														
					SI	ECTI	ONI	B. CI	IAR.	ACT	ERIS	STIC	LAN	DSCAPE DES	SCRIPTION
	1. IANDWATER													ION	3. STRUCTURES
M	Rugged, bold,							nd)						strips,	Symmetrical, strip, bold (road and guardrail)
FORM	simple, gentle rough (foregr			ounc	l) irr	egul	ar,		aı	ngul	ar a	nd a	mor	phous	Angular, vertical, regular (transmission lines)
	0 , 0						-							,	<u> </u>
員	Bold, angular smooth, undu									raig regu				omplex,	Soft delicate regular complex geometric (trans) bold, smooth, continuous, geometric
INE	sinootii, unuc	ııavıı	ng, s	311100	υπ, s	шр	16 (11	iiu)	11	regu	ııaı,	COIII	JIIIu	ous	(road)
دم	Warm yellow	-red	bros	wns	with	com	nati	ible	V	ihre	nt. o	reen	s wii	th dull blue	Compatible warm browns (trans)
COLOR	blues (back) v													lly yellows	Cool deep greys and warm reddish browns
8	(mid)														(roads)
. 6	Coarse, rough	ı, raı	ndor	n (ba	ack)	Smo	oth,		R	ando	om, o	cont	rasti	ng,	Ordered, uniform, coarse, striped (trans)
TEX	continuous, s			nifor	m (n	nid)]	Patc	hy				with	gra	dation,	contrasting, directional, uniform, striped
, [rough striate					m	ıediı	ım				(road)			
						S	SECT	ION	C. F	PROI	POSI	EDA	CTIV	/ITY DESCRIE	TION
		AND	WAT	ER							2.	VEG	ETAT	ION	3. STRUCTURES
FORM	N/A								N	/A					Bold, tall, geometric, linear, contrasting,
Ð															smooth (tailings)
(c)	N/A								N	/A					Regular, horizontal, smooth, simple (tailings)
LIE															F (5.7)
	N/A								N	/A					Warm greys and browns spotted with deep
COLOR	IN/A								IN	/A					greens (tailings)
8															8-10(10
	N/A								N	/A					Fine, uniform, ordered (tailings)
TEX															, , , , , , , , , , , , , , , , , , , ,
[
		_	_	SEC	CTIO	ND.	CO	NTR	AST	'RA'	rinc	;	SH	ORT TERM	☑ LONG TERM
1.						I	FEAT	URE	\mathbf{s}						roject design meet visual resource
	DECREE LANDWATER VEGETATION									S	TRUC	TT IR	FS		gement objectives? □ Yes ☑ No
	DEGREE BODY (2)								-11			3)		(Expla	in on reverse side)
	OF (I)													9 A 1 1 · · ·	
_										a			3. Additi	onal mitigating measures recommended? S D No (Explain on reverse side)	
(CONSTRAST Woderate Wooderate Wooder							a	ng Dg	erat	74	a		Two (Explain on reverse slate)	
Strong Modera None								Weal	None	Strong	Moderate	Weak	None	Names Date	
			-		'				' '	X				J. Grams	11-01-2018
E S	Form													E. Hunt	
TEMENTS	Line									X					
IE	Color									X	x				

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 $\mathbf{Form 8400-4}$ (September 1985)

Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

Date August 14, 2018 15:11pm
District Highway 177
ResourceArea
Activity (program)

	VI	SUA	LC	ONI	RAS	ST R	ATI	NG	WO	RKS	HE	\mathbf{ET}				
															Activi	ty(program)
	SECTIONA. PROJECT INFORMATION															
1.	1. ProjectName												ation	TOWNTION	5. Loc	ationSketch
	Resolution Co	pper	Mine	9								т	.1	0000		esents views from the approach to Superior
2	Key Observation	Point.										Town	the Superior area.			
_	20- Highway 177 from Kearny												е 0	12E		
	Medium Simulation)		
3 VRMClass Forest Service VQO – Modification and Partial Retention																
					SI	ECTI	ONI	B. CI	HAR	ACT	ERIS	STIC	LAN	DSCAPE DESC	CRIPI	ION
	1. I	AND	WAT	ER								2.V	EGE	TATION		3. STRUCTURES
FORM	Jagged, steep (back and mic Rolling, amor	dgro	und))				d)	Pa	tchy	, irr	egul	ar, c	ontrasting		Bold, low, flattened, geometric, regular, symmetrical (road and guardrail)
LINE	Bold, irregula and mid) wea								Ur	ndula	ating	g, ru	gged	l, broken		Bold, straight, smooth, simple, hard, continuous (road and guardrail)
COLOR		Deep grey blues blending into warm red browns (back and mid) dull warm yellow greys (fore)												, yellow blue ens, deep brow	ns	Warm deep greys and cool grey with warm browns (road and guardrail)
TEX	Coarse, rough, patchy, random (back and mid) fine, smooth, contrasting (fore)										stin n	g, gr	ada	tional and pate	chy,	Fine, directional, continuous, striped (road and guardrail)
						S	ECI	ION	C. I	PROI	POSI	EDA	CTIV	/ITY DESCRIP	IION	
		1. LANDWATER														
		AND	WAT	ER								2.V	EGE	TATION		3. STRUCTURES
FORM	1. I	AND	WAT	ER					N/.	A		2.V.	EGE	TATION		3 STRUCTURES Flat, bold, steep, contrasting, vertical, smooth (tailings)
LINE FORM		AND	WAT	ER					N/A			2.V.	EGE	IATION		Flat, bold, steep, contrasting, vertical,
	N/A	AND	WAT	ER						A		2.V.	EGE	IATION		Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth
LINE	N/A N/A	AND	WAT	ER					N/.	A A		2.00	EGE	IATION		Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep
COLOR LINE	N/A N/A	AND	WAT		CTIO	ND.	CO	NIR	N/.	A A	ΓΙΝG			ORT TERM	ĭ LO	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform
COLOR LINE	N/A N/A	AND	WAT		CIIO		CO		N/. N/. AST	A A	TING			ORT TERM 2. Does pr	roject	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform (tailings) NG TERM design meet visual resource
TEX+ COLOR LINE	N/A N/A		ANDA	SEC		I	FEAT EGET	URE	N/. N/. AST	A A A	RUC		SH	ORT TERM 2. Does primanag	roject emen	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform (tailings)
TEX+ COLOR LINE	N/A N/A N/A N/A		ANDA	SEC		I	FEAT EGET	URE	N/. N/. AST	A A A	RUC	i □	SH	ORT TERM 2. Does promanag (Explain	roject emen in on 1	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform (tailings) NG TERM design meet visual resource tobjectives? Yes No reverse side)
TEX COLOR LINE	N/A N/A N/A N/A DEGREE	L	ANDM BO	SEC WATI	ER	V	FEAT EGET	URE EATIC 2)	N/ N/ N/ AST	A A SI	TRUC	TTUR	SH	ORT TERM 2. Does promanag (Explain) 3. Addition Yes	roject emen in on i onal m	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform (tailings) NG TERM design meet visual resource tobjectives? □ Yes ☑ No
TEX COLOR LINE	N/A N/A N/A N/A DEGREE OF		ANDA	SEC		I	FEAT EGET	URE	N/. N/. AST	A A SI Sungay	RUC	i □	SH	ORT TERM 2. Does pring manag (Explain Signature) 3. Addition ✓ Yes	roject emen in on i onal m	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform (tailings) NG TERM design meet visual resource to bjectives? Yes No reverse side) itigating measures recommended? No (Explain on reverse side)
TEX+ COLOR LINE	N/A N/A N/A N/A DEGREE OF	L	ANDM BO	SEC WATI	ER	V	FEAT EGET	URE EATIC 2)	N/ N/ N/ AST	A A SI	TRUC	TTUR	SH	ORT TERM 2. Does promanag (Explain) 3. Addition Yes	roject emen in on i onal m	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform (tailings) NG TERM design meet visual resource tobjectives? □ Yes ☑ No reverse side) ittigating measures recommended? No (Explain on reverse side)
TEX COLOR LINE	N/A N/A N/A N/A DEGREE OF ONSTRAST	L	ANDM BO	SEC WATI	ER	V	FEAT EGET	URE EATIC 2)	N/ N/ N/ AST	A A SI Sungay	TRUC	TTUR	SH	ORT TERM 2. Does printed manage (Explain of the Yes) Evaluator's Manage J. Grams	roject emen in on i onal m	Flat, bold, steep, contrasting, vertical, smooth (tailings) Regular, smooth, continuous, smooth (tailings) Warm grey brown dotted with deep green (tailings) Smooth, fine, ordered, uniform (tailings) NG TERM design meet visual resource to bjectives? Yes No reverse side) itigating measures recommended? No (Explain on reverse side)

 \mathbf{x}

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Texture

•	TOTIAT	CONTR	ACTD	ATTINIO	WODE	CITETO
١	/ISUAL	CONTR	AST K	AHNG	·WUJKM	SHEEL

Date August 15, 2018 11:12am	
District Boyce Thompson Arboretum	
ResourceArea	

	VI	SUA	шО	ONI	NA	21 IV	AII	NG	WU	KN	пс	CI			
	Ac														Activity (program)
	SECTIONA. PROJECT INFORMATION														
	. ProjectName												ation		5. LocationSketch
	Resolution Co	pper	Mine	е							,	Town	ship	0095	Represents views from Boyce Thompson Arboretum.
	2. KeyObservation	Point										IOWI	-		Andorecum.
	21- Picket Post House - (Boyce Thompson)											Rang	e 0	12E	
	Medium Simulation												n 06	3	
	R VRMClass t Service VQO – M	Iodifi	catio	n an	d Paı	tial :	Rete	ntion	1						
					SI	ECTI	ONI	B. CI	HAR	ACT	ERIS	STIC	LAN	DSCAPE DESC	CRIPTION
	1. I	AND	WAT	ER								2.VF	GET	ATION	3. STRUCTURES
M	Jagged, steep flattened, ger							ack)			vert se, i			oreground,	Angular, rough and smooth, high and diverse, contrasting, asymmetrical (house
FORM	Rolling and fl								`	arvei	. se, 1	iiieg	uiai		area) vertical, contrasting, linear (electric
	(foreground)						a 1	`							poles)
LINE	Bold, irregula								'	Wea.	k, ur	ndul	atın	g, simple,	Irregular, complex, hard, broken, converging (house) bold, regular, straight,
	convex (fore)		,	0101 (,	0 011	, 11111	· · · · · · · · · · · · · · · · · · ·							parallel (poles)
X	Deep grey blu													ens with	Earthen warm light dull brown, warm
COLOR	browns (back dull warm gr							mid) 2	yello	w ar	nd b	rowr	greens	dull terracotta red, brilliant white (house) deep dark saturated brown (poles)
	C					`			٠,	O	ا عناء ا	1	J		* '
TEX	Coarse, rough						ck)				ered			se to medium,	Fine, rough discontinuous, scattered, contrasting, ordered (house) uniform,
	smooth, uniform (mid) medium, contrasting, gradational, contrasting(fore)x														continuous, matte (poles)
	•					S	ECT	ION	xC.]	PRO	POS	ED A	CTT	VITY DESCRIP	TION
		AND	WAT	ER								2.VF	GET	ATION	3. STRUCTURES
FORM	N/A									N/A					Geometric, steep, contrasting, regular (tailings)
P.															(tallings)
	N/A]	N/A					Bold, angular, smooth, converging
I E															(tailings)
OE OE	N/A]	N/A					Earthen warm light dull brown dotted with muted greens (tailings)
-															
TEX	N/A									N/A					Smooth, uniform, ordered, contrasting (tailings)
I	•														(
		1		SEC	CTIO	ND.	CO	NTR	AST	'RA	ΓING	} □	SH	ORT TERM	☑ LONG TERM
1.]	FEAT	URE	\mathbf{s}						oject design meet visual resource
	DEGREE LANDWATER VEGETATION								ON	\mathbf{S}	RUC		ES		ement objectives? □ Yes ☑ No n on reverse side)
	(1)								1		(3)	1	` •	
	OF												3. Additio	nal mitigating measures recommended?	
(CONSTRAST N H N H N H N H N N								50	rate			☑ Yes	☐ No (Explain on reverse side)	
CONSTRAST Strong Weak Moderate Moderate Weak Weak							None	Strong	Moderate	Weak	None	T2 1 : 4 22	D.		
		a)	2		Z	a)	2	×	Z		2	5	Z	Evaluator's N J. Grams	fames Date 11-01-2018
2	Form								X				E. Hunt	11 01 2010	
LEMENTS	Line									x					
LE	Color									X					

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the natural landscape. This structure will contrast the surrounding landscape through pattern of color and texture. This structure will block the view of jagged mountains in the background and midground therefore changing the shape of the natural horizon while using color and texture patterns that are not within or subordinate to the natural landscape. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
- Minimize the project footprint and associated disturbance during construction, operations, and closure.
- The report Impact Assessment of the Proposed Resolution Copper Mine on Night Sky Brightness (Dark Sky Partners 2018) contains the following mitigation recommendations:
- Perform a critical examination of where lighting is needed for operational effectiveness and safety. For example, lighting along roadways where only vehicular traffic exists with no potential pedestrian conflicts, may provide no safety benefit.
- Perform a critical examination of where color perception is needed for operational effectiveness and safety. Replace lighting in non-critical
 areas with lower-impact lighting such as PC amber (providing some color discrimination) or direct-emission (also called "narrowband" or
 "limited wavelength" or "580 nm") amber LEDs.
- Perform a critical examination of illumination levels and reduce where appropriate. Many specific illumination recommendations provided
 for typical community applications (e.g. roadways, parking lots, etc.) may not be applicable to needs at industrial sites such as a mine.
 Further, lighting recommendations included in MSHA publications (CFR Title 30 Part 56) do not require specific illumination levels,
 suggesting only that the illumination "sufficient to provide safe working conditions" is needed.
 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the
 ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date

August 13, 2018 13:16pm

District

Tonto National Forest

ResourceArea

Activity (program)

	SECTION A. PROJECT INFORMATION																	
1	Resolution Cop		Mine	!								4. Loc	ation ship		LocationSketch depresents views from a popular taging area for the Arizona Tr	ail. Heavily used		
2	Key Observation I 22- Arizona Tr Medium Simul	ail a		xet P	ost T	'raill	nead					Rang Sectio	e 0: n 1:	11E	rea, popular trailhead. Visible TA has said this is their most or the whole Arizona Trail.			
3	VRM Class Forest Service	VQC) – M	odifi	catio	n an	d Pa	rtial	Rete	ntio	ı							
			SI	ECTI	ON	B. CI	HAR	ACT	ERIS	STIC	LAN	DSCAPE DESC	IPTION					
	1. LANDWATER													ATION	3. STRUCT			
FORM	Jagged, rough, complex, high, contrasting (background) simple, domed, curving (mid and foreground)								Dive and l			plex	, am	orphous, conic	Geometric, regular, co flattened (road)	ntrasting,		
LINE	Bold, jagged, broken geometric (back) undulating, smooth, convex (mid) straight, regular, smooth, continues (fore)													en, irregular	Regular, straight, smo			
COLOR	warm soft du	Muted warm blues and browns (back) warm soft dull red brown (mid) dull light yellow brown (fore)									een			greens and intrasting deep	Warm dull greys (road	1)		
TEX	Coarse, rough, random (back) medium, gradational, striped (mid and fore)								Medi conti					gradational,	Fine, uniform, direction (road)	onal, ordered		
						S	ECI	TON	C. P	ROI	POSI	EDA	CTIV	/ITY DESCRIPT)N			
	1. IANDWATER											2.VE	GET	ATION	3. STRUCT	URES		
FORM	N/A]	N/A						Smooth, rectangular, regular, smooth (tailir			
I.N.	N/A							1	N/A						Angular, smooth, simple geometric (tailings)	ole, hard,		
COLOR	N/A]	N/A						Warm dull brown with spotted with muted gr			
TEX	N/A]	N/A						Fine, smooth, ordered (tailings)	, uniform		
				SEC	TIO	ND.	CO	NTR	AST	RA	rinc	: П	SHO	ORT TERM	LONG TERM			
1.								URE							ect design meet visual reso	ource		
	DEGREE LANDWATER BODY (1) VEGETA (2)							[ATIC		SI		TUR 3)	ES	manag	nent objectives? Yes on reverse side)	☑ No		
C	OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigating measures recommended? ☑ Yes □ No (Explain on reverse side) Evaluator's Names □ Da				
76	Form										X	J. Grams 11-01-2018 E. Hunt						
ELEMENIS	Line										X			ь. nunt				
LEM	Color										X							
Texture x																		

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the natural landscape. This structure will contrast the surrounding landscape through pattern of color and texture. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

Partial Retention designates that activities be "visually subordinate" to the characteristic landscape. Modification class allows for activities to visually dominate the original characteristic landscape while the designed vegetation and land forms must borrow from naturally established visual characteristics. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

Mitigation measures that can be used to reduce the visual impact are the following:

- Implement dust and wind erosion control measures
- · Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
- Minimize the project footprint and associated disturbance during construction, operations, and closure.
- The report Impact Assessment of the Proposed Resolution Copper Mine on Night Sky Brightness (Dark Sky Partners 2018) contains the following mitigation recommendations:
- Perform a critical examination of where lighting is needed for operational effectiveness and safety. For example, lighting along roadways where only vehicular traffic exists with no potential pedestrian conflicts, may provide no safety benefit.
- Perform a critical examination of where color perception is needed for operational effectiveness and safety. Replace lighting in non-critical
 areas with lower-impact lighting such as PC amber (providing some color discrimination) or direct-emission (also called "narrowband" or
 "limited wavelength" or "580 nm") amber LEDs.
- Perform a critical examination of illumination levels and reduce where appropriate. Many specific illumination recommendations provided
 for typical community applications (e.g. roadways, parking lots, etc.) may not be applicable to needs at industrial sites such as a mine.
 Further, lighting recommendations included in MSHA publications (CFR Title 30 Part 56) do not require specific illumination levels,
 suggesting only that the illumination "sufficient to provide safe working conditions" is needed.
 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the

ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Color

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
11-01-2018
District
Tucson BLM
ResourceArea

	, <u></u>	~~.		O1 1 2					•••										
												Activity (program)							
								SEC	TIO	NA.	PRO).JEC	ТП	NFORMATION					
1	. Project Name Resolution Cop	pper	Mine	Э								4. Loc	atior		5. LocationSketch Represents one of the few locations th Leg tailings would be visible from the	Arizona			
2	Key Observation 23- Arizona Tr Block Model S	rail –			Nortl	h						Rang Sectio		012E 17	Trail. Because of the general land form facility in generally not visible from the Point is approximately 7.5 miles from facility.	e trail.			
III	N VRM Class																		
													ISTIC LANDSCAPE DESCRIPTION						
		AND												VEGETATION	3. STRUCTURES				
FORM	Bold, prominent, irregular, diverse, flattened and pyramidal (background) flattened, gentle, geometric, horizontal, strip (midground) conical, irregular, amorphous, complex, rugged (foreground)												ensi	ous, indistinct, onal shape	Definite, rolling, smooth, curv and roads)				
LINE	Bold, angular, rugged and smooth (back) regular, horizontal, simple (mid) undulating, complex, concave, and irregular (fore)												k, i	rregular, flowir	g Irregular, curvilinear, flowing (trails and roads)	, smooth			
COLOR	Muted deep blues with dull and grayish warm yellow-red browns											Mut	ed o	lull blue green	Muted grayish dull light-yello (trails and roads)	w brown			
TEX	Patchy discontinuous contrasting (back) smooth, continuous, striped (mid) clumped, rough, nondirectional, coarse (fore)													onal, continuou d, dotted	Smooth, subtle, fine (trails an	d roads)			
	•						SEC	TON	C. I	PRO	POSI	EDA	CTI	VITY DESCRIP	ON				
	1, I	AND	WAT	ER									2.	VEGETATION	3. STRUCTURES				
FORM	N/A											N/A			Low, angular, horizontal, flattesmooth (tailings)	ened,			
INE	N/A											N/A			Regular, smooth, flowing, sim (tailings)	ple			
COL	N/A											N/A			Bright glaring warm grays (ta				
TEX	N/A											N/A			ordered, continuous, striped, clumped (tailings)	ıniform,			
				SEC	CTIO	ND	. CO	NTR	AST	RA	TINO	, –	SF	ORT TERM	Z LONG TERM				
1.							FEAT	URE	\mathbf{s}						ject design meet visual resource				
	(1) (2)									S		TUR (3)	ES		ment objectives? □ Yes ☑ Non reverse side))			
C	OF CONSTRAST None None None None None None None Non									Strong	Moderate	Weak	None	☑ Yes Evaluator's N		Date			
E	Form										x			J. Grams	11-	01-2018			
MENIS	Line										E. Hunt								

Texture									x			
							S	SEC	CTION	D.	(Cor	ontinued)
Comments from item 2.												
The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the natural landscape and will contrast the surrounding landscape. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.												
Visual Resource Management Class III objective designates that the landscape is to "partially retain its existing character" through moderate changes. The alterations should not dominate the viewscape while repeating elements of the existing landscape. The project, as proposed, would not meet this requirement.												
Additional Mitigating Measures (See item 3)												
Mitigation measures t	hat can	ı be u	sed to	o reduc	ce the v	isual	impa	ıct a	are the	follo	owin	ing:

- Implement dust and wind erosion control measures
- · Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
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- Perform a critical examination of where color perception is needed for operational effectiveness and safety. Replace lighting in non-critical
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 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Texture

Date	
11-01-2018	
District	
Tucson BLM	
ResourceArea	
A	

	VISUAL CONTRAST RATING WORKSHEET														ResourceArea			
	, -	- C													Activity(pr	ogram)		
								SEC	OIT	NA.	PRO	JЕ	CTIN	FORMATION				
1	. ProjectName Resolution Cop	pper	Mine)									cation nship			nSketch nt east of Peg Leg facility. Not very ecause of design.		
2	Key Observation 1 24- Arizona Tr Block Model S	rail -			Ioun	tains	3					Rang Sectio	ge 0 on 3	13E <u> </u>				
3	VRMClass III																	
					SI	ECTI	(ON	B. CI	HAR.	ACT	ERIS	STIC	LAN	DSCAPE DESC	CRIPTION	V		
	1. LANDWATER													2.VEGETATIO	N	3. STRUCTURES		
FORM	horizontal (ba	Diverse, jagged and flat, pyramidical, flattened, horizontal (background) rugged and domed, numerous, concave, asymmetrical (mid and foreground)												gular, rolling, orphous, dimen	sional	n/a		
LINE	Bold, horizontal simple and jagged angular, geometric (back) irregular, subangular, complex, asymmetrical (mid/fore)													gular, asymme inuous, weak	trical,	n/a		
COLOR													Cool	l saturated blu ens	e-	n/a		
TEX	Patchy medium sparse and contrasting (back) coarse, random, continuous										se,			lium, patchy, directional		n/a		
	SECTION C. PROPOSED ACTIVITY DESCRIPTION																	
	1. LANDWATER 2. VEGETATION 3. STRUCTURES																	
FORM	N/A												N/A			Low, angular, horizontal, flattened, smooth (tailings)		
LINE	N/A												N/A			Regular, smooth, flowing, simple (tailings)		
COLOR	N/A												N/A			Bright glaring warm grays (tailings)		
TEX	N/A												N/A		ordered, continuous, striped, uniform, clumped (tailings)			
				SEC	OIT	ND.	CO	NTR	AST	RA	rinc	i [SH	ORT TERM	☑ LONG	TERM		
1.]	FEAT	URE	S					2. Does pr	oject des	ign meet visual resource		
	DEGREE LANDWATER BODY (1) VEGETATION STRUCTURES (2) (1)											TUF 3)	RES			jectives? □ Yes ☑ No erse side)		
C	OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	☑ Yes	ating measures recommended? (Explain on reverse side)			
Т		∞	Z	×	Ž	<u>w</u>	Σ	×	Ź	∑.		M	Ž	Evaluator's N J. Grams	lames	Date 11-01-2018		
E	Form										X			E. Hunt		11-01-2010		
ELEMENIS	Line										X							
el le	Color X									L	X							

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the natural landscape and will contrast the surrounding landscape. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

Visual Resource Management Class III objective designates that the landscape is to "partially retain its existing character" through moderate changes. The alterations should not dominate the viewscape while repeating elements of the existing landscape. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
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- Perform a critical examination of where lighting is needed for operational effectiveness and safety. For example, lighting along roadways where only vehicular traffic exists with no potential pedestrian conflicts, may provide no safety benefit.
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 $\mathbf{Form 8400-4}$ (September 1985)

Texture

Date
August 14, 2018
11:43 AM
District
Tucson BLM
ResourceArea

	VISUAL CONTRAST RATING WORKSHEET														KesourceArea				
												Activity (program)							
								SEC	OIT	NA.	PRO)JE(CTI	NFORMATION					
1	. ProjectName Resolution Cop	pper	Mine)								4. Loc		005S	the Peg	n Road is a popular recreation area west of Leg tailings alternative. An OHV parking			
2	KeyObservation 25- Cochran O Medium Simu	HV I		ng - l	boul	der a	rea					Rang Sectio		012E 5	Kelvin l area pro Approxi	located at the intersection with the Florence n Highway is heavily used. Boulders in the provide a highpoint view of the tailings. oximately 1.5 miles from tailings facility;			
3	VRM Class														foregrou	and view.			
					SI	ECTI	ONI	3. CI	HAR.	ACT	ERIS	STIC	LA	NDSCAPE DESC	CRIPTIO	N			
	1. LANDWATER													VEGETATION		3. STRUCTURES			
FORM	Jagged, rugge rough, comple (midground) amorphous (f	ex, ir smoo	regu	ılar, comp	con	trast	ting		,					moderate, low, nondirectional		N/A			
LINE	Broken, undulating jagged angular (back) irregular, rugged, complex, converging (mid) irregular, subangular, complex, broken (fore)													flowing, broken		N/A			
COLOR	Warm red browns with muted blues (back) warm yellow-red dull browns (mid) warm dull yellow very light browns (fore)											bran ol gr		nd brilliant gree	ens,	N/A			
TEX	Coarse, patch rough, clump granular (for	ed (r								ng,				nedium, patchy onal, random	,	N/A			
	SECTION C. PROPOSED ACTIVITY DESCRIPTION																		
	,	AND	WAT	ER									2	VEGETATION		3. STRUCTURES			
FORM	N/A										N/.	A				Bold, flat smooth, regular, contrasting (tailings)			
LINE	N/A										N/.	A				Bold, straight, smooth, simple, geometric (tailings)			
COL	N/A										N/.	A				Warm gray with deep vibrant greens (tailings)			
TEX	N/A										N/.	A				Smooth, fine, uniform, ordered, clumped (tailings)			
SECI	IOND. CONTRA	ST I	RATI	NG		SHO	RT T	ERI	VI	☑I	ONO	3 ТЕ	RM						
1.						1	FEAT	URE	\mathbf{s}							sign meet visual resource			
	DEGREE LANDWATER BODY (1) VEGETATION (2)									S	TRUC	TUR (3)	ES			bjectives? □ Yes ☑ No verse side)			
C	OF CONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	☑ Yes		gating measures recommended? o (Explain on reverse side)			
		₽	M	M	ž	ž	M	Ř	ž	₹.	M	M	ž	Evaluator's N J. Grams	lames	Date 11-01-2018			
E	Form									X				E. Hunt		11-01-2010			
ELEMENIS	Line									X									
EE	Color x									x									

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's color, line, and form that do not borrow or repeat characteristics from the natural landscape and will contrast the surrounding landscape. The structure will interfere and change the pattern of the horizon by blocking the view of the jagged mountains in the background. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

Visual Resource Management Class III objective designates that the landscape is to "partially retain its existing character" through moderate changes. The alterations should not dominate the viewscape while repeating elements of the existing landscape. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
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 $\mathbf{Form 8400-4}$ (September 1985)

> Color Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

${\bf VISUAL\,CONTRAST\,RATING\,WORKSHEET}$

Date
August 14, 2018
12:40PM
District
Tueson DI M

Tucson BLM		
Resource Area		

															Activity (program)		
								SEC	CTIO	NA.	PRO)JE(TIN	FORMATION			
1	Resolution Cop	pper	Mine	9								4. Loc		004S	5. LocationSketch Dispersed camping location adjacent to Cochran Road. Approximately 3 miles from tailings		
2	KeyObservation 26- Cochran R Medium Simu	oad (Disp	erse	d Site	е					Rang Sectio	e 0	12E	facility; middle ground view.		
3	. VRMClass										•	Secuo	n ə.				
					SI	ECTI	ONI	B. CI	HAR.	ACT	ERIS	STIC	LAN	JDSCAPE DESC	CRIPTION		
	1. LANDWATER											2.	VEGI	ETATION	3. STRUCTURES		
FORM	(background)	definite, rough, irregular, contrasting (background) smooth, simple, geometric, conical and flattened (mid and foreground)									stinc rpho		ntle	, numerous,	Vertical, linear, high, rectangular, contrasting (transmission line)		
LINE	Angular, horizontal, rugged, hard (background) simple, hard, continuous, bold (fore and mid)									Weal	k, flo	owin	g, co	ontinuous, sim	Bold, vertical, simple, hard, geometric (transmission)	С	
COLOR	Warm red browns with muted harmonious blues (back) war yellow-red browns to yellow grayish (mid/fore)										ant s	satu	rate	d yellow greens	Deep dark saturate brown/black (transmission)		
TEX	Course, patchy, horizontal (back) smooth, patchy, contrasting, sparse (mid and fore)										ium, e, do			ı, continuous,	Uniform, directional, ordered, sparse, striped (transmission)		
SECTION C. PROPOSED ACTIVITY DESCRIPTION												ION					
1. LANDWATER												2.	VEGI	ETATION	3. STRUCTURES		
FORM	N/A								1	N/A					Simple, horizontal, parallel (tailings)		
LINE	N/A								1	N/A					Bold, regular, horizontal, simple, hard continuous (tailings)	d,	
COLOR	N/A								1	N/A					Warm grey with dull greens (tailings)	,	
TEX	N/A								1	N/A					Smooth, uniform, ordered, fine (tailings)		
	1			SEC	TIO	ND.	CO	NTR	AST	RA	ring	} □	SH	ORT TERM	☑ LONG TERM		
1.]	FEAT	URE	\mathbf{s}					2. Does pr	oject design meet visual resource	_	
	DEGREE LANDWATER BODY (1) VEGETATION (2)									SI	TRUC	TUR 3)	ES	management objectives? □ Yes ☑ No (Explain on reverse side)			
C	OF ONSTRAST	Strong	Moderate		ne	Strong	Moderate	ak	ne	Strong	Moderate	ak	ne	3. Additio ☑ Yes	nal mitigating measures recommended? □ No (Explain on reverse side)		
		Ą	Mo	Weak	None	₽.	Mo	Weak	None	₽	Mo	Weak	None	Evaluator's N		_	
E	Form									X				J. Grams E. Hunt	11-01-2018		
NEN	Line									X							
ELEMENIS	Color									X							
		or											_				

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's bright color, contrasting line, and geometric forms do not borrow or repeat characteristics from the natural landscape. It's contrasting large scale, color, and would dominate the landscape and would not be compatible with the natural surroundings.

