

Appendix F3.6
Terrestrial Wildlife

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Appendix F3.6 Wildlife

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Table F3.6-1

Species of Management Concern and Special Status Terrestrial Wildlife Species in the Project Study Area

Table F3.6-1 Species of Management Concern and Special Status Terrestrial Wildlife Species in the Project Study Area

Species [†]	Status Designations	Hydrographic Basins																																	
		*Las Vegas Valley ¹	*Garnet Valley ²	*Hidden Valley (North) ²	*Coyote Spring Valley ²	*Pahranagat Valley ²	*Delamar Valley ²	*Dry Lake Valley ²	*Cave Valley ²	Kane Springs Valley ²	Pahroc Valley ²	White River Valley ²	Muddy River Springs Area ²	Lower Moapa Valley ²	California Wash ²	Black Mountains Area	*Lake Valley ³	Patterson Valley ³	Spring Valley (basin #201) ³	Eagle Valley ³	Panaca Valley ³	Lower Meadow Valley Wash ³	Dry Valley ³	Clover Valley ³	Rose Valley ³	*Steptoe Valley ⁴	*Snake Valley ⁵	*Spring Valley (basin #184) ⁵	*Hamlin Valley ⁵	Fish Springs Flat ⁵	Tule Valley ⁵	Pine Valley ⁵	Wah Wah Valley ⁵	Deep Creek Valley ⁵	
Large Mammals																																			
Desert bighorn sheep (<i>Ovis canadensis nelsoni</i>)	BLM, MC	RS	RS	RS	RS	RS	RES	RES	RES	S	S	S	S	S	S	S	RS	S	S	S	S	S	S	S	S	S		RES	RS						
Elk (<i>Cervus canadensis</i>)	MC	S					RES	RES			S						RS	S	S	S			S	S	S	RS	ES	RES	S			S	S	S	
Mule deer (<i>Odocoileus hemionus</i>)	MC	S			RS	RS	RES	RES	RES		S	S					RS	S	S	S	S	S	S	S	RS	RES	RES	RES	RS	S	S	S	S	S	
Pronghorn (<i>Antilocapra americana</i>)	MC					S	RES	RES	RES		S	S					RS	S			S					RS	RES	RES	RS	S	S	S	S	S	
Rocky Mountain bighorn sheep (<i>Ovis canadensis canadensis</i>)	NPS, MC																									S	S	ES	S						S
Small Mammals																																			
Allen's big-eared bat (<i>Idionycteris phyllotis</i>)	BLM, NVP	S																				S										S	S	S	
Big brown bat (<i>Eptesicus fuscus</i>)	BLM	S	S	S	S	RS	ES	ES	ES	S	S	S	S	S	S		S		S		S	S		S		S	ES	ES	S	S	S	S	S	S	S
Big free-tailed bat (<i>Nyctinomops macrotis</i>)	BLM	S				S	ES	ES				S	S	S					S	S	S		S	S		S	S	S	S	S	S	S	S	S	
Brazilian free-tailed bat (<i>Tadarida brasiliensis</i>)	BLM, NVP	S				RS	ES	ES	ES	S		S	S	S	S	S	S		S	S	S	S	S	S	S	S	ES	ES	S	S	S	S	S	S	S
Brush mouse (<i>Peromyscus boyleyi</i>)	MC	S	S	S	S	S	S	S		S		S	S	S	S				S	S	S	S	S	S		S						S			
California myotis (<i>Myotis californicus</i>)	BLM	S	S	S	S	RS	ES	ES	S	S	S	S	S	S	S				S	S	S	S		S	S		S	ES	S	S	S	S	S	S	S
Dark kangaroo mouse (<i>Microdipodops megacephalus</i>)	UTSC, NVP							RES	RES			S					S	S	S		S		S		S	S	RES	RS	S	S	S	S	S	S	S
Desert kangaroo rat (<i>Dipodomys deserti</i>)	MC	S	S	S	S		S			S		S	S	S	S							S													
Desert pocket mouse (<i>Chaetodipus pencillatus</i>)	MC	S	S	S	S	S	S	S		S		S	S	S	S							S													
Desert valley kangaroo mouse (<i>Microdipodops megacephalus albiventer</i>)	BLM						S	R ² S			S	S																							
Fringed myotis (<i>Myotis thysanodes</i>)	BLM, NVP, UTSC, NPS	S			S	RS	ES	ES	ES	S	S		S	S			S		S			S				S	ES	S	S	S	S	S	S	S	S
Hoary bat (<i>Lasiurus cinereus</i>)	BLM, NPS	S				RS	ES	S	ES			S	S				S					S				ES	ES	S	S	S	S	S	S	S	S
Inyo shrew (<i>Sorex tenellus</i>)	NPS, MC	S																								S									
Kit fox (<i>Vulpes macrotis</i>)	MC	S	S	S	RS	S	S	S	S	S	S	S	S	S	S	S	S				S	S	S	S		S		S	S	S	S	S	S	S	S