Visual Resource Management Class III objective designates that the landscape is to "partially retain its existing character" through moderate changes. The alterations should not dominate the viewscape while repeating elements of the existing landscape. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

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Texture

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
August 14, 2018
10:30AM
District
Tucson BLM
ResourceArea

	V 1	OUA	ЦС	0111	LLWW	31 I (W 7 I I	110	VVO	LUIN	71112	ы			140041001		
															Activity(pro	ogram)	
								SEC	OIT	NA.	PRO)JE(TIN	FORMATION			
1		Resolution Copper Mine												005S	5. LocationSketch Represents views from highway on the east side of the tailings facility. High point on road looking		
2	Key Observation Point 27- Florence Kelvin Highway – East Side Medium Simulation											Rang Sectio	e 0 n <u>0</u> 8	13E	acility. Facility visible in mid-ground at ately 2.5 miles distance.		
3	VRMClass																
					SI	ECTI	ON	B. CI	HAR.	ACT	ERIS	STIC	LAN	DSCAPE DESC	CRIPTION	I	
	1. LANDWATER												2.V	EGETATION		3. STRUCTURES	
FORM														nous, irregular ectional	,	Flat, bold, gentle, simple, linear(road)	
LINE		Weak, irregular, straight, rugged and smooth (back) horizontal, flowing, simple (mid and fore)										ı, pe rtica		dicular, horizo	ontal	Smooth, simple, hard, straight (road)	
COLOR	Warm, pastel	Warm, pastel, muted yellow gray browns										nt co gree		reens with war	m	Warm, muted, dull, yellow gray brown (road)	
TEX	Gradational,	Gradational, contrasting, scattered, fine												ered, dense, random		Fine, smooth, uniform, ordered, striped (road)	
						S	ECI	TON	C. P	ROF	POSI	EDA	CTIV	/ITY DESCRIPT	TION		
	1. LANDWATER												2.V	EGETATION	3. STRUCTURES		
FORM	N/A	N/A								N/A	A				bold, flat, smooth, moderate, solid and simple (tailings)		
LINE	N/A									N/A	A				bold, regular, smooth, simple, geometric, parallel (tailings)		
COL	N/A									N/A					warm yellow grey spotted with vibrant greens (tailings)		
TEX	N/A	N/A									A				fine, smooth, uniform, ordered, contrasting (tailings)		
-				SEC	CTIO	ND.	CO	NTR	AST	RA	ring	÷ 🗆	SH	ORT TERM	☑ LONG	TERM	
1.						I	FEAT	URE	\mathbf{s}							ign meet visual resource	
	DEGREE LANDWATER BODY (1) VEGETATION (2)							SI	TRUC	TUR 3)	ES		gement objectives? □ Yes ☑ No ain on reverse side)				
C	OF ONSTRAST	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	☑ Yes	` .		
· ·		₹.	M	Ä	Ž	₹	M	W	Ž		M	W	Ž	Evaluator's N J. Grams			
E	Form									X				E. Hunt	11-01-2010		
EL EMENIS	Line									X							
E E	Color																

Comments from item 2.

The addition of the structure (tailings) to the landscape would be greater than ecological change and would be noticeable to observers. This structure's bright color, contrasting line, and geometric forms do not borrow or repeat characteristics from the natural landscape. The simple horizontal structure will block the existing horizon that is defined by rugged mountains in the background. It's contrasting large scale, color, and form would dominate the landscape and would not be compatible with the natural surroundings.

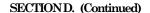
Visual Resource Management Class III objective designates that the landscape is to "partially retain its existing character" through moderate changes. The alterations should not dominate the viewscape while repeating elements of the existing landscape. The project, as proposed, would not meet this requirement.

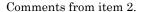
Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- · Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
- Minimize the project footprint and associated disturbance during construction, operations, and closure.
- The report Impact Assessment of the Proposed Resolution Copper Mine on Night Sky Brightness (Dark Sky Partners 2018) contains the following mitigation recommendations:
- Perform a critical examination of where lighting is needed for operational effectiveness and safety. For example, lighting along roadways where only vehicular traffic exists with no potential pedestrian conflicts, may provide no safety benefit.
- Perform a critical examination of where color perception is needed for operational effectiveness and safety. Replace lighting in non-critical
 areas with lower-impact lighting such as PC amber (providing some color discrimination) or direct-emission (also called "narrowband" or
 "limited wavelength" or "580 nm") amber LEDs.
- Perform a critical examination of illumination levels and reduce where appropriate. Many specific illumination recommendations provided for typical community applications (e.g. roadways, parking lots, etc.) may not be applicable to needs at industrial sites such as a mine. Further, lighting recommendations included in MSHA publications (CFR Title 30 Part 56) do not require specific illumination levels, suggesting only that the illumination "sufficient to provide safe working conditions" is needed.
 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Date											
August 14, 2018											
2:40pm											
District											
'ucson BLM											
Resource Area											

	VISUAL CONTRAST RATING WORKSHEET														ResourceArea					
															Activity (program)					
	SECTIONA. PROJECT INFORMAT																			
-	D : 4N							SEC	OIT	NA.					NOIT	FT (* C1 / 1				
1	. ProjectName Resolution Cop	oper	Mine)							1	4. Loc	ation	ı		5. LocationSketch Represents view of tailings facility from the				
2. KeyObservationPoint											′	Town	ship	<u>005S</u>		Florence Kelvin Highway on the south side of the				
2	outh						Rang	е ()12E		tailings facility.									
28- Florence Kelvin Highway – South Medium Simulation												~ ·		•						
•						;	Sectio	n 2	zu											
3																				
													RISTIC LANDSCAPE DESCRIPTION							
						.1.		-	г			ETA			T21 - 4	3. STRUCTURES				
FORM	Definite, roug						ζ		ırreg asyn				e, g€	entle,	Flat	, regular, geometric simple, horizontal (road)				
FO		(background) horizontal, regular, flattened, gentle (mid and foreground)										.1								
	Irregular, ang	zula	r. un	ıdula	ating	<u> </u>			Curv	riline	ear.	smo	oth.	soft,	Bold	l, simple, hard, continuous (road)				
E	(background) horizontal, smooth,										,		ĺ	,	Boid, Simple, Hard, continuous (road)					
Ι	simple, contir	simple, continuous (mid/fore)																		
OR	Warm red bro								Dull				is a	nd	Deep grays and blacks (road)					
COLOR	(background) light dull yell	n	1	vibra	ınt g	reer	ns													
	Coorso rough		`		<i>′</i>	rour	·4)	7	Medi	ium	rou	αh			Smo	ooth, fine, uniform, ordered, contrasting,				
EX RE	Coarse, rough, random (background) continuous, fine, smooth, uniform, ordered (mid/fore)												ontr	asting		ped (road)				
T	ordered (mid/fore)																			
	1					S	SECT	TON	C. P	ROF	POSI	EDA	CTT	VITYDES	CRIP	ITION				
	1. L	AND	WAT	ER						2 VEGETATION						3. STRUCTURES				
W.	N/A															smooth, indistinct, geometric, regular				
FOF	FORM N/A														(tail	ings)				
63	N/A	N/A													regular, straight, horizontal, simple (tailings)					
E N/A									N/A						0					
	27/4								N/A						muted greens and warm grayish browns (tailings)					
COL OR	IVA							1	IN/A						mut	eu greens and warm grayish browns (tanings)				
	N/A							1	N/A						fine, smooth, uniform, ordered (tailings)					
TEX															ino, anoth, amorn, aratica (vanings)					
ן.																				
				SEC	CTIO	ND.	CO	NTR	AST	RA	Γ IN G	÷ 🗆	SH	ORT TER	RM	☑ LONG TERM				
1.]	FEAT	URE	\mathbf{s}							roject design meet visual resource				
	DEGREE	L	ANDA		ER	V	EGET	ATIO	ON	SI	RUC	TUR	ES			ement objectives? □ Yes ☑ No in on reverse side)				
	DEGREE			DY 1)				2)				3)		(1	зхріа	in on reverse side)				
	OF													3. Ac	dditio	onal mitigating measures recommended?				
(ONSTRAST		æ				age (age				Yes					
an a				Strong Moderate Weak None					ne	Strong	Moderate	Weak	None							
		Strong Moderate Weak None Strong Moderate					Weak	None Strong			•		Evalua							
ß	Form												X	J. Gra E. Hu		11-01-2018				
ELEMENIS	Line												X							
LEM	Color												X	$\overline{\zeta}$						
囝	Texture	exture											X	1						





This structure's bright color, contrasting horizontal simple lines, and geometric form does not borrow or repeat characteristics from the natural landscape. It's contrasting large scale, color, and form will not be compatible with the natural surroundings.

Visual Resource Management Class III objective designates that the landscape is to "partially retain its existing character" through moderate changes. The alterations should not dominate the viewscape while repeating elements of the existing landscape. The project, as proposed, would not meet this requirement.

Additional Mitigating Measures (See item 3)

- Implement dust and wind erosion control measures
- · Avoid siting roads on steep side slopes and ridge faces. Site roads along ridgetops. Site access roads to minimize cut and fill
- Immediately revegetate temporary disturbance areas that are no longer needed for mining activity
- Minimize the project footprint and associated disturbance during construction, operations, and closure.
- The report Impact Assessment of the Proposed Resolution Copper Mine on Night Sky Brightness (Dark Sky Partners 2018) contains the following mitigation recommendations:
- Perform a critical examination of where lighting is needed for operational effectiveness and safety. For example, lighting along roadways where only vehicular traffic exists with no potential pedestrian conflicts, may provide no safety benefit.
- Perform a critical examination of where color perception is needed for operational effectiveness and safety. Replace lighting in non-critical areas with lower-impact lighting such as PC amber (providing some color discrimination) or direct-emission (also called "narrowband" or "limited wavelength" or "580 nm") amber LEDs.
- Perform a critical examination of illumination levels and reduce where appropriate. Many specific illumination recommendations provided
 for typical community applications (e.g. roadways, parking lots, etc.) may not be applicable to needs at industrial sites such as a mine.
 Further, lighting recommendations included in MSHA publications (CFR Title 30 Part 56) do not require specific illumination levels,
 suggesting only that the illumination "sufficient to provide safe working conditions" is needed.
 Perform a critical examination of operations to determine if some lighting may be installed with control systems that either provide the
 ability to turn lighting off at particular times of night, or activate light based on motion detected within the work area.

Date	
District	
Private/State	
ResourceArea	
Activity (program)	

	VISUAL CONTRAST RATING WORKSHEET													ResourceArea				
															Activity (program)			
	SECTIONA. PROJECT INFORMATION																	
	, , , , , , , , , , , , , , , , , , ,															5. LocationSketch		
	Resolution Cop		Mine)					Township 003S							Represents full view of Skunk Camp TSF looking North		
2	2. KeyObservation I 29- Dripping S	os Ro	hed					Range 014E										
						1,	Section	n 1	3									
						- '	Securo	41 1	<u> </u>									
	R. VRM Class N/A																	
	SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPT														ION			
1. LANDWATER														ATION		3. STRUCTURES		
Bold, rough, irregular, pyramidical (background) definite, smooth, simple, linear (mid and foreground)									Indis	stino	et, ro	olling	g, re	gular,		Curving, simple, rolling, bold (road)		
I.R.	Irregular, jag (back) simple (mid/fore)					Weal	k, si	mple	e, su	ban	gular		Curvilinear, flowing, simple, parallel (road)					
COLOR	Warm yellow	Warm yellow-red muted light browns									yello	ow gi	reen	s with grayish		Warm dull red-yellow gray brown (road)		
TEX	Coarse, gradational, random, striped (back) fine, continuous, smooth (mid/fore)									latio led	nal,	pato	chy,	medium, order	red,	Ordered, directional, uniform, smooth (road)		
						S	ECI	TON	C. F	PROI	POSI	EDA	CTI	VITY DESCRIPT	ION			
	1. L	AND	WAT	ER										ATION		3. STRUCTURES		
FORM	N/A								N/A							bold, smooth, steep, solid, simple, geometric, contrasting (tailings)		
INE	N/A															bold, regular, horizontal, simple, hard, converging (tailings)		
COLOR	N/A															warm very light gray browns dotted with greens (tailings)		
TEX	N/A]	N/A							fine, smooth, ordered, contrasting, uniform (tailings)		
[SEC	OITO	ND.	CO	NTR	AST	'RA'	rinc	; D	SH	ORT TERM	☑ LO	NG TERM		
1.								URE								design meet visual resource		
DEGREE LANDWATER VEGETA: BODY (2)								ATIC		S		TUR	ES			t objectives? □ Yes □ No reverse side) NOT APPLICABLE		
OF (1) (2)											Ì			0 4 7 70 7				
						Moderate	Weak	None	Strong	Moderate	☐ Yes NOT APPI				al mitigating measures recommended? No (Explain on reverse side) PLICABLE			
		R M N				<i>₹</i>	M	M	ž	ž	M	Ä	ž	Evaluator's N J. Grams				
2	Form									X				E. Hunt		11-01-2018		
ELEMENIS	Line									x								
E E	Color									x								
' '	Texture									x								

SECTIOND. (Con	ntimod
Comments from item 2.	innear
Not Applicable.	
Additional Mitigating Measures (See item 3)	
Not Applicable.	
••	
U.S. GOVERNMENT PRINTING OFFIC	E: 1985-461-988/33094

Form 8400-4 (September 1985)

Date
11-01-2018
District
Private/State
ResourceArea
Activity (program)

	VISUAL CONTRAST RATING WORKSHEET															ResourceArea				
																Activity (program)				
-	D: - 4 N							SEC	ТЮ	NA.)JE(4. Loc		IFORM.	ATION	5. LocationSketch				
1	ProjectName Resolution Copper Mine											4. LOC	auon			From Skunk Camp Block Model PDF provided by				
		• •											ship	002S		Trudscape.				
2		y Observation Point											e 0:	15E						
	Block Model Simulation																			
														7						
3 VRMClass N/A																				
	SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION																			
	1. L	WAT	ER						2.1	ÆGE	TATI	ON			3. STRUCTURES					
1	Bold, asymme					ougł	n an				e, an		hous	s,	n/a					
FORM	flatted (backg					1.		8	asyn	nme	trica	l								
Œ	asymmetrical (mid and fore			nous	, cor	npie	X													
	Irregular, and			d sm	ooth	1,		7	Weal	k, ir	regu	lar,			n/a					
LINE	complex broke	en (b	oack	grou	ınd)				andu											
Π	subangular, undulating, converging,																			
ده	irregular (mid Deep dark bla			ns v	warr	n ve	llow	. 1	Vihr	ant i	deep	ore	ns		n/a					
COLOR	red muted lig						110 **		V 101	all v	асср	gro	2110		11/α					
00	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3																			
. r=	Coarse, patch	y, di	iscor	ntinı	ious	, ran	ndom	1, (Grad	latio	nal,	med	lium	١,	n/a					
TEX	striped (back)						,	1	and	om										
L	directional, m	ediu	ım (1	mid/	fore))														
						۶	SECI	ION	C. F	PROI	POSI	EDA	CTIV	/ITY DE	SCRIP	TION				
		AND	WAT	ER						2.7	ÆGE	TATI	ON			3. STRUCTURES				
₩	N/A							1	N/A						Definite, horizontal, low, smooth (tailings)					
FORM																				
	N/A							1	N/A						Rogule	ar, smooth, simple, flowing (tailings)				
LINE	14/11							1	. 1/11						negun	ar, smooth, simple, nowing (tanings)				
Т																				
COL	N/A	_	_	_	_	_	_	1	N/A	_	_	_	_	Ţ	contrasting warm grays (tailings)					
D D																				
% ₩	N/A							1	N/A						h, nondirectional, uniform, clumped (tailings)					
TEX																				
<u> </u>	ı			SEC	TIO	ND	CO	NTP	AST	RA'	rinc	٦ ؛	SH	ORT TE	CRM	☑ LONG TERM				
1.				SEA	7110			URE		141.	11110					roject design meet visual resource				
		T	AND/	X/A/TI	FR											gement objectives? \(\sigma\) Yes \(\sigma\) No				
	DEGREE	14		DY	LIL	V		CATIC 2))N	\mathbf{S}	TRUC	TUR 3)	ES		(Explai	in on reverse side) NOTAPPLICABLE				
	OF		(1)			,	<i>-</i> ,	ı		,) 		0	A 1 11/41	1 10				
	Or															onal mitigating measures recommended? Do (Explain on reverse side)				
(ONSTRAST	50	rate			200	rate			50	rate					PPLICABLE				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak None								
		<u>w</u>	Z	×	Ž	Q	Z	×	Ž		Z	×	Ž	Evalu J. Gr	uator's N	Names Date 11-01-2018				
$\mathbf{\bar{x}}$	Form									X				E. H		11-01-2016				
BLEWENTS	Line									X										
LEM	Color									x										
豆										X										
	Texture X X																			

SECTIOND. (Con	ntimod
Comments from item 2.	innear
Not Applicable.	
Additional Mitigating Measures (See item 3)	
Not Applicable.	
••	
U.S. GOVERNMENT PRINTING OFFIC	E: 1985-461-988/33094

Form 8400-4 (September 1985)

VISUAL	CONTRAST	RATINGWO	ORKSHEET

Date	
11-01-2018	
District	
Private/State	
ResourceArea	
Activity (program)	

	VISUAL CONTRAST RATING WORKSHEET														Activity (program)					
	SECTIONA. PROJECT INFORMATION																			
	D : /N							SEC	CTIO	NA.)JE(4. Lo			F T	ationSketch				
_	. ProjectName Resolution Cop	Resolution Copper Mine													From	Skunk Camp Block Model PDF provided by				
		T. O											Township 003S Truescape. San Carlos 2A is the preferred location.							
2	KeyObservation Point 31- San Carlos 2A											Rang	е 0	014E	10000					
	Block Model S	imul	ation									Sectio	n 2	3						
	k VRM Class																			
	N/A																			
	SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION																			
	1, I	AND	WAT	ER										ATION		3. STRUCTURES				
V	Asymmetrica	l, bo	ld, r	ollin	g, cı	ırvir	ıg,]	Rolli	ing,	mod	erat	e, ar	morphous,		N/A				
FORM	diagonal							j	irreg	gulai	r									
	7 1 1		,	,				4.					0.			27/4				
INE	Irregular, dia sloping, comp			ıban	igula	ır,			Wea	k, co	ompl	ex, s	soft,	converging		N/A				
	stoping, comp																			
æ	Muted and du	ıll w	arm	bro	wns	and]	Mut	ed co	ool s	oft d	ull g	greens		N/A				
COLOR	grays	grays																		
	3.5 1:	1							N. F. 1			1				NY/A				
TEX	Medium, grad	atio	nai,	con	tinu	ous,			viea dotte		, gra	.dati	onal	l, continuous,		N/A				
	3																			
						S	ECI	ION	C. I	PRO	POSI	EDA	CTT	VITYDESCRIPT	ΓΙΟΝ					
	1, I								2.VE	GET	ATION		3. STRUCTURES							
FORM	N/A	I/A							N/A							Bold, angular, solid, horizontal,				
Ğ.																smooth, linear (tailings)				
Ħ	N/A	A														Regular, smooth, hard, simple				
INE																(tailings)				
)R	N/A]	N/A							Bright light warm grays (tailings)				
COLOR																				
	, N/A							-	N/A							Constant for a surface of a surface of				
TEX	I IN/A								IN/A							Smooth, fine, uniform, clumped, ordered (tailings)				
	[{]																			
L	1			SEC	CTIO	ND.	CO	NTR	AST	'RA'	TING	} □	SH	ORT TERM	☑ LO	NG TERM				
1.]	EAT	URE	\mathbf{s}							design meet visual resource				
	DECDEE	L	ANDA		ER					S	TRUC	TIB	ES			tobjectives?				
	DEGREE BODY (1) VEGETATION (2)											3)		(Explai	ın on ı	reverse side)				
	OF			ĺ										3. Additio	nal m	itigating measures recommended?				
(CONSTRAST & & & &									age					No (Explain on reverse side)					
	001,01111	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None							
		₽	Mc	W	ž	₽.	Mc	We	ž		Mc	We	ž	Evaluator's N	lames	Date				
βΩ	Form									X				J. Grams E. Hunt		11-01-2018				
SINEMETE	Line									X										
TEM	Color									x	1			1						
日	Texture													†						

SECTIOND. (Con	ntimod
Comments from item 2.	innear
Not Applicable.	
Additional Mitigating Measures (See item 3)	
Not Applicable.	
••	
U.S. GOVERNMENT PRINTING OFFIC	E: 1985-461-988/33094

Form8400-4 (September 1985)

Date
6-15-2019
District
Tonto National Forest
ResourceArea
Activity (program)

	VISUAL CONTRAST RATING WORKSHEET														THIS THE				
																Activity (program)			
	SECTIONA. PROJECT INFORMA													FORMAT	ION				
1												4. Loc			1011	5. Location Sketch			
	Resolution Cop							Ι,	т	.1.1.	0015		From US 60 provided by Truescape simulations.						
2	. KeyObservation]									Town	snip	00125							
	32- Tailings Pi)							Range	e 0	13E								
	Photograph Si	Goog	le Ea	arth .	Aeria	ıl Vie	ew	;	Sectio	n 28	3								
N/A	. VRM Class																		
	SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION 1. LANDWATER 2. VEGETATION 3. STRUCTURES																		
				ER												3. STRUCTURES			
FORM	Rolling and a	ngu	lar.								e, an trica		hou	s, n/	a				
Ð.								(абуп	iiiie	urca	1							
	Angular, irre	gula	r.					7	Weal	k. ir	regu	lar.		n/	'a				
LINE		,										,							
I																			
OR	Tans, browns							'	Vibr	ant (deep	gree	ens	n/	'a				
ПОО	Tans, browns.																		
	Coarse, uneve			-	Frac	latio	nal,	mad	lium	ı, n/	ี 9								
TEX	Coarse, uneve	011.							and		,11α1,	11100	iiuii	, 11/	а				
L																			
	SECTION C. PROPOSED ACTIVITY DESCRIPTION																		
	1. LANDWATER										ÆGE	TATI	ON		3. STRUCTURES				
FORM	Smooth	th								se				N	/A				
FOI																			
Ð	Straight, linear								Spar	:se				N	/A				
LINE																			
	Tan, light brown								Spar	300				N	/A				
COL	Tan, iigni biowii								эраг	se				1	/A				
	Smooth								Spar	'se				N	/A				
TEX									· P ···										
- [
				SEC	OITO	ND.	CO	NTR	AST	'RA'	TING	÷ 🗆	SH	ORT TER		☑ LONG TERM			
1.						I	FEAT	URE	S	1						roject design meet visual resource ement objectives? □ Yes □ No			
	DEGREE	L		WATI DDY	ER	VI		ATIC	ON	\mathbf{S}	TRUC		ES			in on reverse side) YES			
				1)			(2)			(3)		,					
	OF													3. Ad	ditio	nal mitigating measures recommended?			
C	ONSTRAST		ate				ate				ate				Yes	☐ No (Explain on reverse side)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None						
		ž	M	W	Ž	ž	M	W	Ž		M	W	Ž	Evalua t J. Gran		Tames Date 6-15-2019			
$\overline{\mathbf{x}}$	Form									X				E. Hun		6-13-2019			
ELEMENIS	Line									X									
NE E	Color									x									
4	Texture									X									

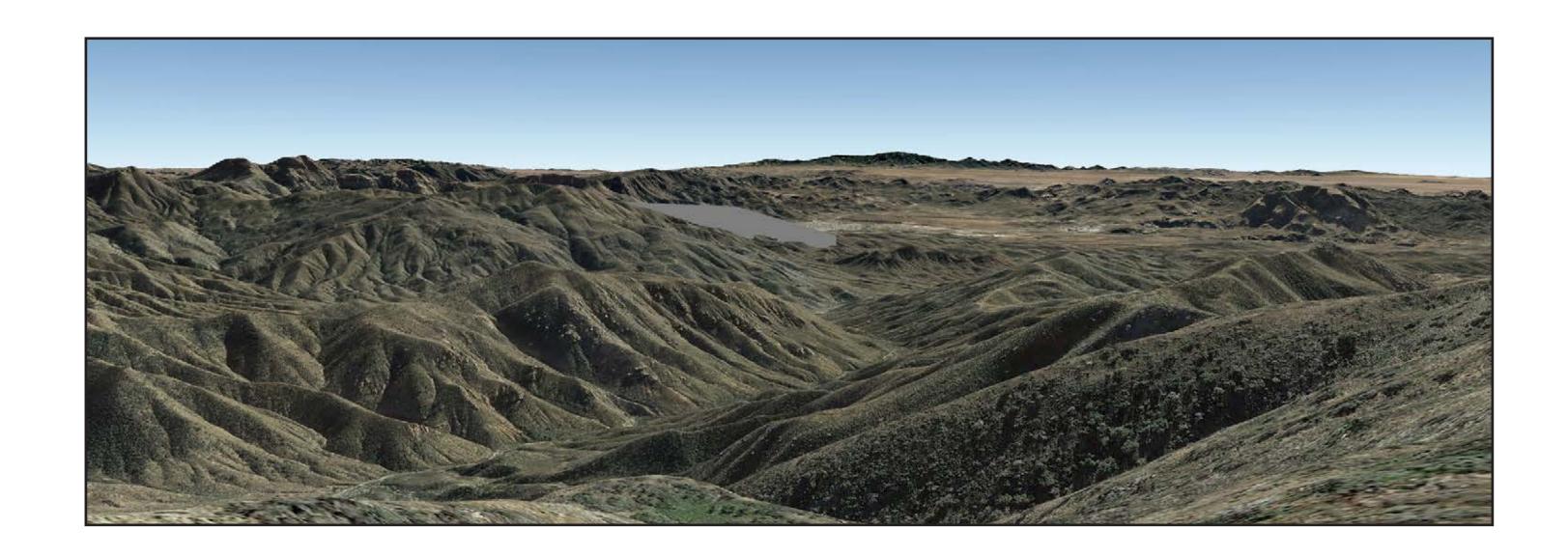
SECTIOND. (Continued)	
Comments from item 2.	
Additional Mitigating Measures (See item 3)	
U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094	

Date
6-15-2019
District
Tonto National Forest
ResourceArea
Activity (program)

	VISUAL CONTRAST RATING WORKSHEET																	
												Activity(program)						
								CTEV	ALIO	TAT A	DD) IEV	YTI TO	TEVODA/	T A TITON			
1. ProjectName						SEC	ECTION A. PROJECT INFORM 4. Location						IATION	5. LocationSketch				
Resolution Copper Mine													From US 60 provided by Truescape simulations.					
										_	Township <u>001S</u>							
2 KeyObservationPoint 33- U.S. 60 Transmission Lines									Range 013E									
Photograph Simulation											Section 29							
	VRM Class										_	Securi	41 2	<u></u>				
N/A																		
SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION																		
1. LANDWATER 2. VEGETATION 3. STRUCTURES																		
ı	Rolling and a]	Mod			amorphous,			Straight, bold								
FORM					á	asymmetrical												
F																		
Ħ	Angular, irre	Angular, irregular. Weak, i undulat													Regula	ar		
LINE																		
٠,	Tans, browns	Tans, browns.											ens		Gray			
COLOR				Vibrant deep greens						3.530								
Ω																		
7.	Coarse, unev	Coarse, uneven.											liun	1,	Even, regular			
TEX]	random															
SECTION C. PROPOSED ACTIVITY DESCRIPTION													MON.					
														VIIY D	3. STRUCTURES			
	N/A	1. LANDWATER										JIAI	ON		Straig	ht, bold		
FORM	17771		N/A						Strang	, 501a								
H																		
LINE	N/A	N/A													Regula	ar		
11																		
COL	N/A]	N/A						Gray				
ο																		
X X	N/A]	N/A						Even,	regular		
TEX																		
<u> </u>	SECTION D. CONTRAST RATING □ SHORT TERM □ LONG TERM																	
1. FEATURES 2. Does project design meet visual resource																		
		L	AND/	WAT	ER										manag	agement objectives? Yes No		
DEGREE		BODY VEGETA							JΝ	S		UCTURES (3)			(Explain on reverse side) Yes			
\mathbf{OF}		(1)																
CONSTRAST			d)			ng	Moderate		a		d)			3. Additional mitigating measures recommended? ☐ Yes ☐ No (Explain on reverse side)				
		ng	Moderate	ķ	e			ķ		ng Di	lerat	¥	.		— 103	Two (Explain of Teverse state)		
		Strong	Moc	Weak	None	Strong	Moc	Weak	None	Strong	Moderate	Weak	None	Eva	luator's N	Names Date		
ELEMENIS	Form									X				J. G	J. Grams 6-15-2			
	Form													E. Hunt				
	Line									X				4				
	Color	<u> </u>			-		-			X V				-				
	Texture	<u> </u>							SECTION D. (Continued)					in				
											11 /1 /							

Comments from item 2.	
Comments from Nem 2.	
Additional Mitigating Measures (See item 3)	
U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094	

Appendix C.



Block Models - Existing & Proposed 19 February 2019

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Truescape® **Overall KOP Locations**

Alternative 2

- Arizona Trail Northwest of Montana Mountain
- Picket Post Mountain
- Apache Leap

Alternative 4

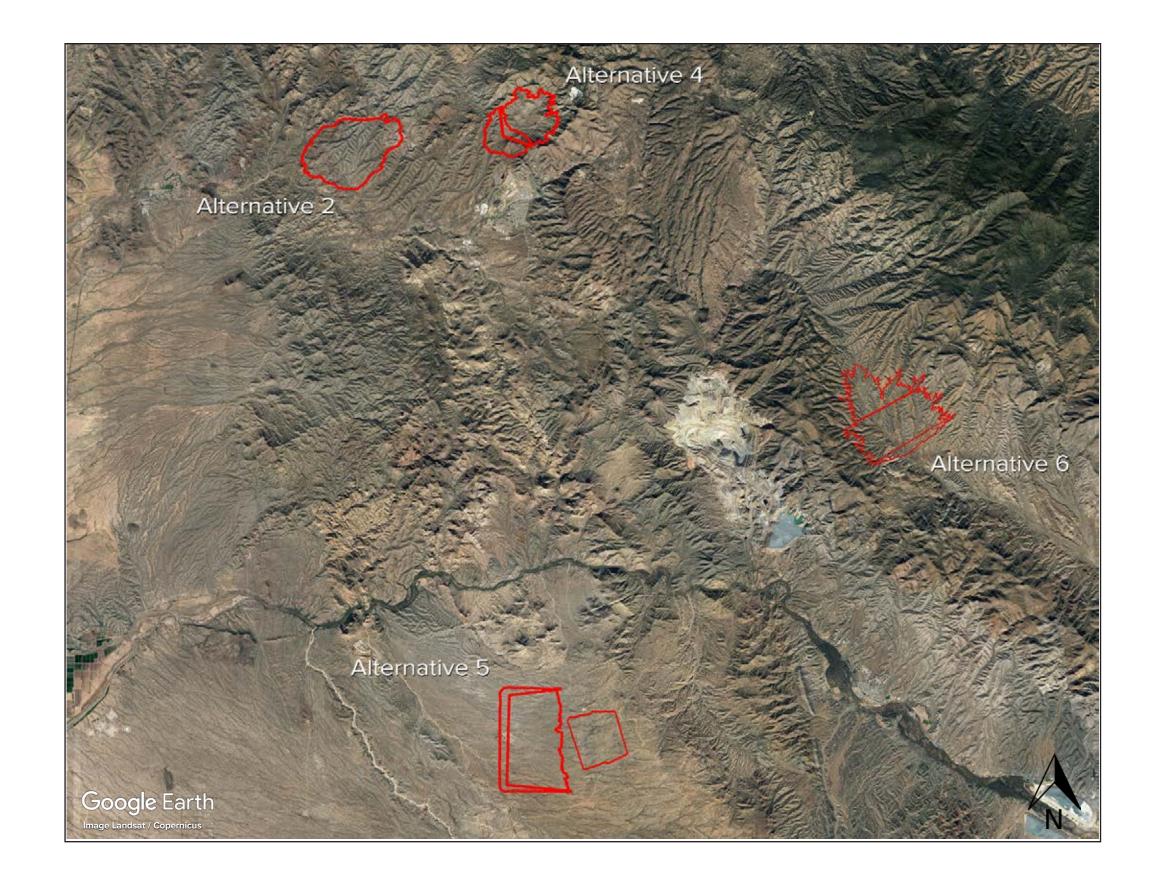
- Picket Post Mountain
- Apache Leap
- Arizona Trail Montana Mountain

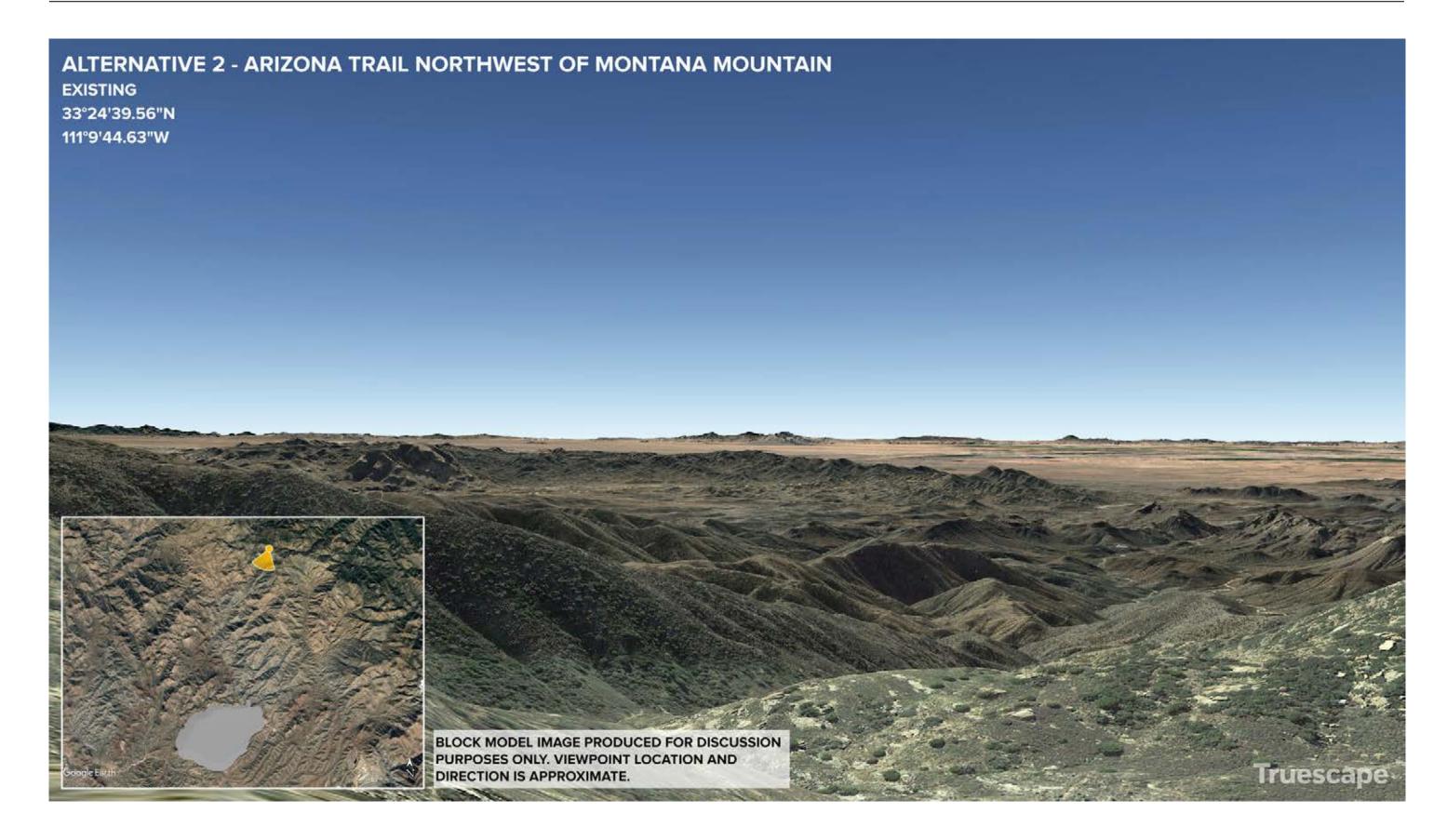
Alternative 5

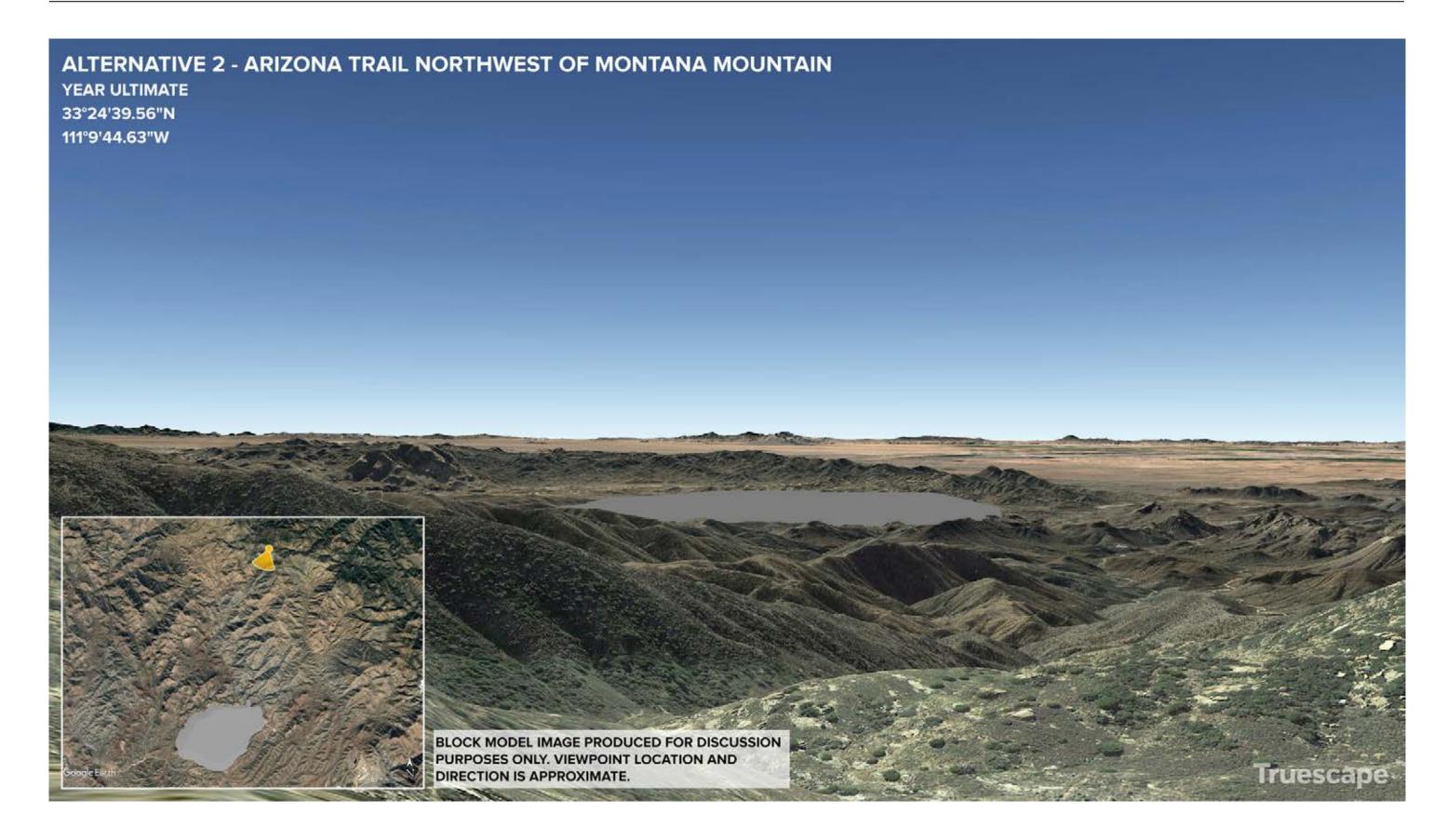
- Arizona Trail Peg Leg NorthArizona Trail Tortilla Mountains