Table F3.6-1 Species of Management Concern and Special Status Terrestrial Wildlife Species in the Project Study Area (Continued)

Species [†]	Status Designations	Hydrographic Basins																																		
		*Las Vegas Valley ¹	*Garnet Valley ²	*Hidden Valley (North) ²	*Coyote Spring Valley ²	*Pahranagat Valley ²	*Delamar Valley ²	*Dry Lake Valley ²	*Cave Valley ²	Kane Springs Valley ²	Pahroc Valley ²	White River Valley ²	Muddy River Springs Area ²	Lower Moapa Valley ²	California Wash ²	Black Mountains Area	*Lake Valley ³	Patterson Valley ³	Spring Valley (basin #201) ³	Eagle Valley ³	Panaca Valley ³	Lower Meadow Valley Wash ³	Dry Valley ³	Clover Valley ³	Rose Valley ³	*Steptoe Valley ⁴	*Snake Valley ⁵	*Spring Valley (basin #184) ⁵	*Hamlin Valley ⁵	Fish Springs Flat ⁵	Tule Valley ⁵	Pine Valley ⁵	Wah Wah Valley ⁵	Deep Creek Valley ⁵		
Little brown bat (<i>Myotis lucifugus</i>)	BLM	S				S	ES	ES	ES			S				S										ES	ES	S	S	S	S	S	S	S		
Long-eared myotis (<i>Myotis evotis</i>)	BLM, NPS	S				S	ES	ES	ES		S	S				S		S	S							S	ES	ES	S	S	S	S	S	S		
Merriam's shrew (<i>Sorex merriami</i>)	NPS, MC					S	S			S	S	S							S	S	S	S	S	S	S	S			S			S				
Pacific western big-eared bat (<i>Corynorhinus townsendii townsendii</i>)	BLM, USFS, NVP, UTSC	S				S	ES	S	S	S	S	S	S	S	S				S	S	S	S			S	S	S	S	S	S	S	S	S	S	S	
Pahranagat Valley montane vole (<i>Microtus montanus fucosus</i>)	BLM, NVP					S																														
Pale kangaroo mouse (<i>Microdipodops pallidus</i>)	BLM, NVP					S																														
Pallid bat (<i>Antrozous pallidus</i>)	BLM, NVP, NPS	S	S	ES	S	RS	ES	ES	ES	S	S	S	ES	ES	S	S	S	S	S	S	S	S	S	S	S	S	ES	ES	S	S	S	S	S	S	S	
Pygmy rabbit (<i>Brachylagus idahoensis</i>)	P, BLM, NVP, UTSC, NPS								RES	RES							RS	S	S	S	S					R ^{ab} S	ES	RES	S	S	S	S	S	S	S	
Ringtail (<i>Bassariscus astutus</i>)	MC, NPS	S	S	S	S		S	S			S	S		S	S				S	S	S	S			S	S	S	S	S	S	S	S	S	S		
Silver-haired bat (<i>Lasiorycteris noctivagans</i>)	BLM, NPS	S				S			ES	S		S	S	S			S									S	ES	ES	S	S	S	S	S	S	S	
Spotted bat (<i>Euderma maculatum</i>)	BLM, NVP, NPS	S										S	S	S							S	S	S			S	S	S	S	S	S	S	S	S		
Vagrant shrew (<i>Sorex vagrans</i>)	MC																									S	S	S								
Water shrew (<i>Sorex palustris</i>)	MC, NPS																									S	S									
Western pipistrelle (<i>Pipistrellus hesperus</i>)	BLM	S	S	S	S	RS	ES	ES	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	ES	S	S	S	S	S	S	S	S	S
Western red bat (<i>Lasiurus blossevillei</i>)	BLM, NVP					S	ES	S			S	S	S	S					S	S		S			S	S	S		S	S	S	S	S	S		
Western small-footed myotis (<i>Myotis ciliolabrum</i>)	BLM	S				RS	ES	ES	ES	S	S	S					S		S	S	S	S	S		S	S	ES	ES	S	S	S	S	S	S	S	S
Yuma myotis (<i>Myotis yumanensis</i>)	BLM	S	S	S	S	S	ES	S	S	S	S	S	S	S								S				S			S	S	S	S	S	S		
Birds																																				
American avocet (<i>Recurvirostra Americana</i>)	MC	S ^B				S ^M													S ^M	S ^M						S ^M	S ^M			S ^B	S ^B	S ^M			S ^B	
Bald eagle (<i>Haliaeetus leucocephalus</i>)	NVP	S ^M			S ^M	S ^M	S ^M	S ^M	S ^M		S ^M	S ^M	S ^M	S ^M		S ^M		S ^M	S ^M	S ^M	S ^M					S ^M	ES ^M	ES ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M
Band-tailed pigeon (<i>Patagioenas fasciata</i>)	MC	S ^M																																		