Alternative 6

- Pinal Peak
- San Carlos 2A

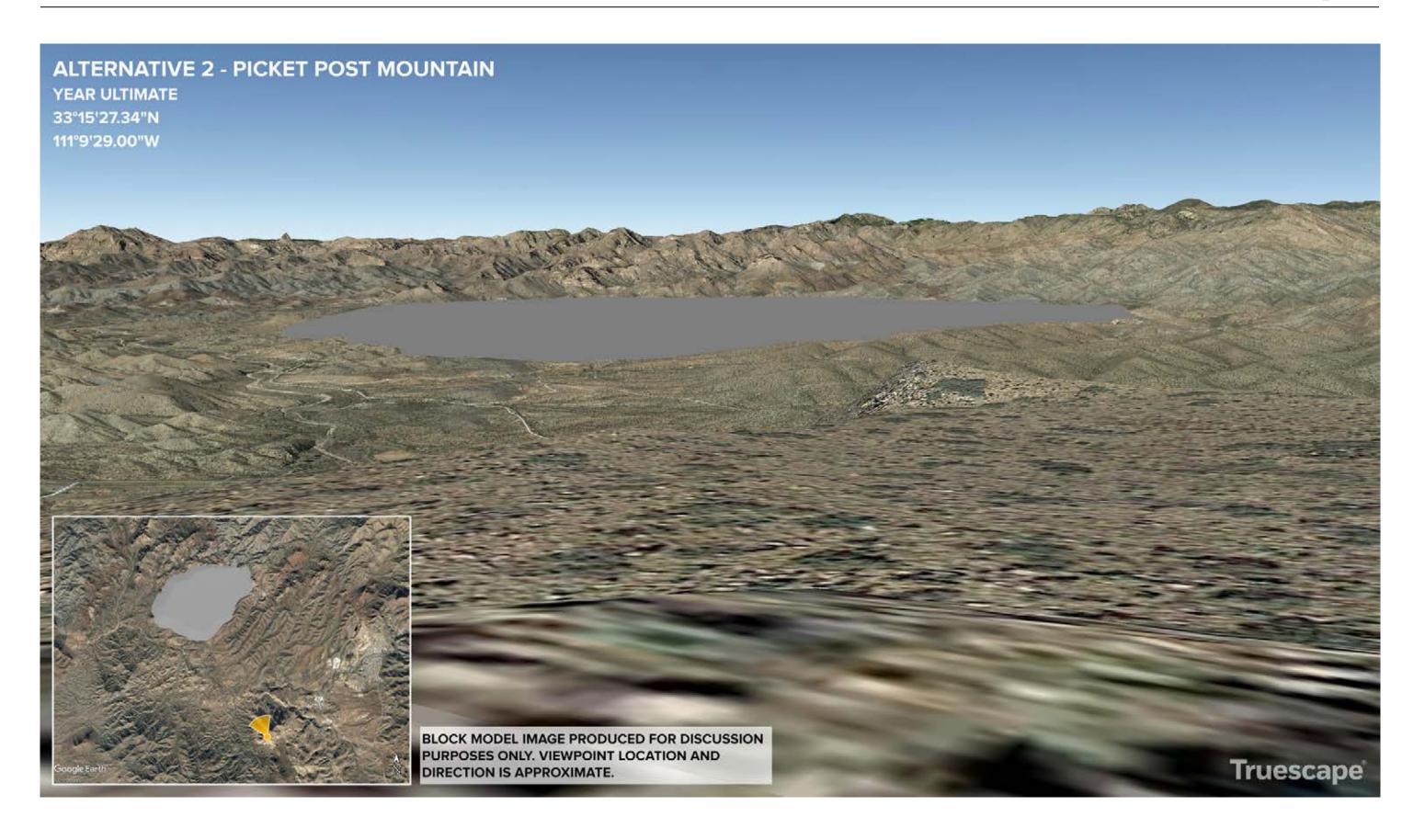


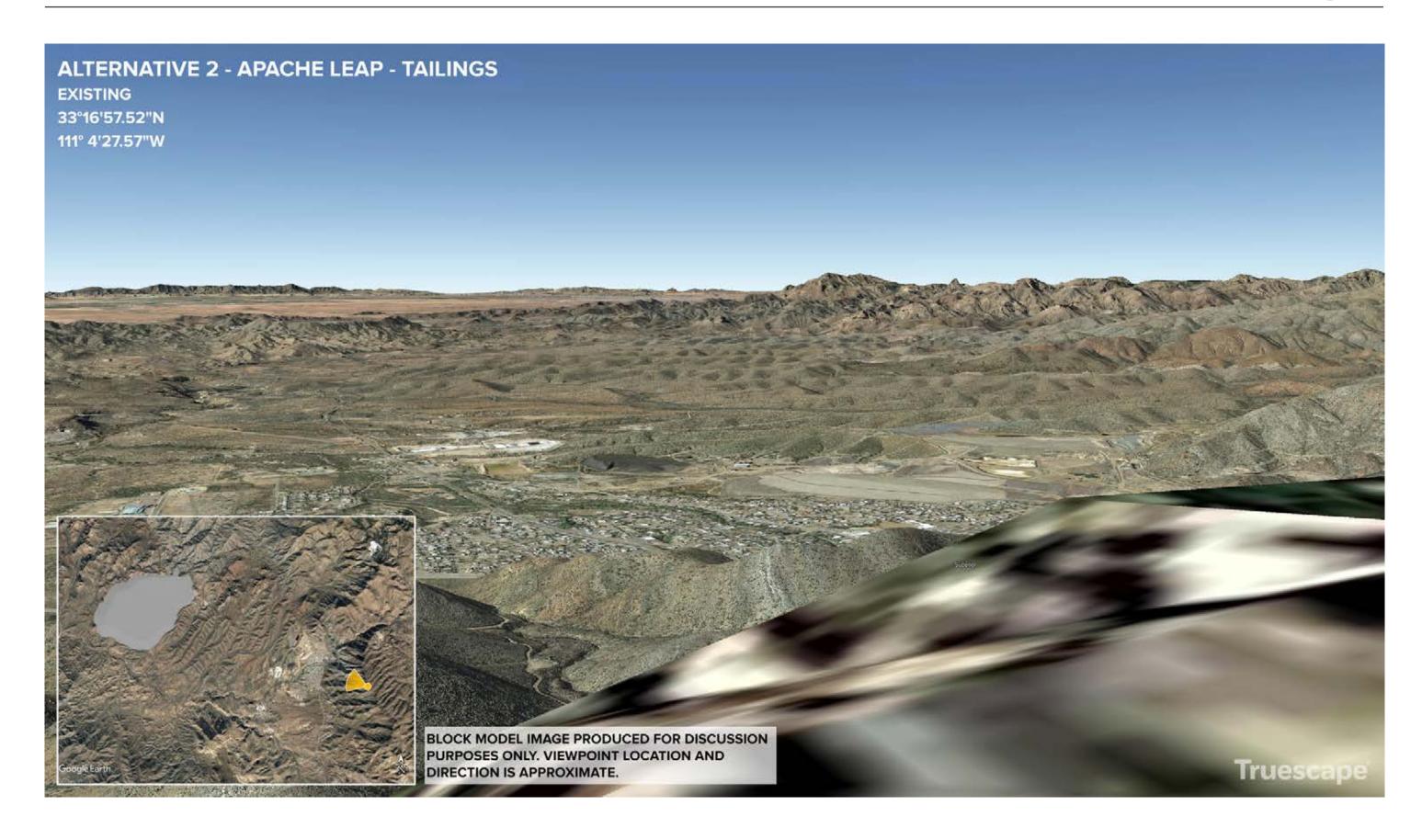


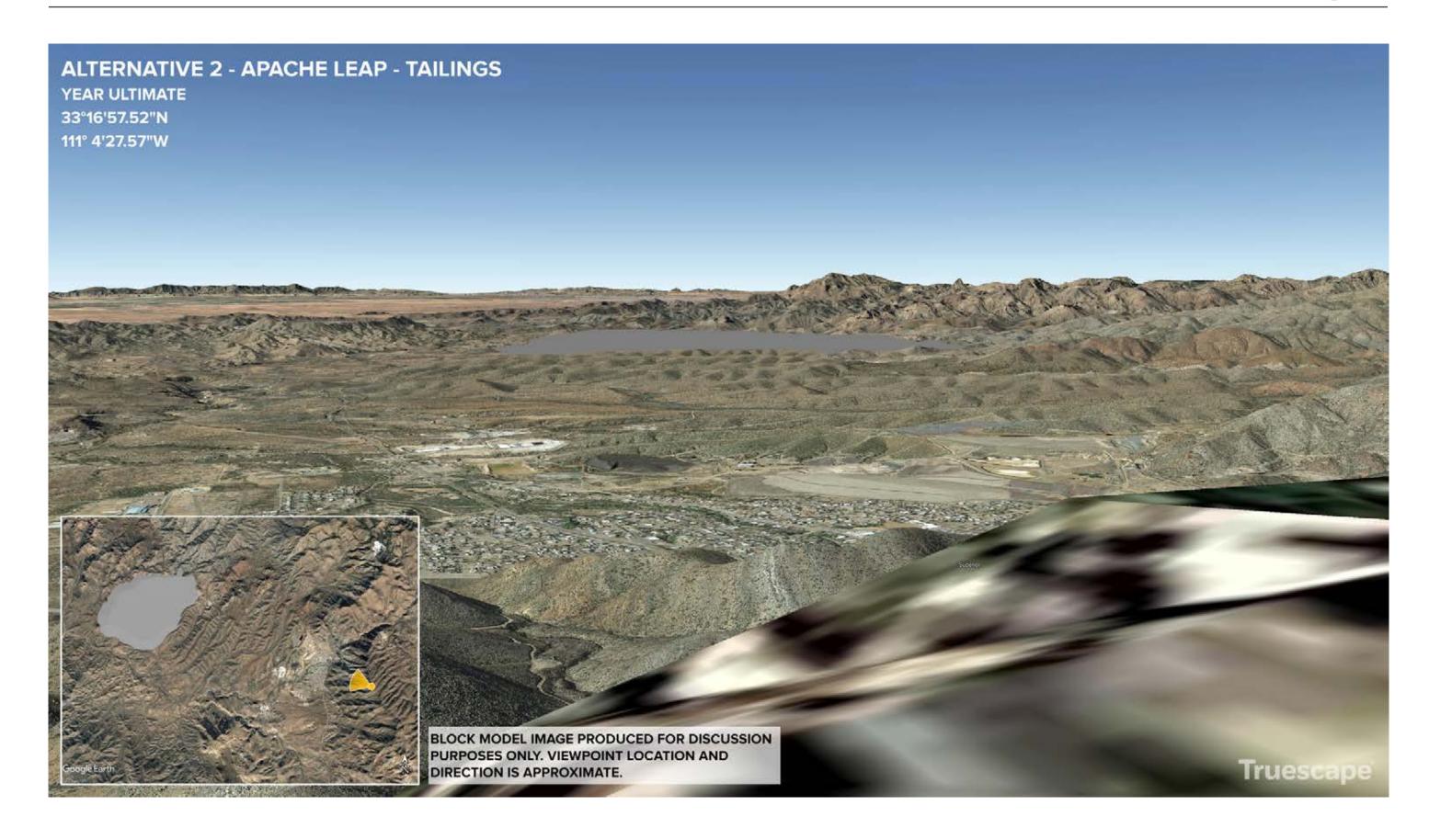




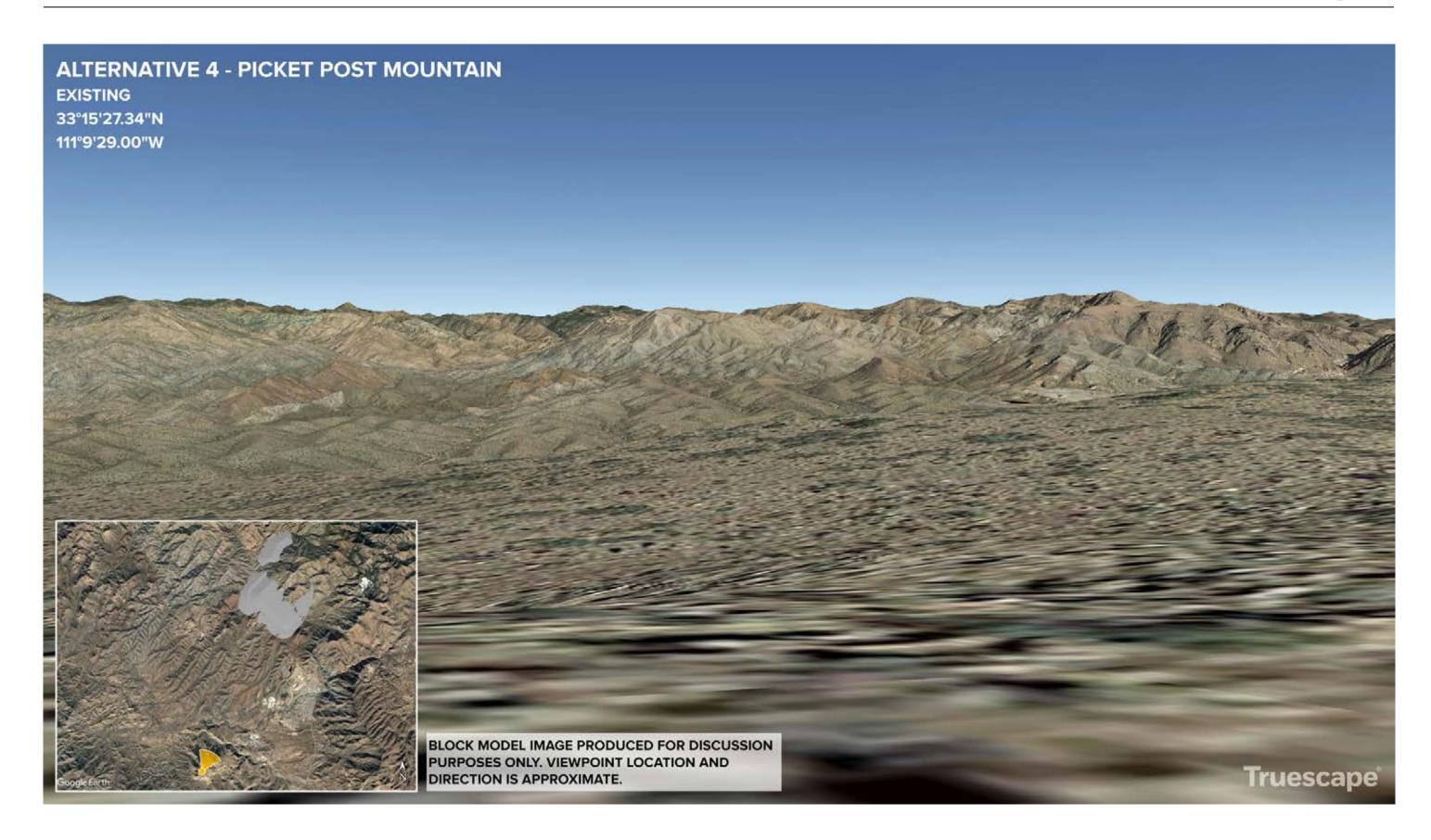
Truescape®

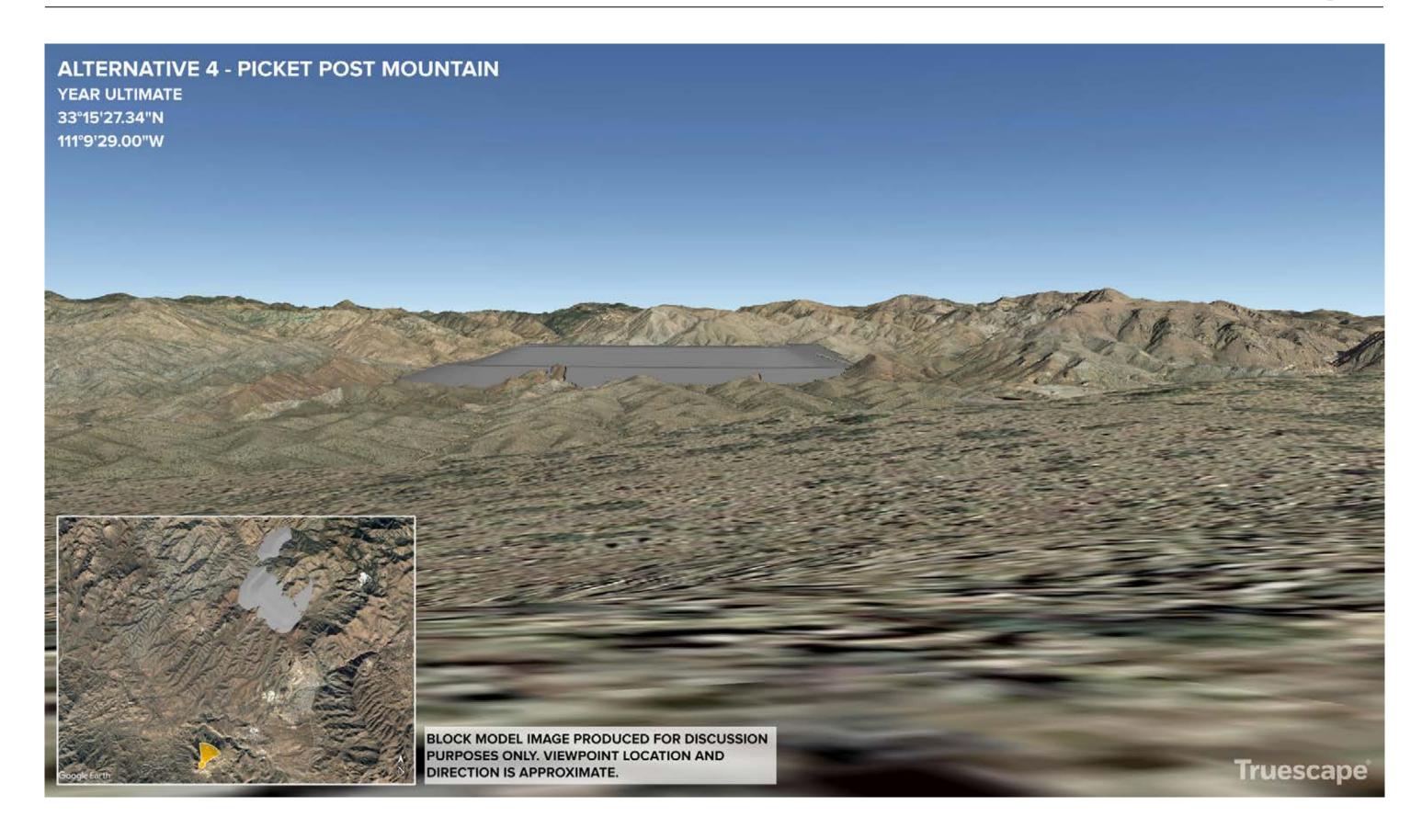




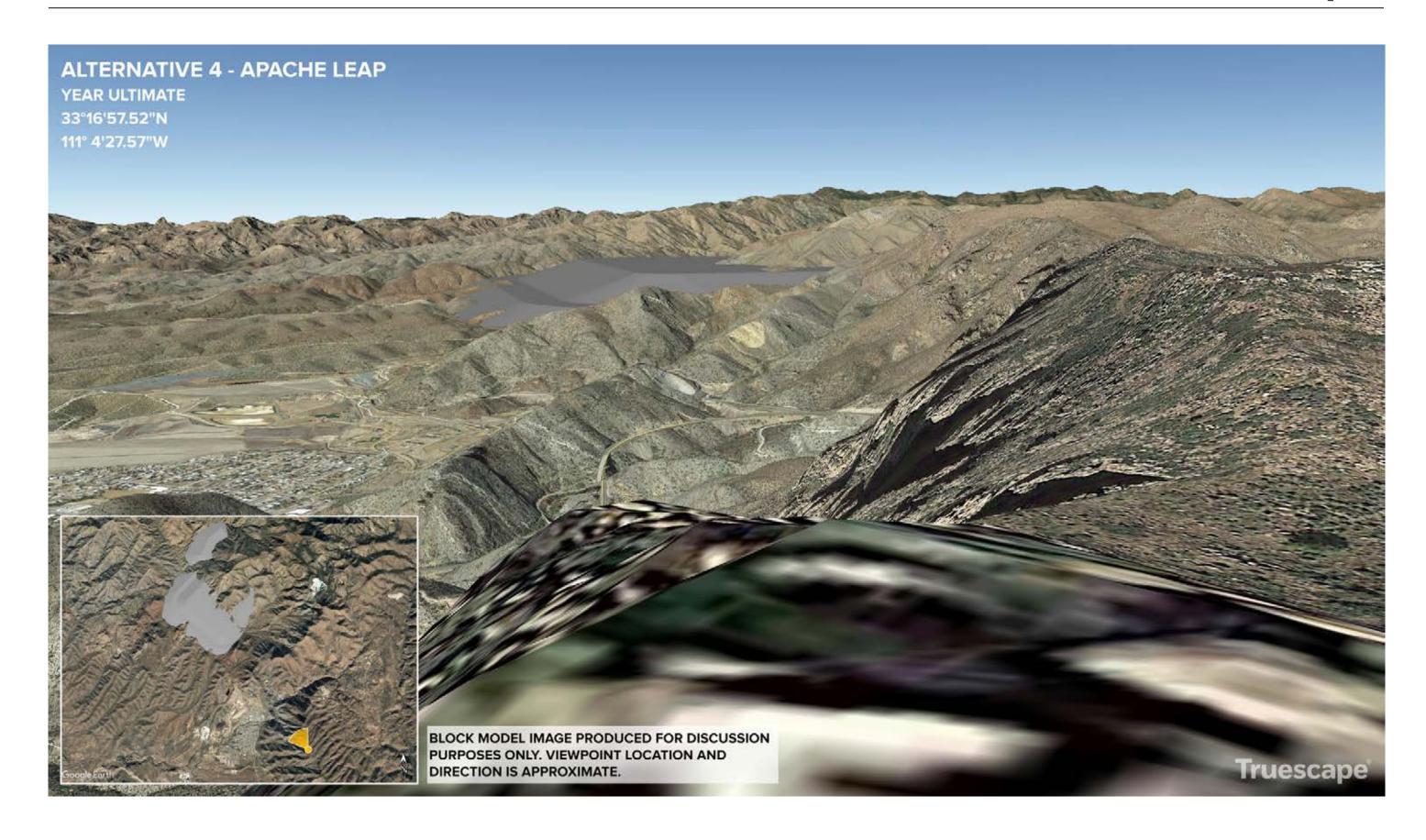


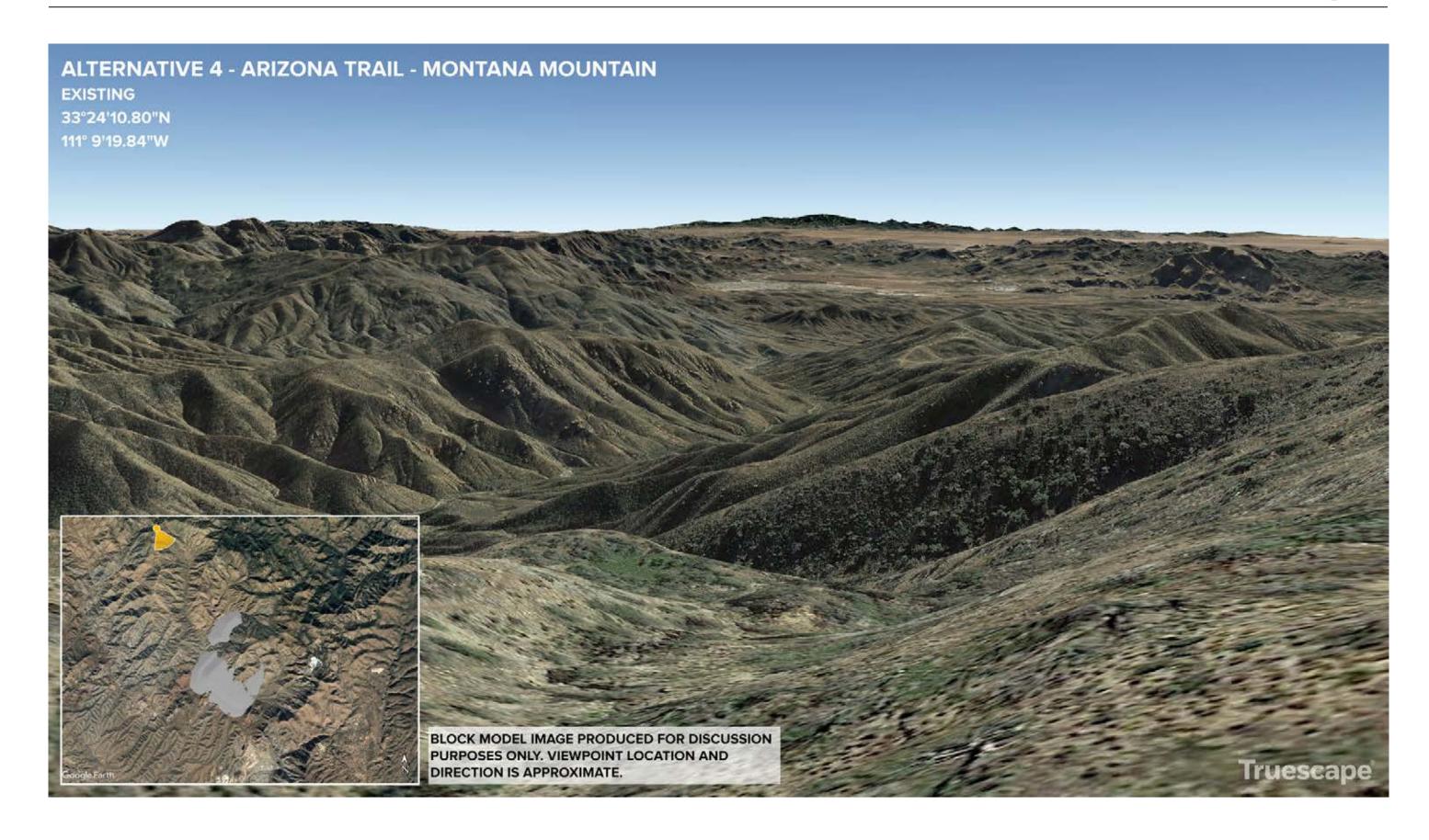
Truescape®

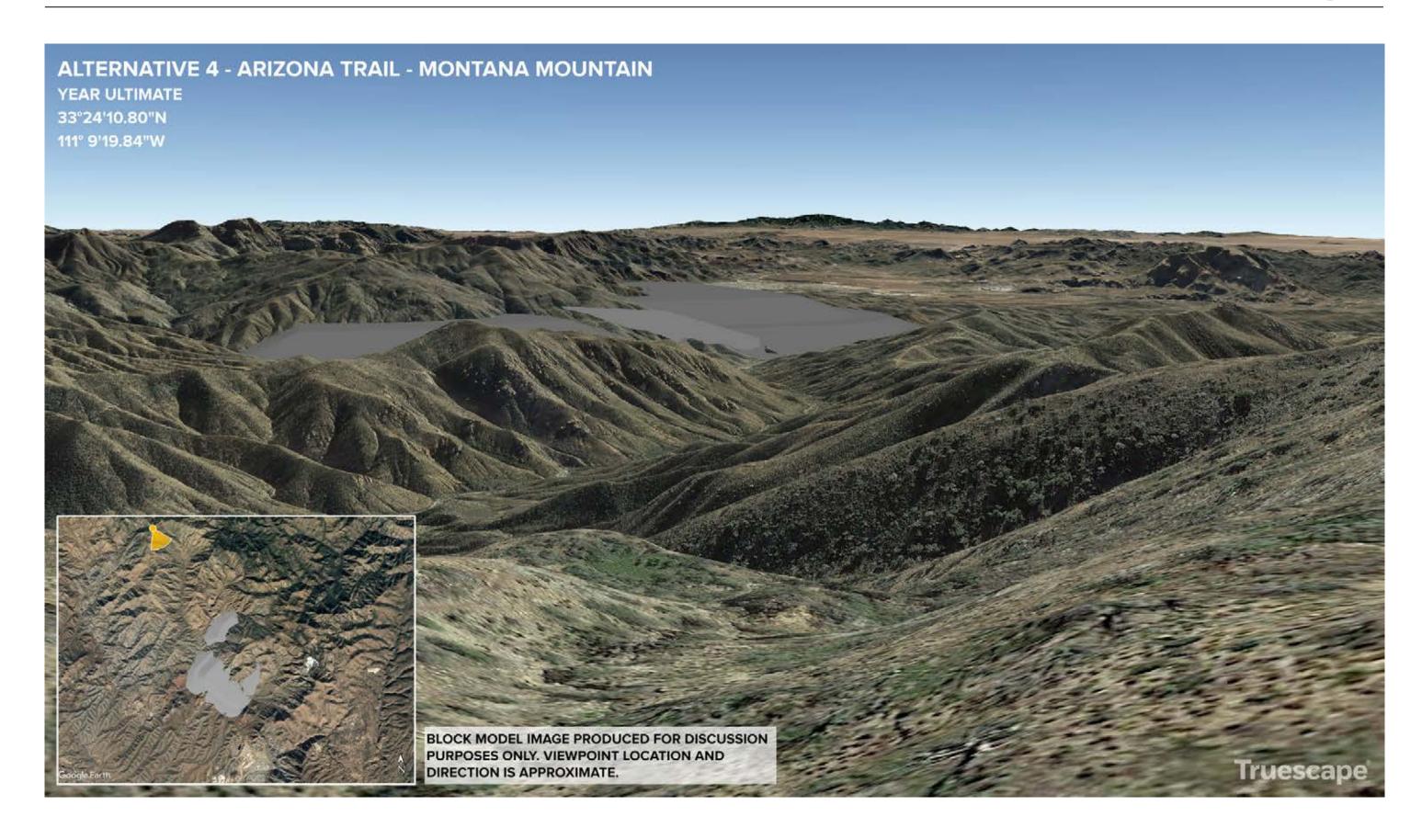






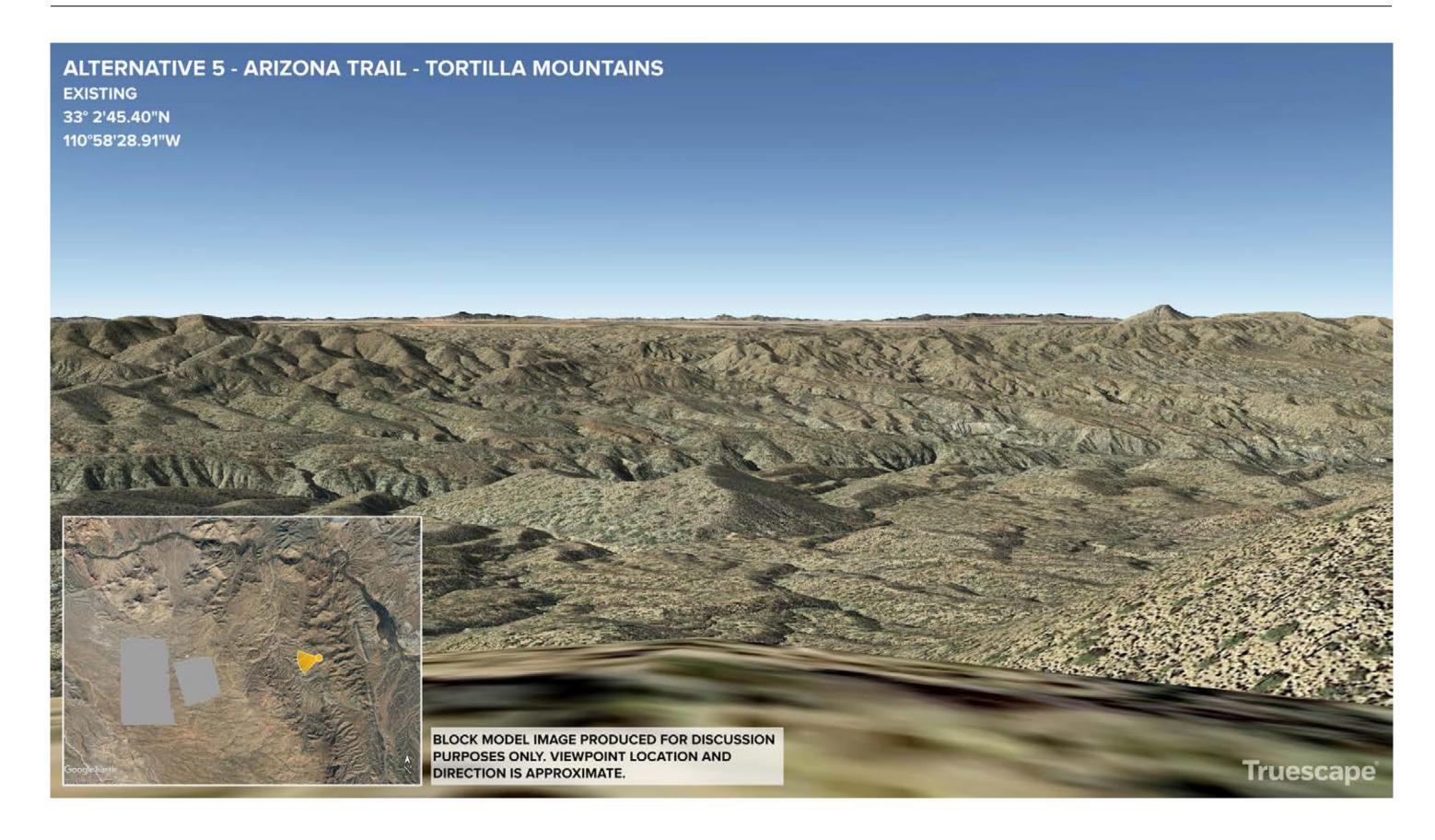


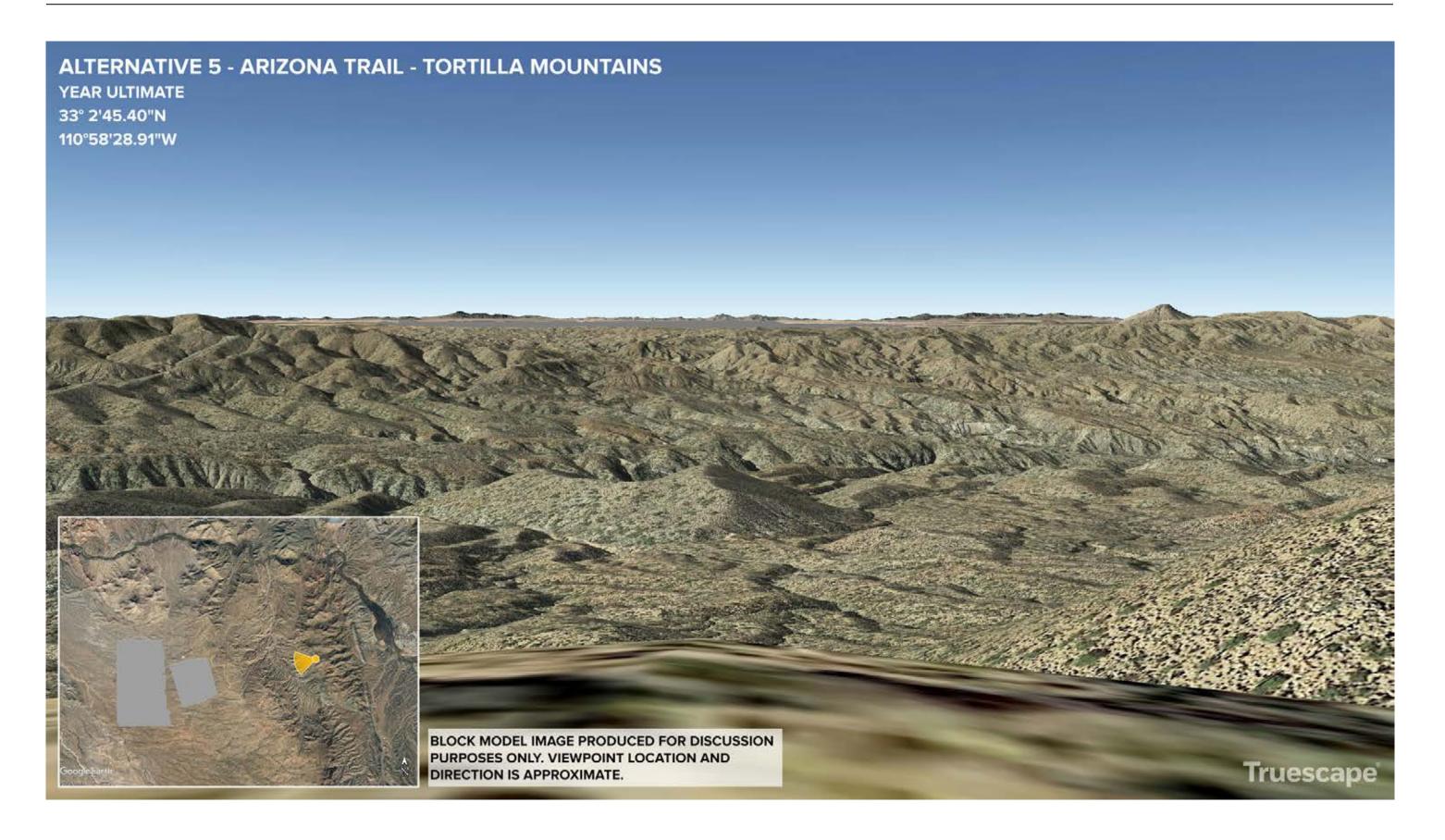


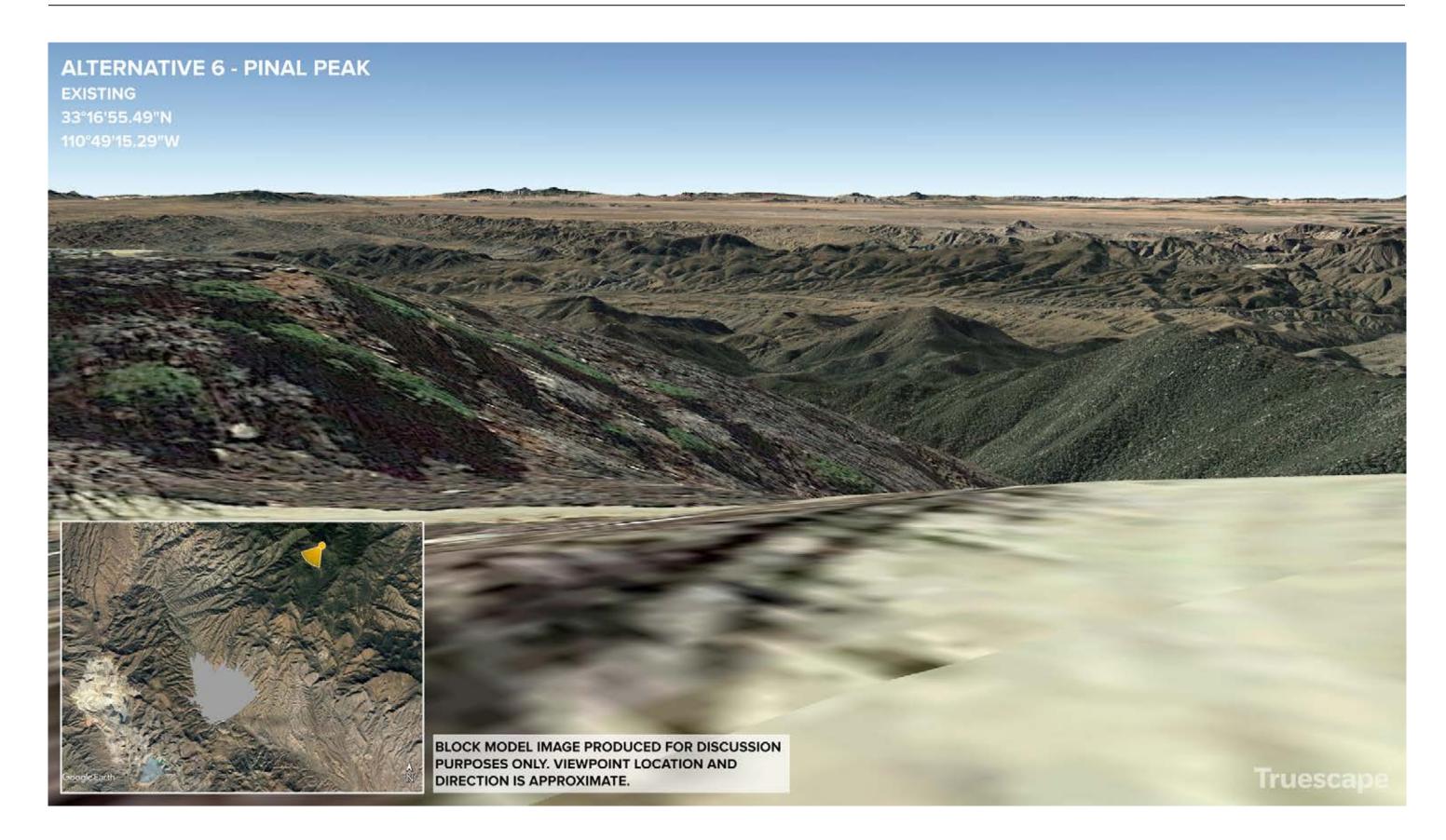


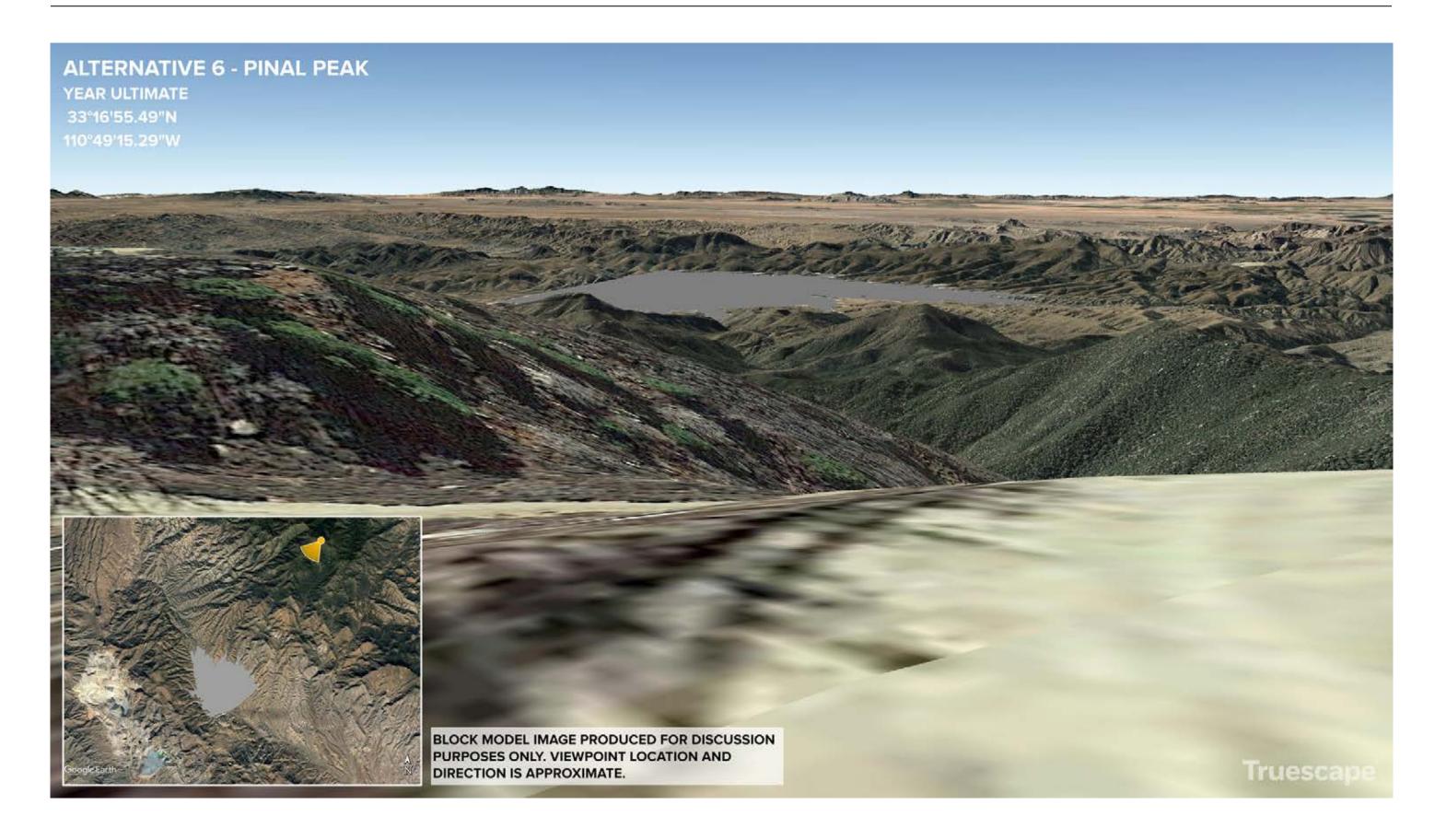


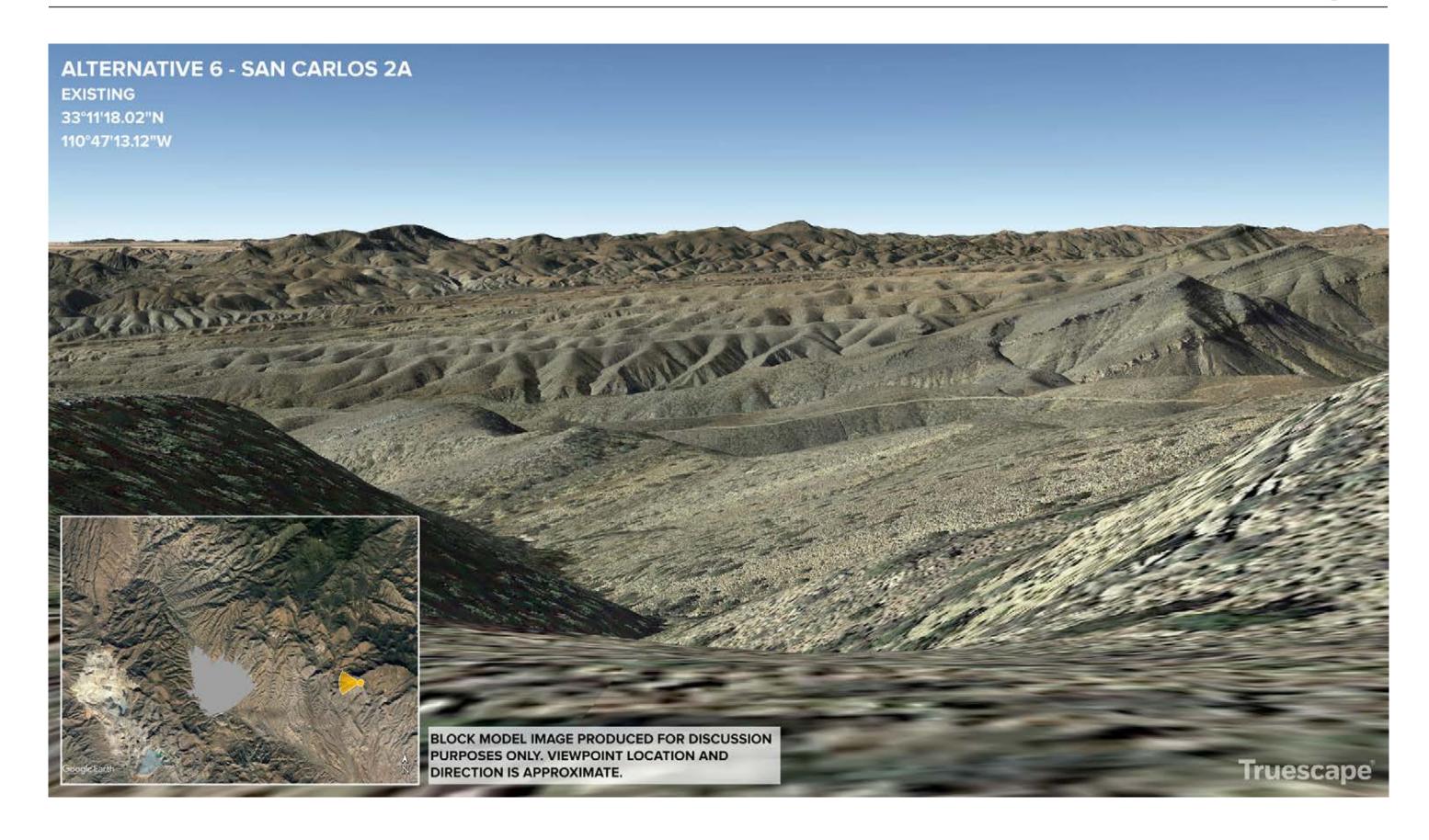












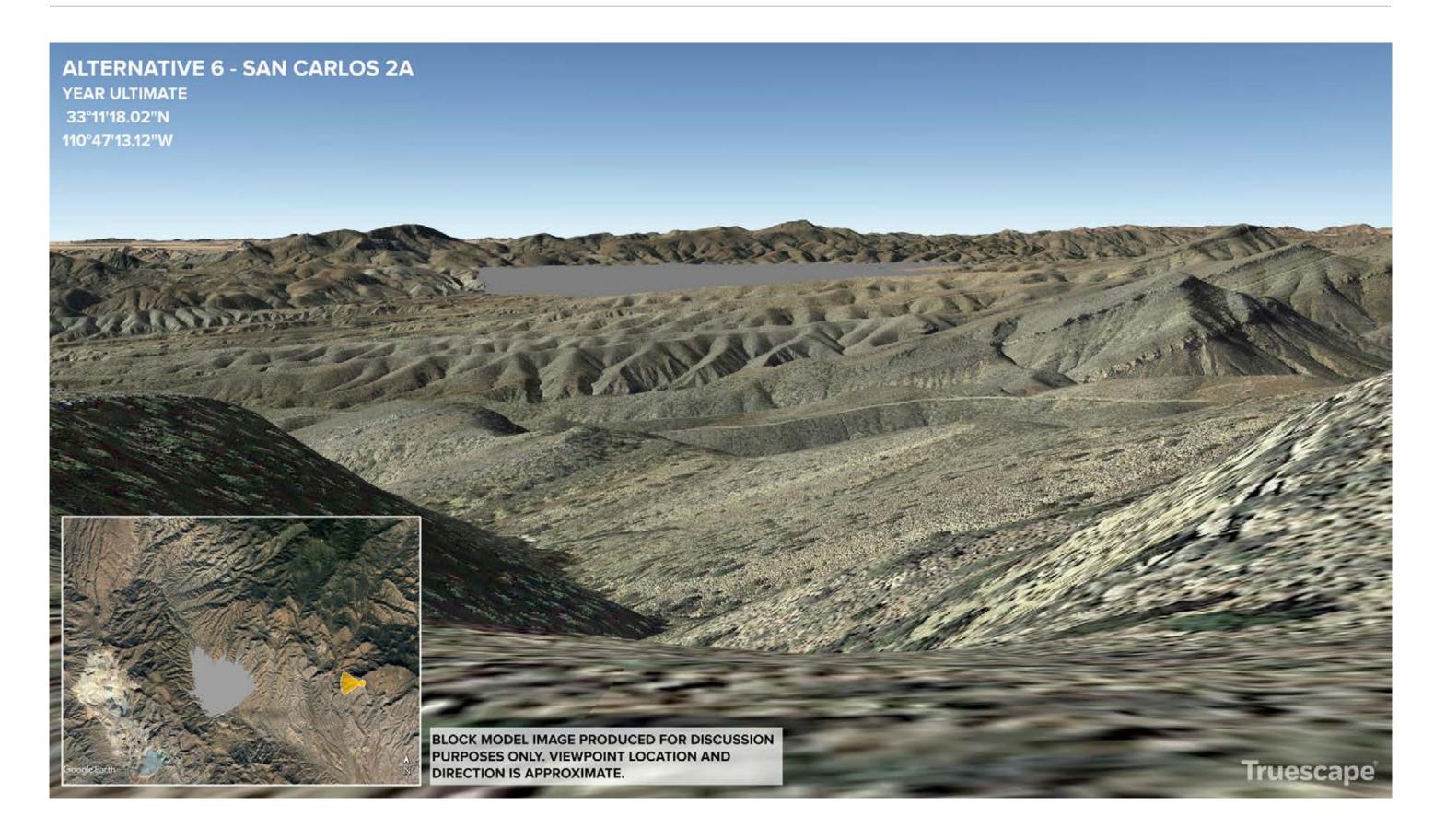




Photo Simulations - Existing & Proposed 20 February 2019

www.truescape.com

Overall KOP Locations Truescape®

Alternative 2

- Arizona Trail at Barnett Camp
- Arizona Trail Ridge
- Highway 177 from Kearny
- Pickett Post House (Boyce Thompson)
- Forest Road 172
- US 60, Milepost 219
- · Arizona Trail at Picket Post Trailhead
- Queen Valley North Charlotte Street

Alternative 4

- Superior, South Stone Avenue
- Superior, Baseball Field
- Arizona Trail Ridge
- US 60, Near Silver King Wash
- Highway 177 from Kearny
- Picket Post House (Boyce Thompson)
- · Arizona Trail at Picket Post Trailhead

Alternative 5

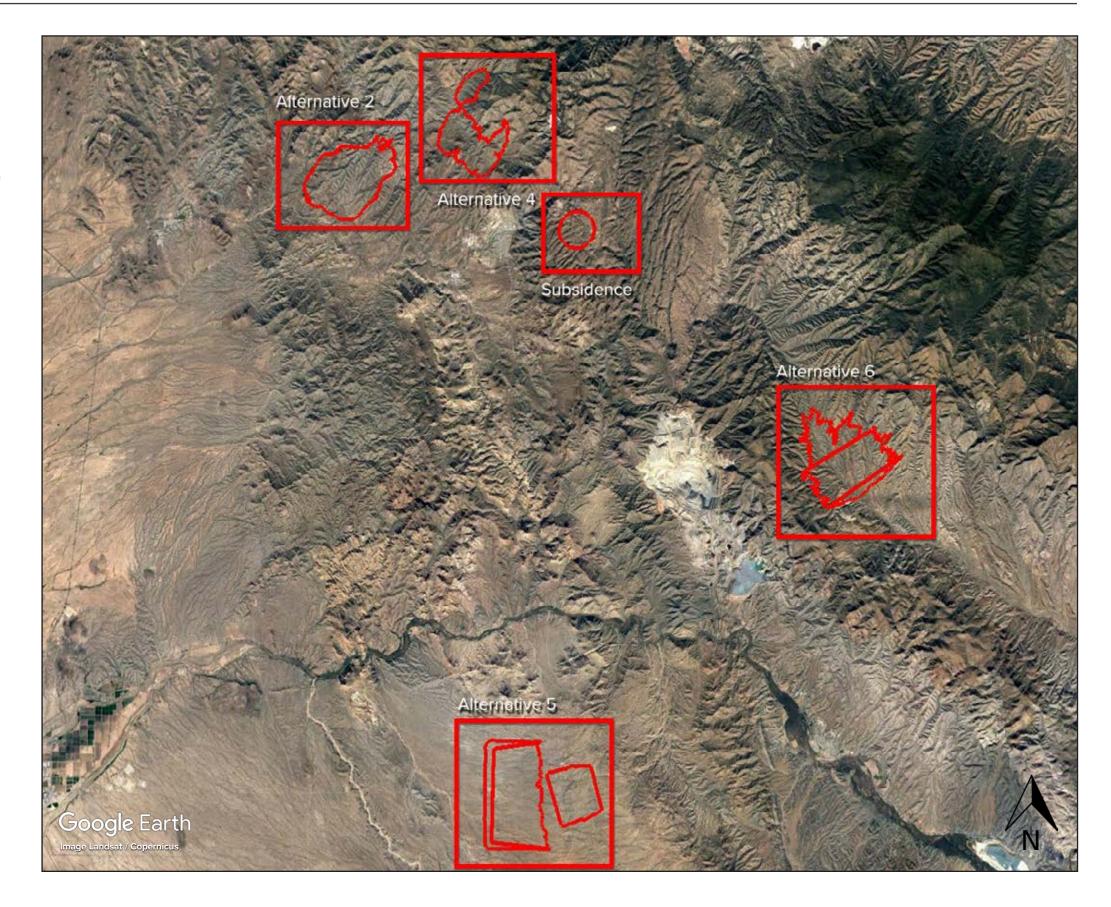
- Cochran OHV Parking Boulder Area
- Cochran Road OHV Dispersed Site
- Florence Kelvin Highway East Side
- Florence Kelvin Highway South

Alternative 6

• Dripping Springs Road

Subsidence

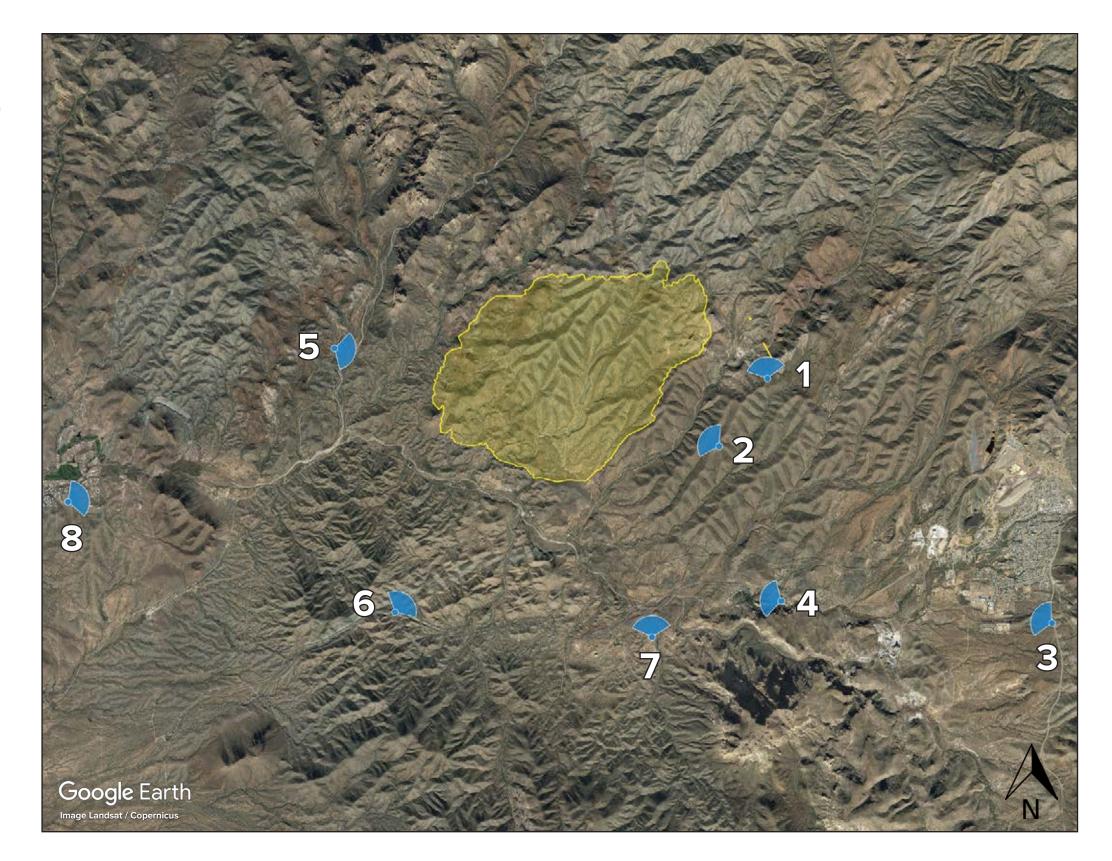
• FSR 2466 East of Subsidence Zone



Truescape®

- 1. Arizona Trail at Barnett Camp

- 2. Arizona Trail Ridge
 3. Highway 177 from Kearny
 4. Pickett Post House (Boyce Thompson)
 5. Forest Road 172
- 6. US 60, Milepost 219
- 7. Arizona Trail at Picket Post Trailhead
- 8. Queen Valley North Charlotte Street







Alternative TSF & Subsidence KOPs

Alternative Tailings

Arizona Trail at Barnett Camp

Viewpoint Loca

Project A



Longitude: 111° 09' 15.0048'
Latitude: 33' 18' 54.7175
Elevation of Viewpoint Position (ti): 275
Height of Camera Above Ground (tt):
Date of Photography: 13 August 2018 at 14:25
Orientation of View: 1.
Vartical Elied of View: 1.
Vartical Elied of View: 1.

NOTE

Viewpoint locations have been precision surveye

Oracle, AZ

No part of this photo simulation shall be altered in an

Truescape

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20 February 2018 SHEET



Alternative Tailings 2

Arizona Trail - Ridge



Longitude: 111° 09' 48.6132'
Latitude: 33° 18' 14.7867
Elevation of Viewpoint Position (tt): 276
Height of Camera Above Ground (tt):
Date of Photography: 13 August 2018 at 16:11
Orientation of View: WI
Horizontal Field of View: 1
Vertical Field of View:





Alternative Tailings 2

Highway 177 from Kearny



Longitude: 111" 05" 52.4039"

Latitude: 33" 16" 28.4160"

Elevation of Viewpoint Position (tt): 2842

Height of Camera Above Ground (tt): 5

Date of Photography: 8 March 2016 at 14:23 P

Orientation of View: WN

Horizontal Field of View: 13

Vertical Field of View: 4





Alternative fallings 2



Longitude: 111' 09' 3.1112"

Latitude: 33° 16' 41.8758"

Elevation of Viewpoint Position (tt): 2485

Height of Camera Above Ground (tt): 5

Date of Photography: 9 March 2016 at 11:27 A

Orientation of View: WN

Horizontal Field of View: 13

Vertical Field of View: 4





Alternative Tailings 2

Forest Road 17



111° 14' 21.8399"	Longitude:	
33° 19' 11.6040"	Latitude:	
217	Elevation of Viewpoint Position (ft):	
5	Height of Camera Above Ground (ft):	
8 March 2016 at 11:10 A	Date of Photography:	
E	Orientation of View:	
13	Horizontal Field of View:	
4	Vertical Field of View:	





US 60, Milepost 219



 Longitude:
 111" 13" 39.4680"

 Latitude:
 33" 16" 35.5800"

 Elevation of Viewpoint Position (tt):
 2549

 Height of Camera Above Ground (tt):
 5

 Date of Photography:
 8 March 2016 at 09:55 A

 Orientation of View:
 N

 Horizontal Field of View:
 13

 Vertical Field of View:
 4





Alternative Tailings 2

Arizona Trail at Dicket Poet Trailhea



Longitude:	111° 10' 36.4609"
Latitude:	33° 16' 20.0299"
Elevation of Viewpoint Position (ft):	2391
Height of Camera Above Ground (ft): 5
Date of Photography: 1	4 October 2015 at 14:23 P
Orientation of View:	
Horizontal Field of View:	13
Vertical Field of View:	4





Alternative Tailings 2

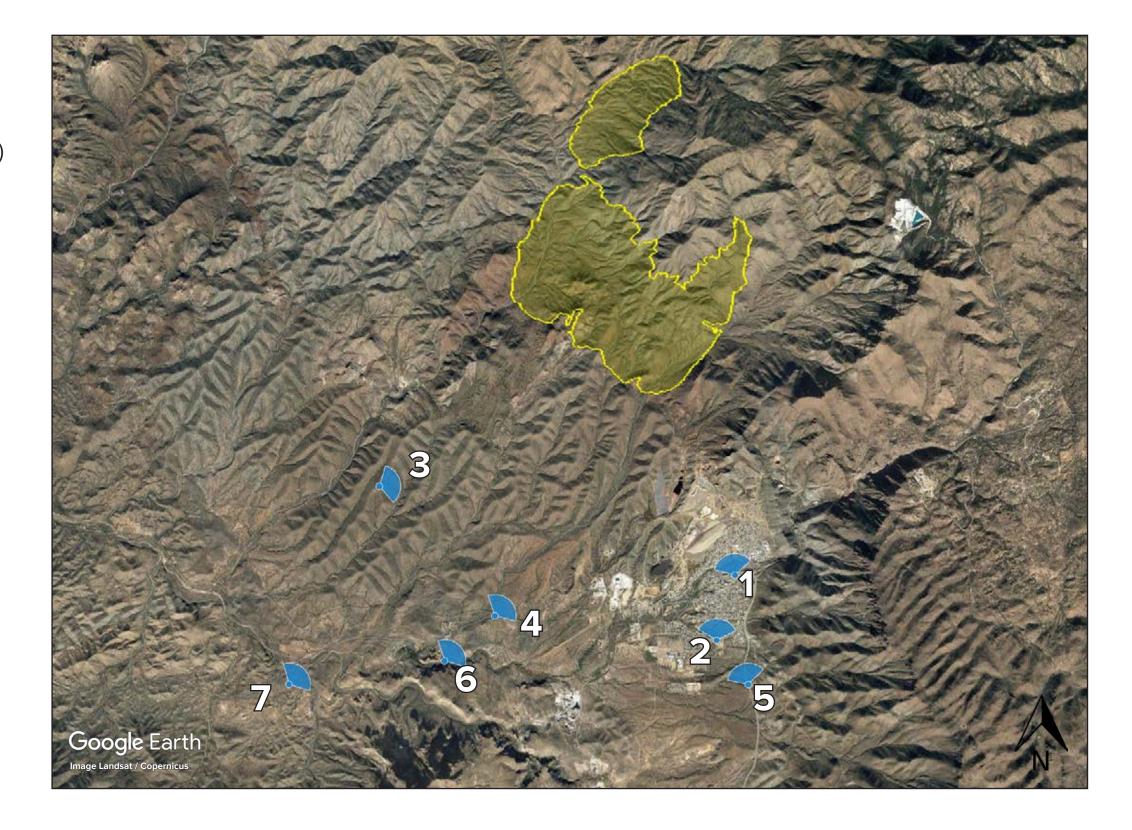


Longitude: 11ff 17 34.1185"
Latitude: 33° 17 41.7727'
Elevation of Viewpoint Position (ft): 2101
Height of Camera Above Ground (ft): 5
Date of Photography: 15 October 2015 at 10.13 J
Orientation of View: El
Horizontal Field of View: 15
Vertical Field of View: 4
Vertical Field of View: 4



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- Superior, South Stone Avenue
 Superior, Baseball Field
 Arizona Trail Ridge
 US 60, Near Silver King Wash
 Highway 177 from Kearny
 Picket Post House (Boyce Thompson)
 Arizona Trail at Picket Post Trailhead





Alternative Tailings 4

Superior, South Stone Avenu



Longitude: 111° 06' 1.3696"

Latitude: 33' 17' 25.6512"

Elevation of Viewpoint Position (t): 282'

Height of Camera Above Ground (tt): 5

Date of Photography: 12 October 2015 at 15:09 P

Orientation of View: NN

Horizontal Field of View: 13



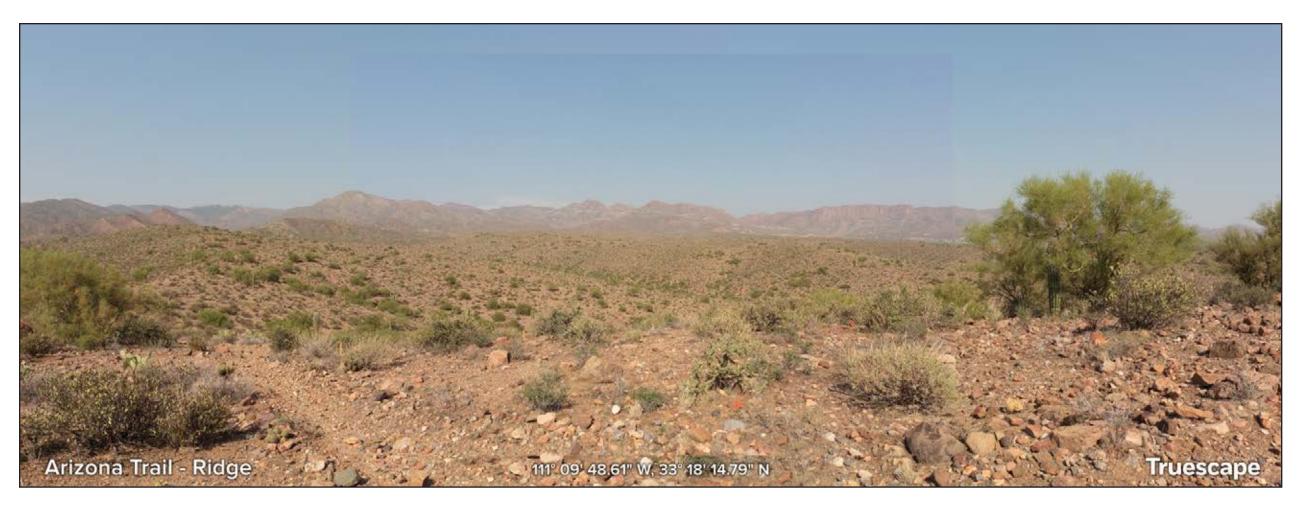


Alternative failings 4



Longitude: 111° 06° 11.6842
Latitude: 33° 16° 50.345*
Elevation of Viewpoint Position (ft): 28
Height of Camera Above Ground (ft):
Date of Photography: 12 October 2015 at 16:02
Orientation of View:
Horizontal Field of View:
Vertical Field of View:

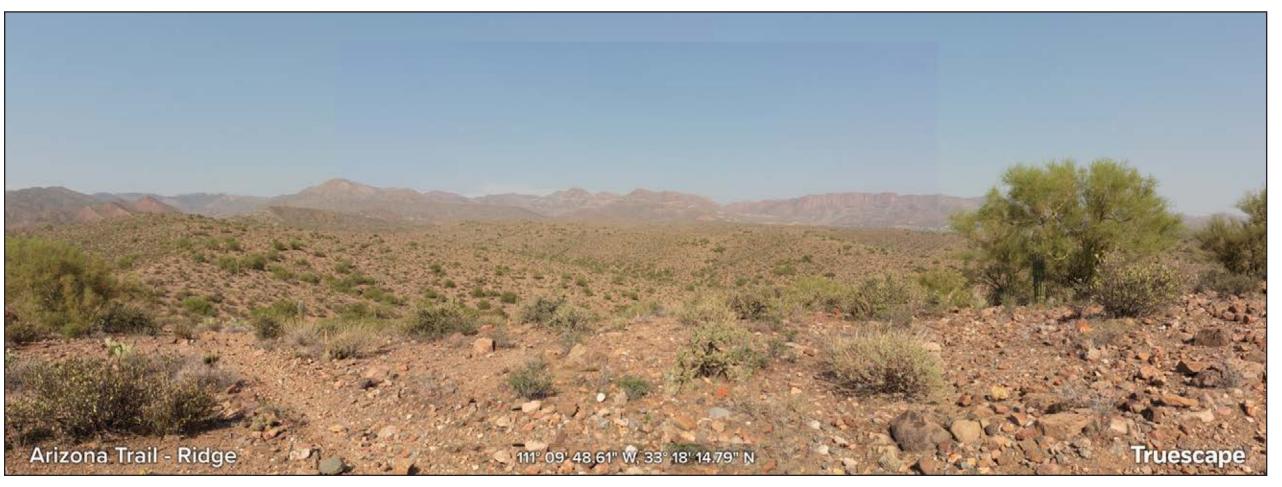




Alternative Tailings 4



Longitude: 111° 09' 48.6132'
Latitude: 33° 18' 14.7867'
Elevation of Viewpoint Position (tt): 276
Height of Camera Above Ground (tt):
Date of Photography: 13 August 2018 at 16:00
Orientation of View: E
Horizontal Field of View: 1
Vertical Field of View:





Alternative Tailings 4

US 60, Near Silver King Wash



111° 08' 40.3785"	Longitude:	
33° 17' 3.8626"	Latitude:	
2566	Elevation of Viewpoint Position (ft):	
5	Height of Camera Above Ground (ft):	
just 2018 at 15:47 F	Date of Photography: 14 Au	
	Orientation of View:	
13	Horizontal Field of View:	
4	Vertical Field of View:	





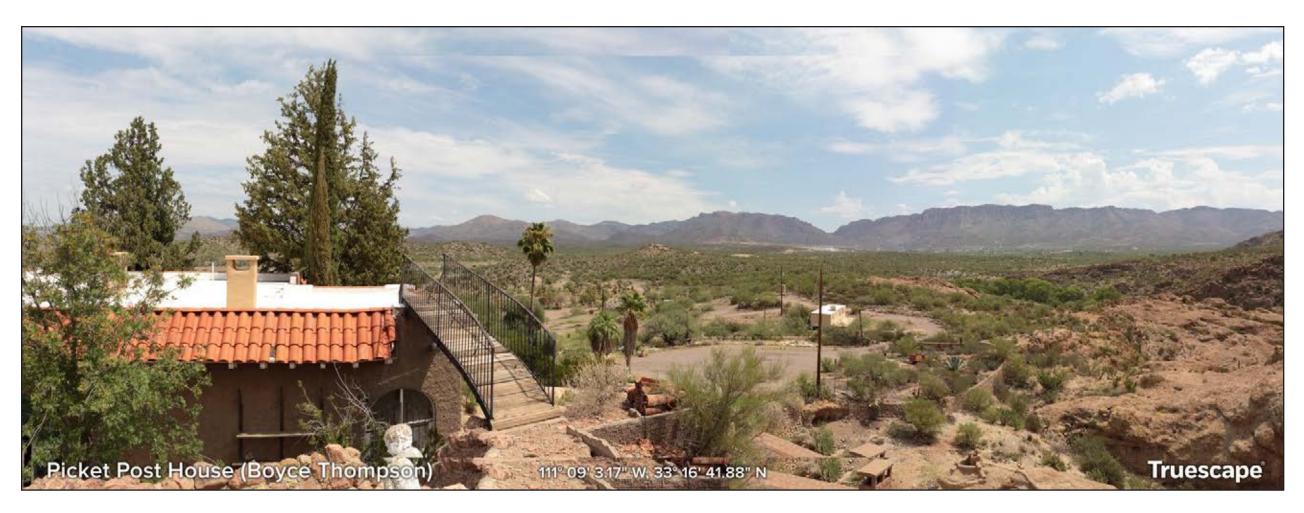
Alternative Tailings 4

Highway 177 from Kearn



Longitude: 111" 05" 52.0091"
Latitude: 33" 16" 28.3472"
Elevation of Viewpoint Position (ft): 2921
Height of Camera Above Ground (ft): 1
Date of Photography: 14 August 2018 at 15:11
Orientation of View: NN
Horizontal Field of View: 12
Varies Elistic of View: 15





Alternative Tailings 4

Picket Post House (Boyce Thompson)



111° 09' 3.1674" \	Longitude:
33° 16' 41.8822"	Latitude:
2581.	Elevation of Viewpoint Position (ft):
5.	Height of Camera Above Ground (ft):
5 August 2018 at 11:12 Al	Date of Photography: 15
N	Orientation of View:
130	Horizontal Field of View:
46	Vertical Field of View





Alternative Tailings 4



1° 10' 36.3223"	de:	
3° 16' 20.0788'	2:	
240	n of Viewpoint Position (ft):	
	of Camera Above Ground (ft):	
t 2018 at 13:16 F	Photography: 13 Aug	
	tion of View:	
13	tal Field of View:	
4	Field of View:	



Truescape®

- Cochran OHV Parking Boulder Area
 Cochran Road OHV Dispersed Site
 Florence Kelvin Highway East Side
 Florence Kelvin Highway South





Alternative Tailings 5

Cochran OHV Parking - Boulder Area



111° 06' 57.4751" \	Longitude:	
32° 59' 19.6398"	Latitude:	
2706.	Elevation of Viewpoint Position (ft):	
5.	Height of Camera Above Ground (ft):	
igust 2018 at 11:14 A	Date of Photography: 14 a	
N	Orientation of View:	
130	Horizontal Field of View:	
46	Vertical Field of View:	





Alternative Tailings 5

Cochran Road - OHV Dispersed Site



Longitude: 111" 09' 25.2601" W
Latitude: 33" 02' 11.8240" N
Elevation of Viewpoint Position (ft): 2246.1
Height of Camera Above Ground (ft): 5.4
Date of Photography: 14 August 2018 at 11:50 AM
Orientation of View: E
Horizontal Field of View: 130"
Vertical Field of View: 46"





Alternative Tailings 5
Florence Kelvin Highway - East Side



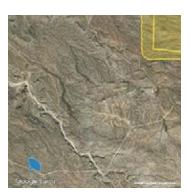
Longitude: 111° 02° 11.7476°
Latitude: 33° 01' 40.6180'
Elevation of Viewpoint Position (ti): 320
Height of Camera Above Ground (tt): 9:
Date of Photography: 14 August 2018 at 10:30 /
Orientation of View: Wh
Horizontal Field of View: 15
Vertical Field of View: 4





Alternative Tailings 5

Florence Kelvin Highway - South



Longitude: 111° 08' 59.4922'
Latitude: 32' 58' 29.7253
Elevation of Viewpoint Position (it): 261
Height of Camera Above Ground (ft):
Date of Photography: 14 August 2018 at 12:40
Orientation of View:
Horizontal Field of View: 1
Vertical Field of View:



1. Dripping Springs Road





Alternative Tailings 6

Dripping Springs Road



Longitude: 110° 52' 2.6432"

Latitude: 33° 10' 20.5463'

Elevation of Viewpoint Position (ft): 322

Height of Camera Above Ground (ft): !

Date of Photography: 14 August 2018 at 08:40 J

Orientation of View: 15

Horizontal Field of View: 45

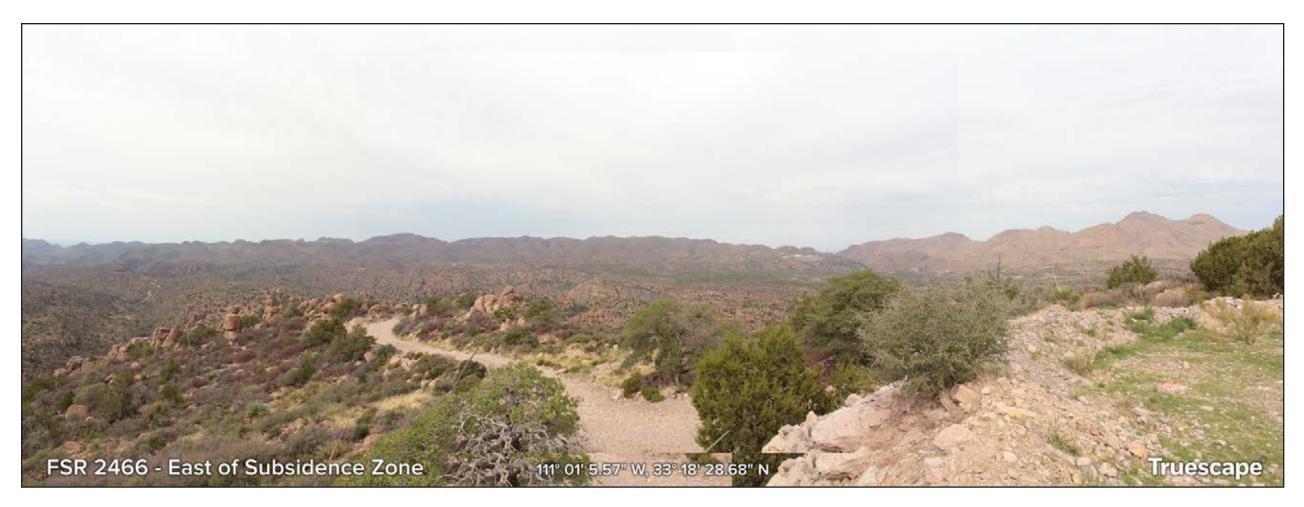
Vertical Field of View: 44



Subsidence Zone Locations Truescape®

1. FSR 2466 East of Subsidence Zone





Subsidence Zone

FSR 2466 - East of Subsidence Zone



Longitude: 111" 01" 5.5698"

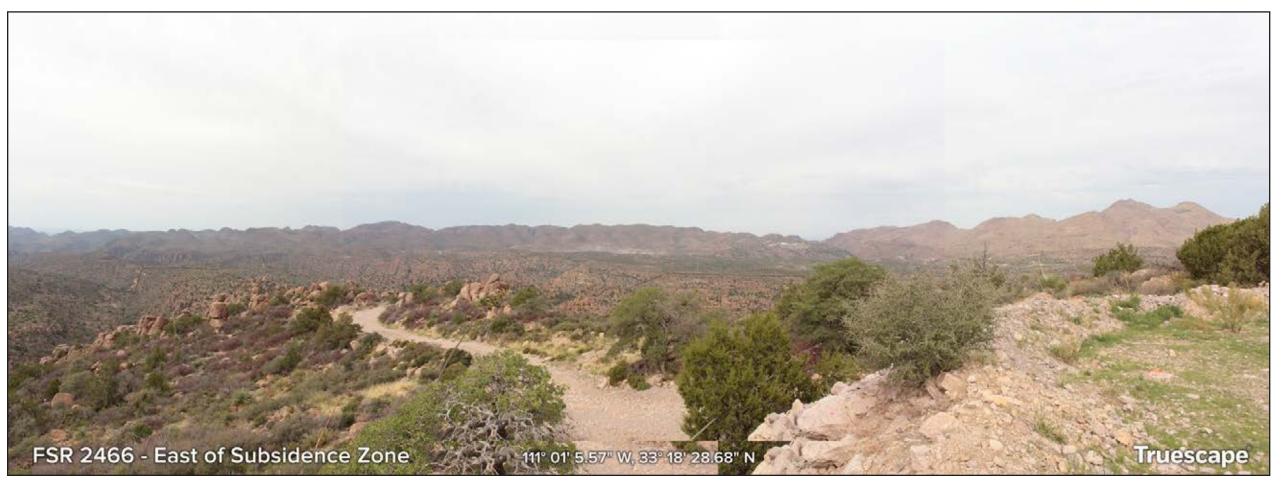
Latitude: 33" 18" 28.6831"

Elevation of Viewpoint Position (t): 4679

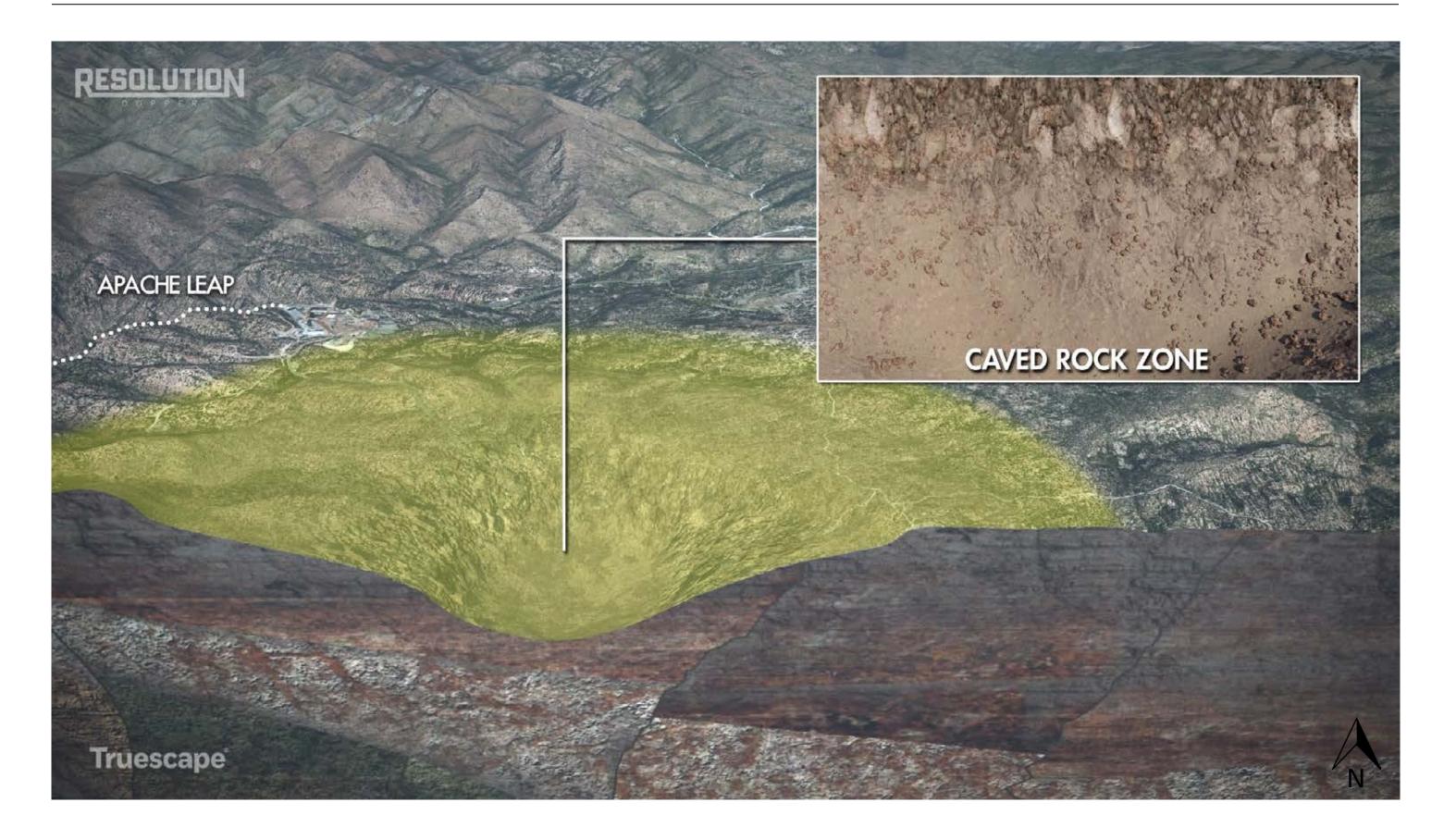
Height of Camera Above Ground (tt): 5040 of Photography: 15 August 2018 at 08:43 A

Orientation of View: WS

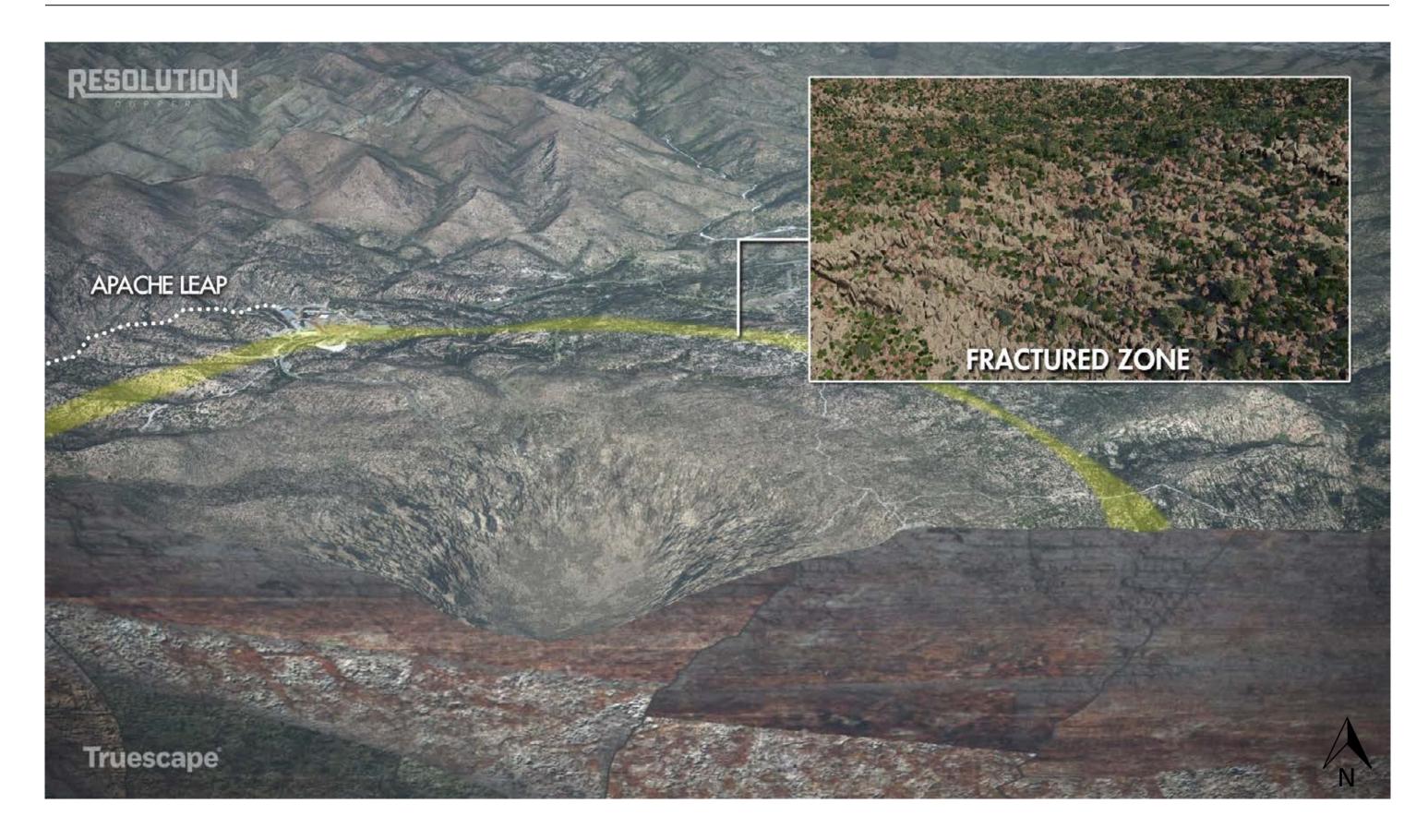
Horizontal Field of View: 13



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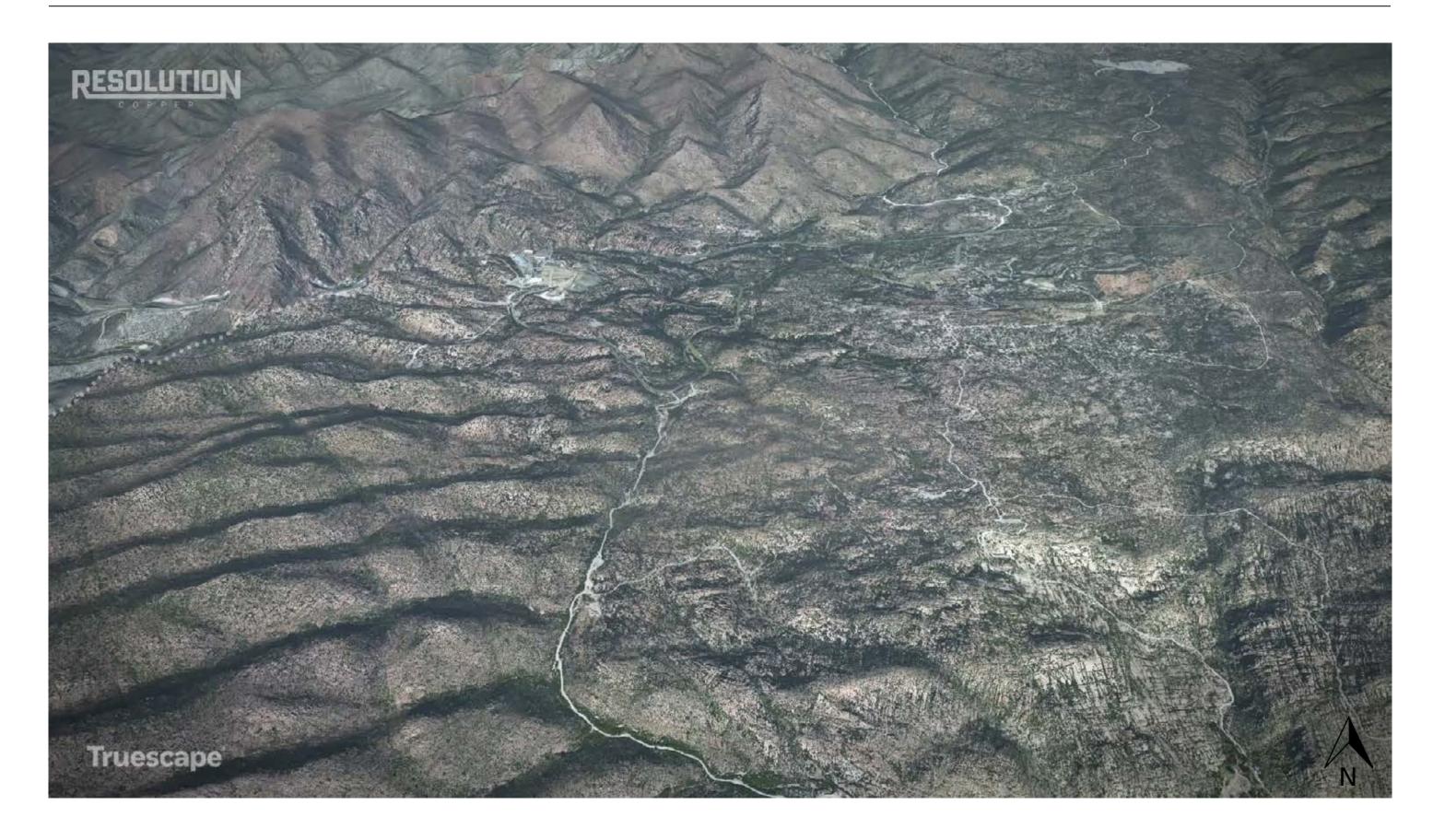


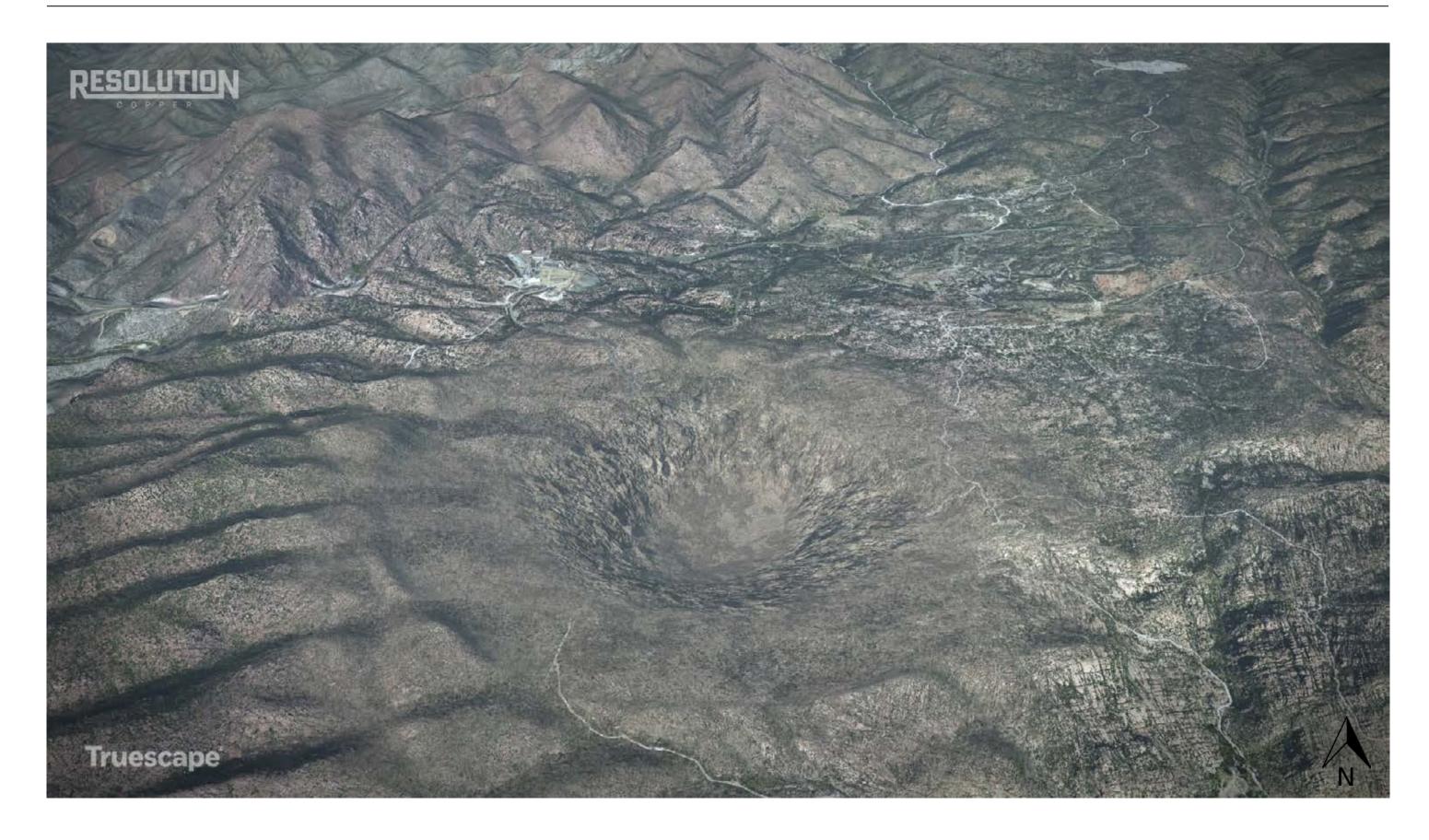
Subsidence - Fractured Zone **Truescape**®



Truescape[®]





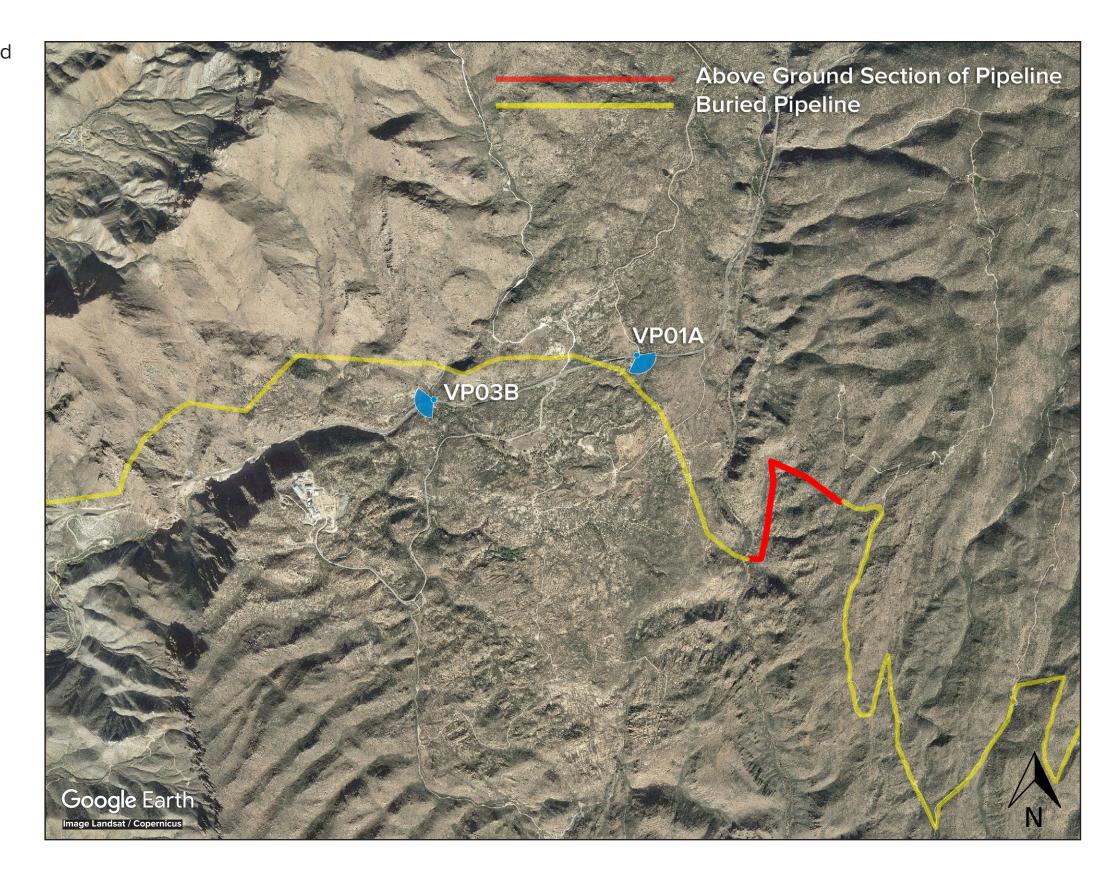




TrueView Photo Simulations - Existing & Proposed 17 June 2019

Viewpoint Locations Truescape®

Viewpoint 01A - Corner of N Cerro Rd and US 60
Viewpoint 03B - US 60 vehicle pullover near Queen Creek





Viewpoint VP01A - Corner of N Cerro Rd and US 60, Looking Southeast - Existing View



Viewpoint VP01A - Corner of N Cerro Rd and US 60, Looking Southeast - Proposed View (pipeline not visible)





EPS Transmission and Skunk Pipeline Simulations

Viewpoint VP01A

Corner of N Cerro Rd and US 60

Viewpoint Locati



3D N

NOTES.

Viewpoint locations have been precision survey

Robert Breen R.L.S. Environmental Field Services LLC 1575 West American Ave. Suite D Oracle, AZ 85623 Office 520-896-2784 Mobile 520-400-6156

part of this photo simulation shall be altered in any way.

Visual assessments should be made from the full s TrueView™ only.

> Photo Simulation Created Using TrueView™ Technology (Patent No.: US 8,184,906 B2)

> > Provided by

Truescape

truescape.co

17 June 2019 3



Viewpoint VP01A - Corner of N Cerro Rd and US 60, Looking Southeast - **Overlay**

Viewpoint VP01A

Corner of N Cerro Rd and US 60



Easting Position (SPCS, Arizona Central (FIPS 202)): 967052.2

Northing Position (SPCS, Arizona Central (FIPS 202)): 843111.9

Elevation of Viewpoint Position (NAD83): 4072.4

Height of Camera Above Ground (ft): 1.7

Date of Photography: 23 May 2019 at 01:19 PM

Orientation of View: 5E

Horizontal Field of View: 124*

Vertical Field of View: 55*



1 Aerial view pipeline corridor simulation using Google Earth.



Viewpoint VP03B - US 60 vehicle pullover near Queen Creek, Looking SouthWest - **Existing View**



Viewpoint VP03B - US 60 vehicle pullover near Queen Creek, Looking SouthWest - **Proposed View**

iewpoint VP03B

US 60 Vehicle pullover near Queen Creek



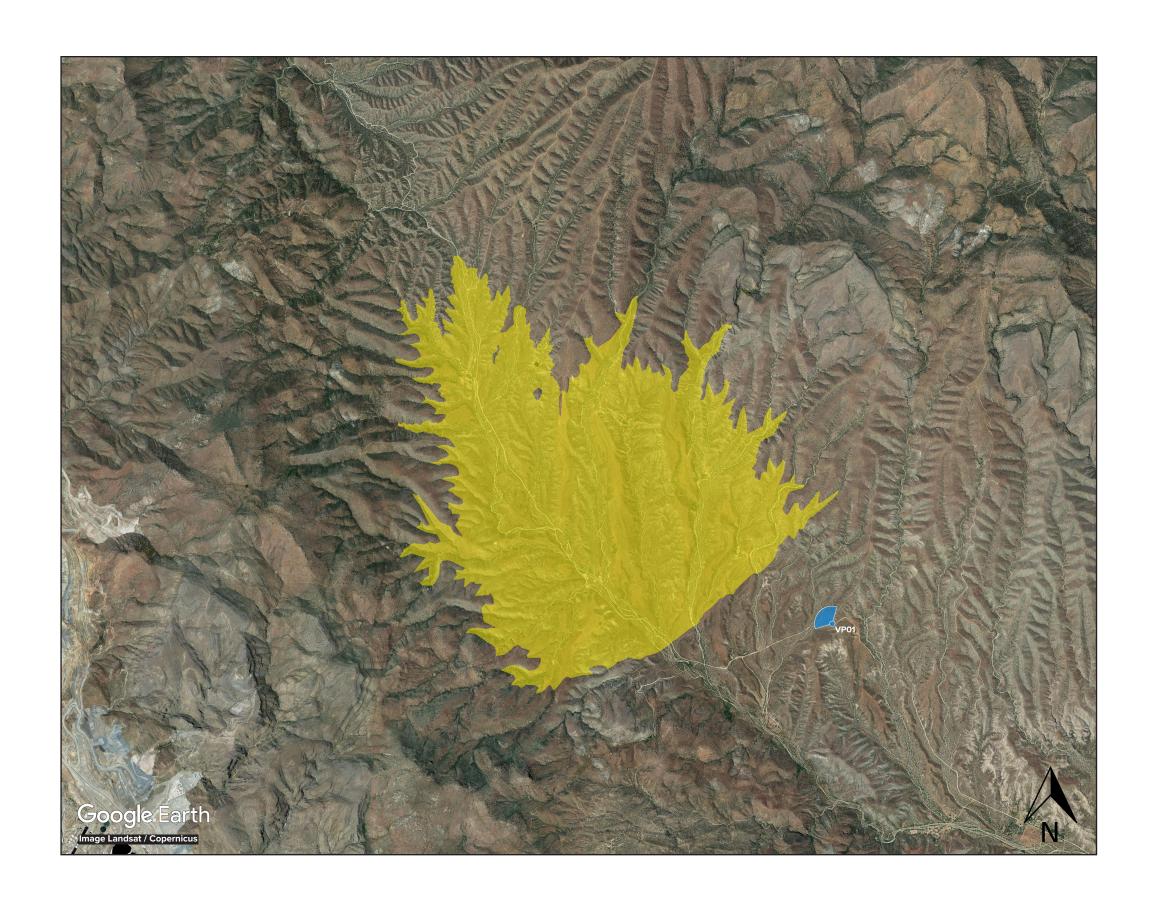
Easting Position (SPCS, Arizona Central (FIPS 202)): 962128 96
Northing Position (SPCS, Arizona Central (FIPS 202)): 841958.48
Elevation of Viewpoint Position (NAD83): 3861.5
Height of Camera Above Ground (ft): 1.7
Date of Photography: 23 May 2019 at 02:19 PM
Orientation of View: SW
Horizontal Field of View: 124*
Vertical Field of View: 55*



Photo Simulations - Existing & Proposed 08 May 2020

www.truescape.com

1. Dripping Springs Road





Viewpoint 01 - Dripping Springs Road - *Existing View*



Viewpoint Dripping Springs Road - *Proposed View - After 15 Years*



USFS Skunk Camp Reclamation Visuals

Viewpoint 01

Dripping Springs Roa

Viewpoint Loca



Longitude: 110° 52° 2.6432" V
Latitude: 33° 10° 20.5463" N
Elevation of Viewpoint Position (ft): 3226.
Height of Camera Above Ground (ft): 5.
Date of Photography: 14 August 2018 at 08:40 Ah
Orientation of View: NV
Horizontal Field of View: 130
Vertical Field of View: 46

NOTES:

ewpoint locations have been precision surveyed b vironmental Field Services LLC

No part of this photo simulation shall be altered in any v

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DATE SHEET 4



Viewpoint Dripping Springs Road - *Proposed View - After 20 Years*



Viewpoint Dripping Springs Road - *Proposed View - After 30 Years*



USFS Skunk Camp Reclamation Visuals

Viewpoint 01

Dripping Springs Roa

Viewpoint Location

on O Project



Longitude: 110" 52" 2.6432" W.
Latitude: 33" 10" 20.5463" h
Elevation of Viewpoint Position (ft): 3226.
Height of Camera Above Ground (ft): 5.4
Date of Photography: 14 August 2018 at 08:40 AM
Orientation of View: NW
Horizontal Field of View: 130
Vertical Field of View: 46

NOTES:

numental Field Consists II C

Environmental Field Service

No part of this photo simulation shall be altered in any w

Truescape

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DATE SHEET 4

Response to Data Request #4 VR-1. Visual Impact of Fog Plume

To: Kami Ballard, Environmental & Permitting Advisor, Resolution Copper

From: Nate Tipple, Air Quality Engineer, Air Basics, Inc.

Date: June 25, 2020

This technical memorandum was prepared in response to Data Request #4 VR-1, submitted by the Tonto National Forest (TNF) on April 15, 2020:

VR-1. Visual impact of fog plume. Several comments were received concerning the potential for a fog plume to generate above the East Plant Site from the hot, moist mine exhaust (see GPO p. 103). To respond to this concern, we would like to assess:

- The conditions and frequency under which the fog plume could occur (expanding on the details contained in the GPO);
- An approximate visual simulation of the potential fog plume, from a number of the Key Observation Points (KOPs) identified in the Draft EIS (see figure 3.11.1-1). The following KOPs used for Alternative 2 (see table 3.11.4-5) are likely the most pertinent for this issue; KOPs 1,2,5,7,10,11.

Resolution Copper's General Plan of Operation states that ventilation air exiting the exhaust shafts will be at or near saturation, which will lead to the formation of a fog plume that may be visible at certain times. As the ventilation air cools, if the dew point of the ventilation air is reached, the water vapor will begin to condense and form a cloud-like water vapor plume (fog plume). Given the relatively warm and saturated conditions expected from the mine exhaust vents as well as the meteorological conditions at the East Plant, a fog plume is expected to form when ambient conditions are cool and humid. The conditions and frequency under which a fog plume is expected to occur are further detailed in the sections below.

Conditions Conducive to Plume Formation

The conditions under which a fog plume will form can be estimated by using a psychrometric chart and the mine vent exhaust parameters. A visible plume can be expected to form in cool and humid conditions, lower than approximately 10°C (50°F), and higher than approximately 60% relative humidity. An analysis of the site-specific meteorological data from 2015 and 2016 demonstrates fog plume formation is more likely to occur during December and January when conditions are cooler and more humid. Warmer and drier conditions are not expected to result in a visible fog plume. This is consistent with observations from current site conditions and visibility of fog plume formation from existing shafts.

The presence of visible plumes can be predicted by plotting both the ambient and ventilation exhaust shaft conditions on a psychometric chart. For example, Figure 1 represents the site-specific conditions on December 31, 2016, at 11:00 am. The ambient temperature of 6.5°C (44°F) and 99.8% relative humidity indicate that a plume will be visible. By contrast, Figure 2 represents conditions on September 23, 2016, at 5:00 pm. The ambient temperature of 21.1°C (70°F) and 6.9% relative humidity indicate that no plume will be visible.

Figure 1. Psychometric Chart Predicting Visible Fog Plume

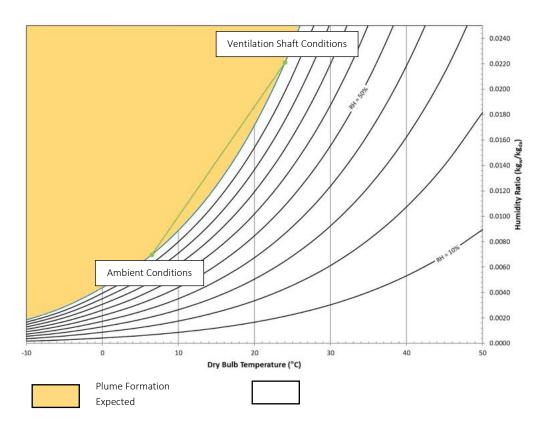
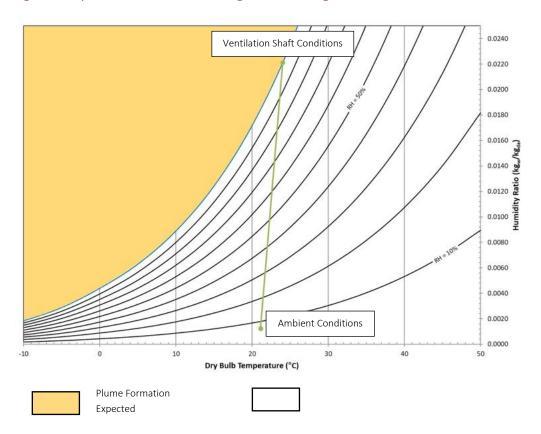


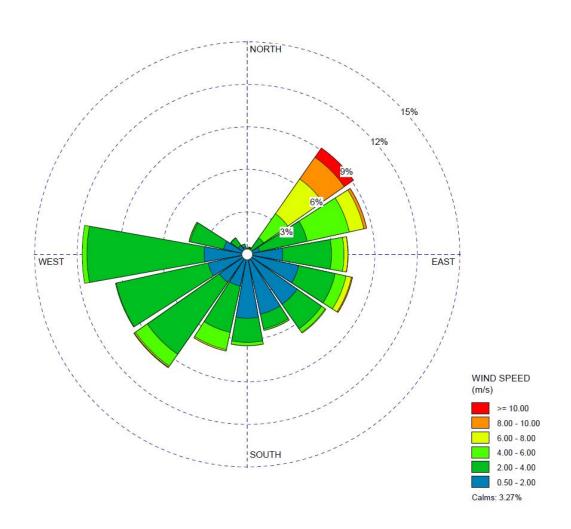
Figure 2. Psychometric Chart Predicting No Visible Fog Plume



Plume Frequency and Size

A fog plume model that is commonly used to support environmental assessments was employed to evaluate the frequency and associated size of the estimated fog plumes. The model utilized vent shaft parameters (location, size, ventilation rate, temperature) as well as site-specific hourly meteorological data from 2015 and 2016, the same years that were used for the air quality modeling impact analysis. A wind frequency distribution diagram of the data is provided in Figure 3. The results of the plume model were used to inform the visual simulations prepared by Truescape in Appendix A.



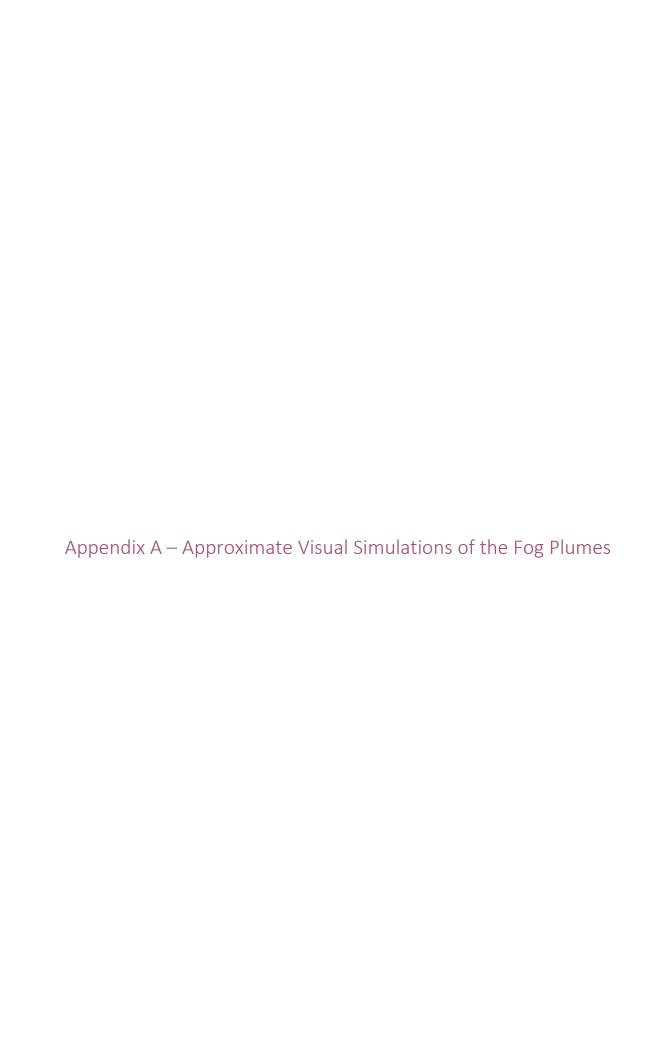


The fog plume model estimated the frequency of visible plumes and approximate dimensions for each exhaust shaft. Two representative scenarios were selected, 1% and 10%. As shown in the visual simulations, the 1% scenario represents plumes most visible from the requested KOPs, however, plumes of this size are expected fewer than four days per year. The 10% scenario represents a more common occurrence and smaller overall plume size. This scenario is expected to occur fewer than 37 days per year. The maximum plume dimensions for each scenario are provided in Table 1.

Table 1. Plume Sizes

Scenario	Plume Height	Plume Length
	(m)	(m)
1%	110	200
10%	40	100

Approximate visual simulations of the fog plumes for both frequency scenarios were generated by Truescape and are attached as Appendix A. Plumes are not expected to be visible from KOPs 7 or 11 and are therefore not included in the visual simulations.





Simulations - Existing & Proposed 6/25/2020

Viewpoint Locations Truescape®

KOP 01 - FSR 2466 East of Subsidence Zone

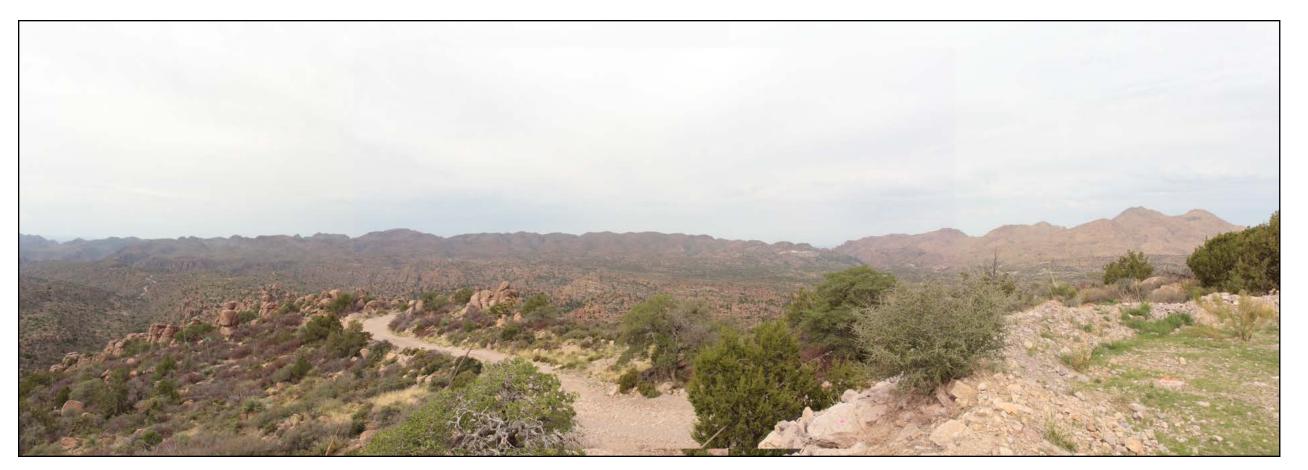
KOP 02 - Arizona Trail - Montana Mountain

KOP 05 - Arizona Trail - Ridge

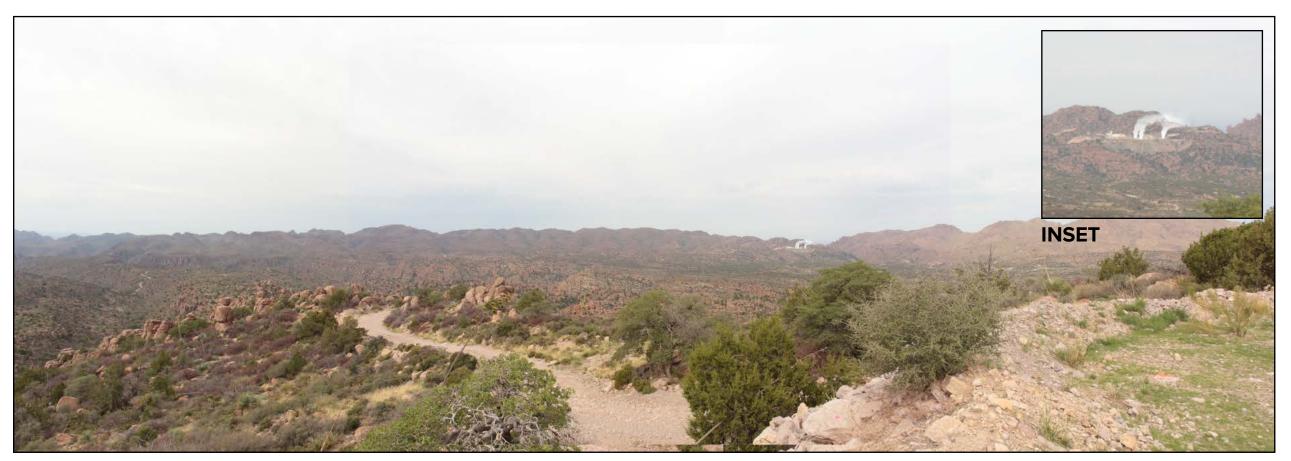
KOP 10 - US60, Milepost 219



1km 10km 0km 5km



KOP 01 - FSR 2466 East of Subsidence Zone - **Existing View**



KOP 01 - FSR 2466 East of Subsidence Zone - Proposed View (with Plumes - 1% / 4 days - North East Wind Direction) - Plumes visible



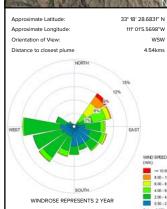


KOP 01

FSR 2466 East of Subsidence Zone

Viewpoint Loc





VAPOR PLUM

PLUMES FROM SHAFTS 9, 10 AND 14 ARE REPRESENTED AS PER TABLE BELOW.

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diamete of shaft (m)
9	100	30	5	6.7
10	100	40	5	8.5
14	100	40	10	10.5

NOT

Viewpoint locations have been precision surveyed

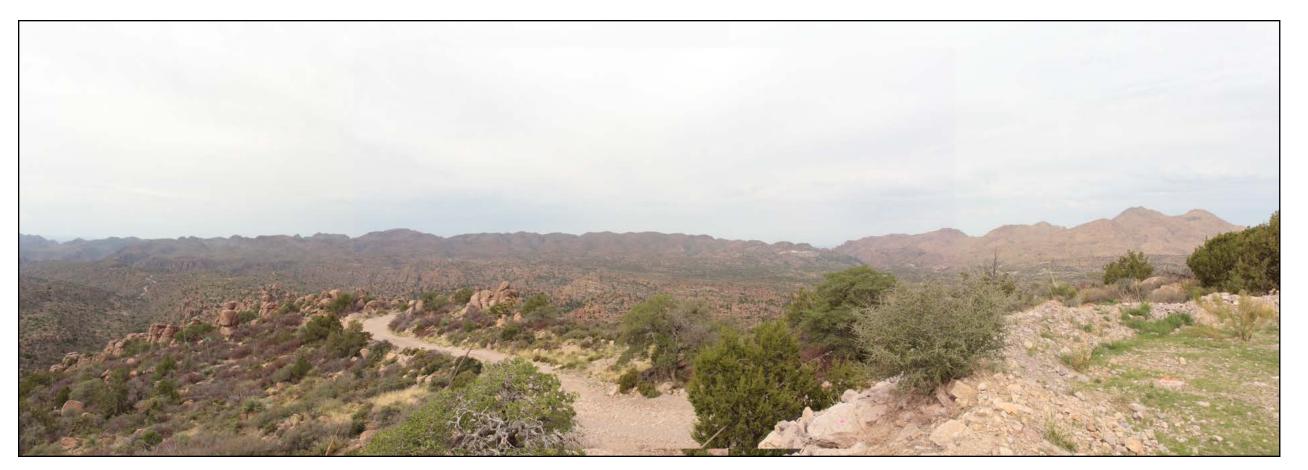
Oracle, AZ

No part of this photo simulation shall be altered in any wa

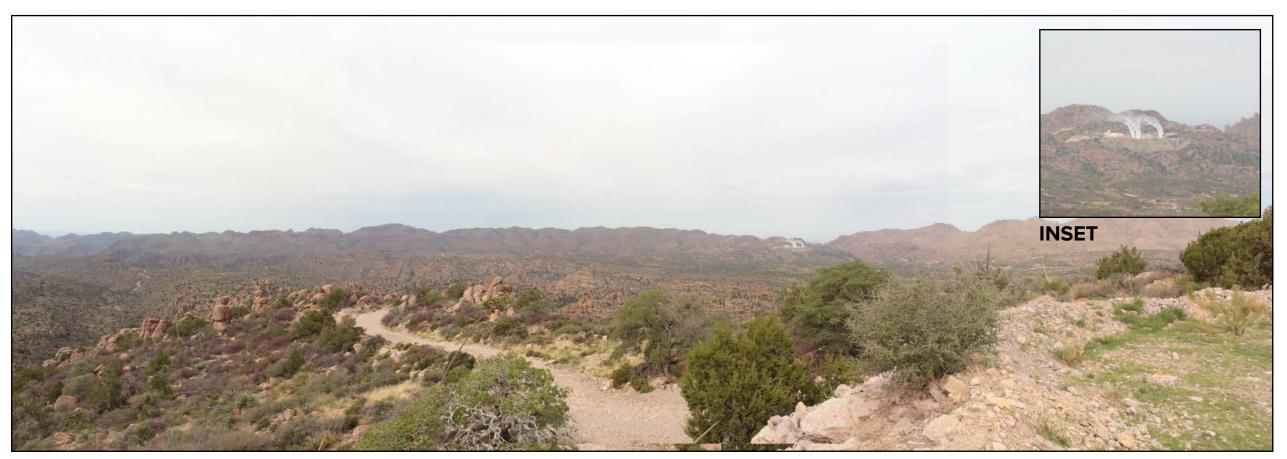


truescape.co

DATE	SHEET
6 / 25 / 2020	3



KOP 01 - FSR 2466 East of Subsidence Zone - **Existing View**



KOP 01 - FSR 2466 East of Subsidence Zone - Proposed View (with Plumes - 1% / 4 days - West South West Wind Direction) - Plumes visible

For on-screen display: Scale bar to be 4 inches wide Viewing distance is 19.7 inches



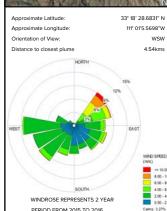
USFS VR-1 Shaft Plume Visuals

KOP 01

FSR 2466 East of Subsidence Zone

Viewpoint Loc





VAPOR PLUM

PLUMES FROM SHAFTS 9, 10 AND 14 ARE REPRESENTED AS PER TABLE BELOW.

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	30	5	6.7
10	100	40	5	8.5
14	100	40	10	10.5

NOTE

viewpoint locations have been precision surveyed

Oracle, AZ

No part of this photo simulation shall be altered in any w



KOP 01 - FSR 2466 East of Subsidence Zone - **Existing View**



KOP 01 - FSR 2466 East of Subsidence Zone - Proposed View (with Plumes - 10% / 37 days - East Wind Direction) - Plumes visible



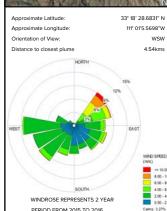
Shaft Plume Visuals

KOP 01

FSR 2466 East of Subsidence Zone

Viewpoint Loc





VAPOR PLUMES

PLUMES FROM SHAFTS 9, 10 AND 14 ARE REPRESENTED AS PER TABLE BELOW.

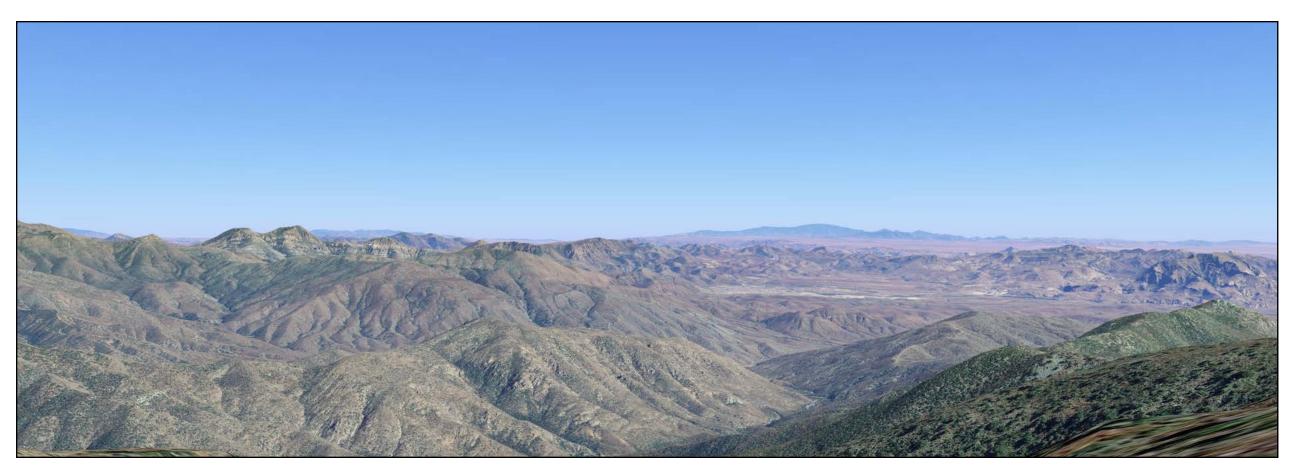
Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	30	5	6.7
10	100	40	5	8.5
14	100	40	10	10.5

NOTE

Viewpoint locations have been precision surveyer

Oracle, AZ

No part of this photo simulation shall be altered in any



KOP 02 - Arizona Trail - Montana Mountain - **Existing View**



KOP 02 - Arizona Trail - Montana Mountain - Proposed View (with Plumes - 1% / 4 days - North East Wind Direction) - Plumes visible



Viewpoint Locati



Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diamete of shaft (m)
9	100	70	20	6.7
10	200	90	25	8.5
14	200	110	25	10.5

Viewpoint location latitiude and longitude are approximate of

| (



KOP 02 - Arizona Trail - Montana Mountain - Existing View



KOP 02 - Arizona Trail - Montana Mountain - Proposed View (with Plumes - 1% / 4 days - West South West Wind Direction) - Plumes visible



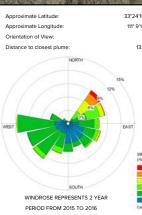


KOP 02

Arizona Trail - Montana Mountain

Viewpoint Loc



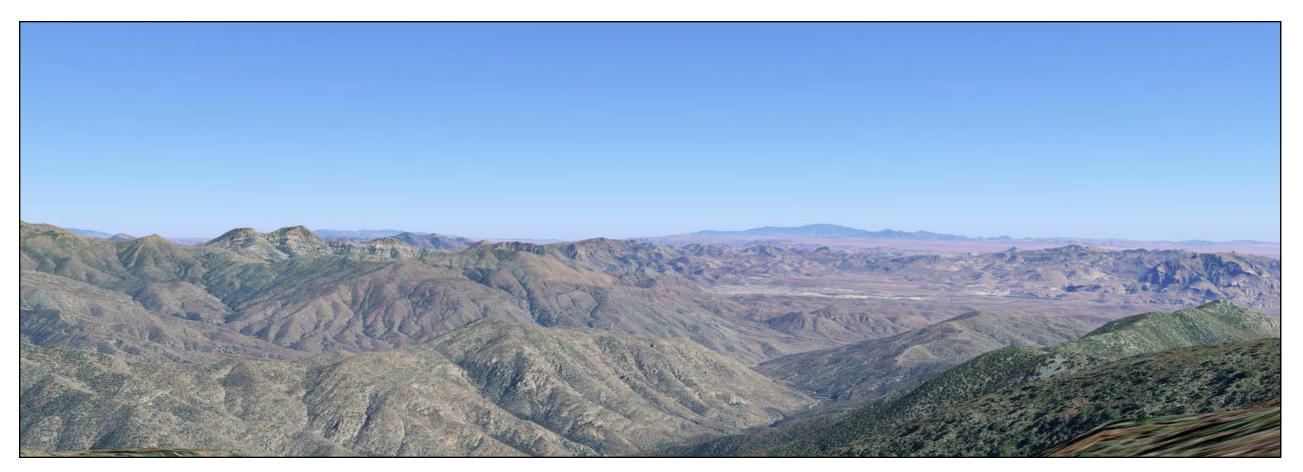


AS PER T	ABLE BELOW.			
Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	70	20	6.7
10	200	80	20	8.5

PLUMES FROM SHAFTS 9, 10 AND 14 ARE REPRESENTED

NOTES:

Viewpoint location latitiude and longitude heading a approximate only.



KOP 02 - Arizona Trail - Montana Mountain - Existing View



KOP 02 - Arizona Trail - Montana Mountain - Proposed View (with Plumes - 10% / 37 days - East Wind Direction) - Plumes not visible



Arizona Trail - Montana Mountain

Viewpoint Location



Approximate Latitude:
Approximate Longitude:
Orientation of View:

33°24°10.80"N 111° 9°19.84"W SE

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	30	5	6.7
10	100	40	5	8.5
14	100	40	10	10.5

NOTES

Viewpoint location latitiude and longitude heading a approximate only.



KOP 05 - Arizona Trail - Ridge - Existing View

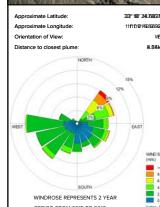


KOP 05 - Arizona Trail - Ridge - Proposed View (with Plumes - 1% / 4 days - North East Wind Direction) - Plumes visible



FSR 2466 i East off Sill b Bidderce Zone





PLUMES FROM SHAFTS 9, 10 AND 14 ARE REPRESENTED AS PER TABLE BELOW.

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	30	250	6.7
10	200	90	25	8.5
14	200	1400	26	10.5



KOP 05 - Arizona Trail - Ridge - Existing View



KOP 05 - Arizona Trail - Ridge - Proposed View (with Plumes - 1% / 4 days - West South West Wind Direction) - Plumes visible



KOP 05

Arizona Trail - Ridge

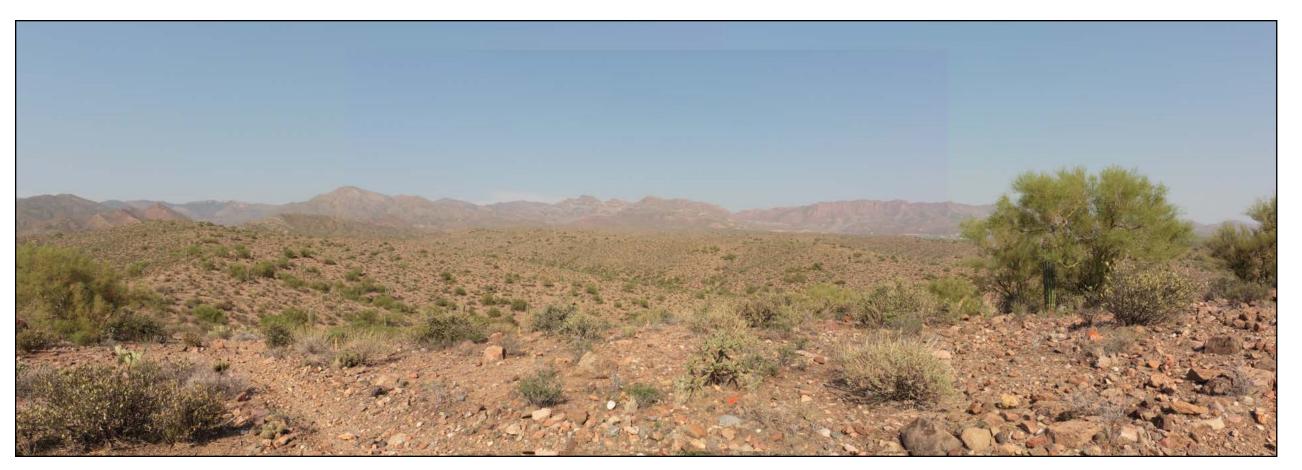
Viewpoint Local



Approximate Latitude:
Approximate Longitude:
Orientation of View:

3° 18' 14.7867" N 1° 09' 48.6132"W ENE 8.85kms

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	70	20	6.7
10	200	80	20	8.5
14	200	100	25	10.5



KOP 05 - Arizona Trail - Ridge - Existing View



KOP 05 - Arizona Trail - Ridge - Proposed View (with Plumes - 10% / 37 days - East Wind Direction) - Plumes not visible

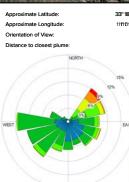


KOP 05

FSR 2466ri Easholfr Sill b Blidderece Zone

Viewpoint Loc





VAPOR PLUME

PLUMES FROM SHAFTS 9, 10 AND 14 ARE REPRESENTED AS PER TABLE BELOW.

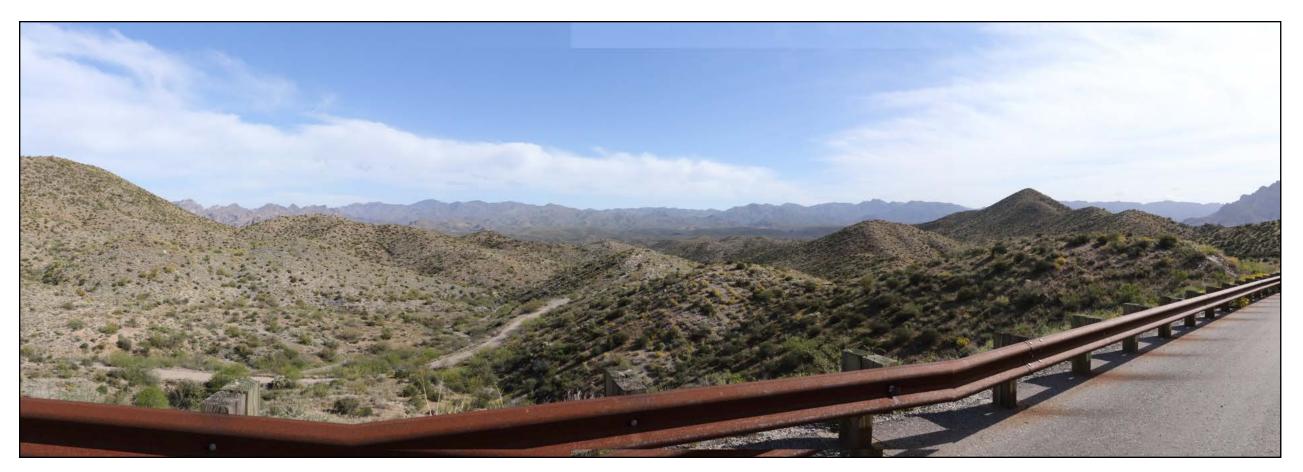
Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	30	5	6.7
10	100	40	5	8.5
14	100	40	10	10.5

NOTES

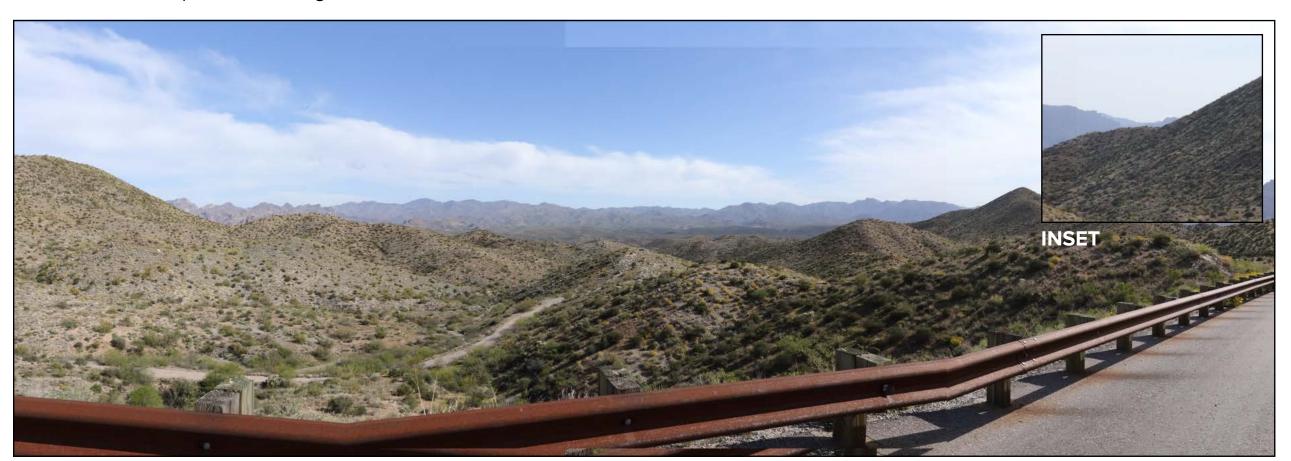
Viewpoint locations have been precision surveyed

Oracle, AZ

No part of this photo simulation shall be altered in any wa



KOP 10 - US60, Milepost 219 - Existing View



KOP 10 - US60, Milepost 219 - Proposed View (with Plumes - 1% / 4 days - North East Wind Direction) - Plumes visible



US60, Milepost 219

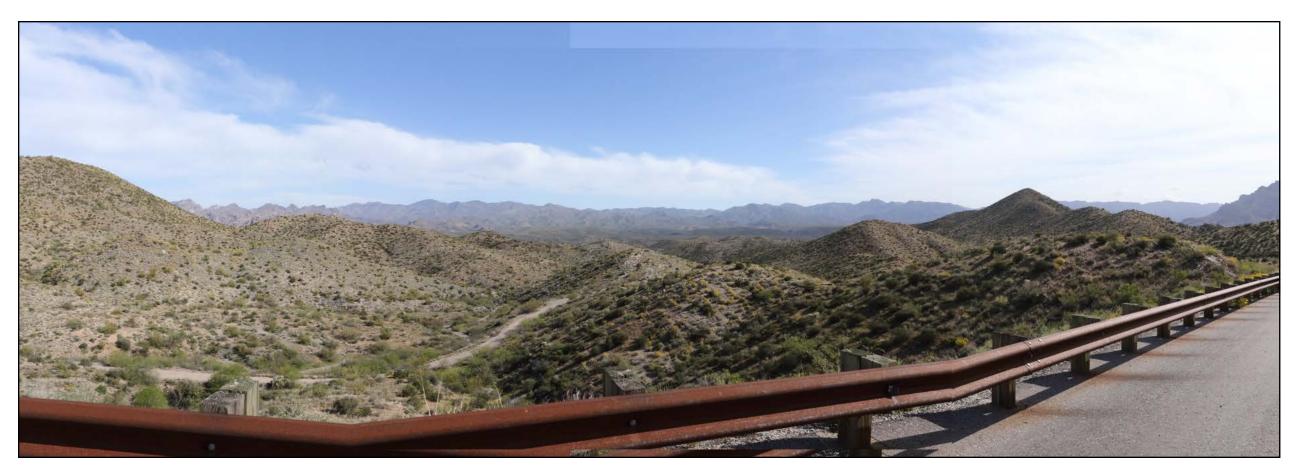
Viewpoint Loc



Approximate Latitude:
Approximate Longitude
Orientation of View:

33° 16′ 35.5800″ N 111″ 13′ 39.4680″V Ni

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	70	20	6.7
10	200	90	25	8.5
14	200	110	25	10.5



KOP 10 - US60, Milepost 219 - Existing View



KOP 10 - US60, Milepost 219 - Proposed View (with Plumes - 1% / 4 days - West South West Wind Direction) - Plumes visible



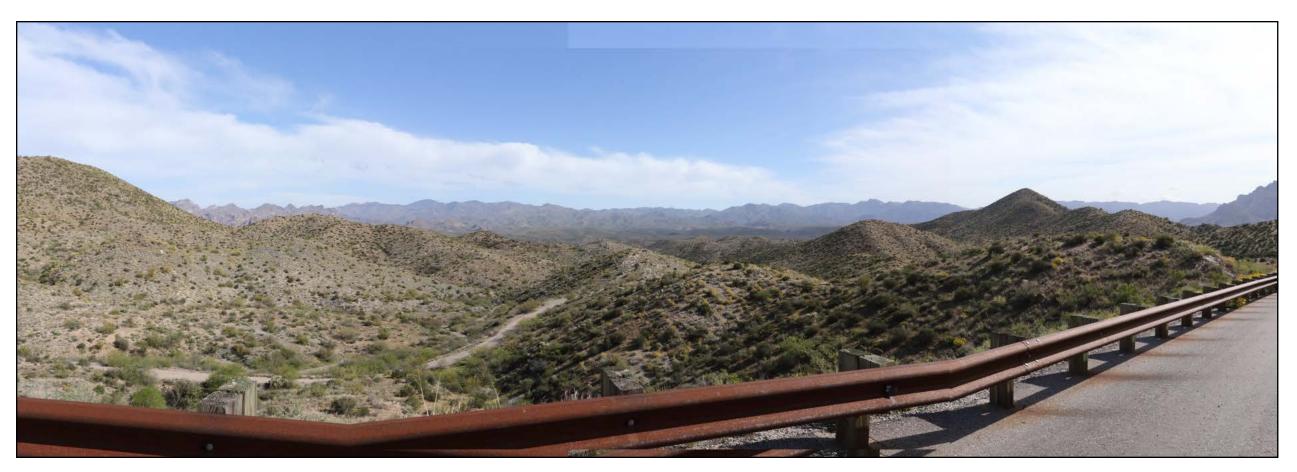
US60, Milepost 219

Viewpoint Loc

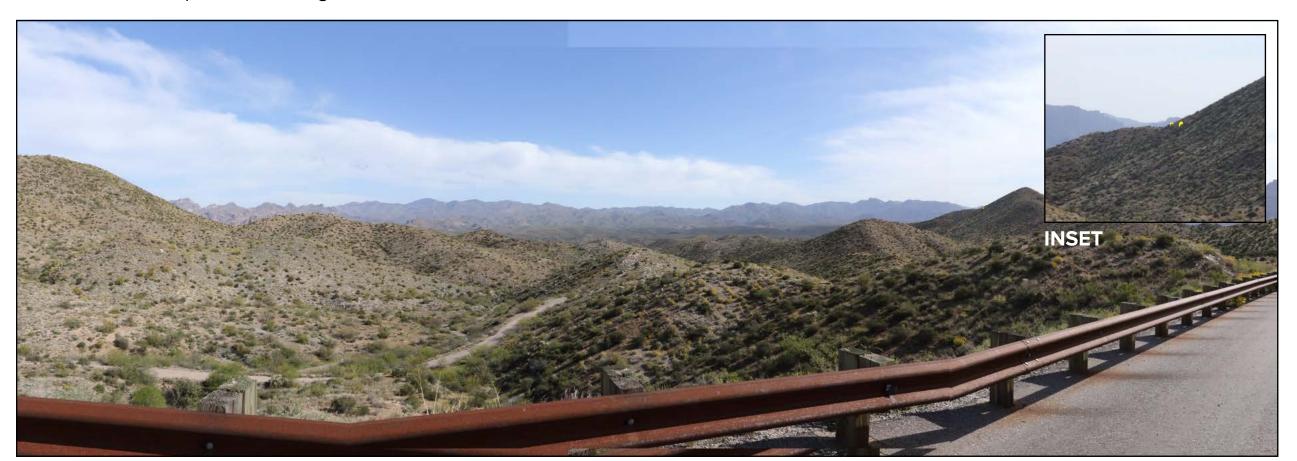


Approximate Latitude: Approximate Longitud Orientation of View: 33° 16' 35.5800" I 111" 13' 39.4680"\ N 15.16km

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)
9	100	70	20	6.7
10	200	80	20	8.5
14	200	100	25	10.5



KOP 10 - US60, Milepost 219 - Existing View



KOP 10 - US60, Milepost 219 - Proposed View (with Plumes - 10% / 37 days - East Wind Direction) - Plumes not visible



US60, Milepost 219

Viewpoint Locati



Approximate Latitude: Approximate Longitude Orientation of View: 33° 16′ 35.5800″ N 111° 13′ 39.4680″N NE

Shaft Number	Plume Length (m)	Plume Height (m)	Plume Radius (m)	Diameter of shaft (m)		
9	100	30	5	6.7		
10	100	40	5	8.5		
14	100	40	10	10.5		

| 1