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Bell's vireo (<i>Vireo bellii</i>)	MC	S ^B	S ^M	S ^M	S ^M	S ^B	S ^M			S ^M	S ^M		S ^B	S ^B	S ^B	S ^M						S ^B		S ^M												
Black-throated gray warbler (<i>Dendroica nigrescens</i>)	MC	S ^B			S ^B			S ^M	S ^B	S ^M	S ^M	S ^B					S ^M		S ^M	S ^M			S ^M	S ^M	S ^B	ES ^B	ES ^B	S ^M	S ^M							
Brewer's sparrow (<i>Spizella breweri</i>)	NPS, MC	S ^B	S ^M		S ^B	S ^B	S ^B	S ^B	ES ^B	S ^M		S ^B	S ^M	S ^M			S ^B		S ^M	S ^M	S ^M	S ^B	S ^M	S ^B	S ^M	S ^B	ES ^B	ES ^B	S ^M	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	
Cactus wren (<i>Campylorhynchus brunneicapillus</i>)	MC	S ^B			S ^B	S ^B	S ^B	S ^B		S ^M			S ^M	S ^B								S ^B														
Canada goose (<i>Branta canadensis</i>)	MC	S ^M			S ^M	S ^B						S ^M	S ^M	S ^M	S ^M												S ^M	S ^B			S ^B	S ^M			S ^B	
Caspian tern (<i>Sterna caspia</i>)	MC	S ^M				S ^M						S ^M	S ^M	S ^M																				S ^B		
Cassin's sparrow (<i>Aimophila cassinii</i>)	MC																					S ^M														
Common yellowthroat (<i>Geothlypis trichas</i>)	BLM, NVP	S ^B	S ^d		S ^M	S ^B							S ^B	S ^M	S ^B	S ^M	S ^M				S ^M	S ^M	S ^B	S ^M		S ^M		S ^M	S ^B	S ^M	S ^B	S ^B	S ^M	S ^B	S ^M	
Costa's hummingbird (<i>Calypte costae</i>)	MC	S ^B			S ^M	S ^M																S ^B														
Crissal thrasher (<i>Toxostoma crissale</i>)	MC	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B						S ^B																							
Ferruginous hawk (<i>Buteo regalis</i>)	BLM, NVP, UTSC, NPS				S ^M	S ^M	RS ^M	ES ^M									S ^B	S ^M	S ^M								S ^B	ES ^B	ES ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B
Flammulated owl (<i>Otus flammeolus</i>)	NPS, MC	S ^B			S ^M	S ^M							S ^M							S ^M	S ^M	S ^M		S ^M		S ^M	ES ^M	S ^M			S ^M	S ^M			S ^M	
Golden eagle (<i>Aquila chrysaetos</i>)	BLM	S ^B	S ^M	S ^M	S ^M	S ^B	R ^e ES ^B	RES ^B	S ^M	S ^M	S ^B	S ^B	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^B	S ^M	S ^M	S ^M	S ^B	ES ^B	RES ^B	RES ^B	R ^e S ^M	S ^B	S ^B	S ^B	S ^B	S ^B		
Grace's warbler (<i>Dendroica graciae</i>)	MC	S ^B											S ^M																							
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	MC					S ^M																													S ^B	S ^B
Gray vireo (<i>Vireo vicinior</i>)	BLM	S ^M			S ^M			S ^B		S ^M	S ^M	S ^B	S ^M	S ^M					S ^M	S ^M	S ^M	S ^M	S ^B	S ^M	S ^M	S ^B	S ^M	ES ^M	S ^M			S ^B	S ^B	S ^B	S ^M	
Greater-sage grouse (<i>Centrocercus urophasianus</i>)	FC, BLM, UTSC, NPS, MC								RES ^B		S ^M	S ^B					S ^M	S ^M	S ^M	S ^M			S ^M		S ^M	S ^M	RS ^M	RES ^B	RS ^B	S ^M	S ^M	S ^B	S ^M	S ^M	S ^M	
Hooded oriole (<i>Icterus cucullatus</i>)	MC	S ^B			S ^M	S ^B	S ^M															S ^B														
Horned lark (<i>Eremophila alpestris</i>)	MC	S ^B	S ^M	S ^M	S ^M	S ^B	S ^B	S ^B	RES ^B	S ^B	S ^M	S ^B	S ^M	S ^M	S ^B	S ^M	S ^B	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^B	ES ^B	ES ^B	S ^M	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	
Le Conte's thrasher (<i>Toxostoma lecontei</i>)	MC	S ^B	S ^B	S ^B	S ^M	S ^B	S ^B			S ^M		S ^M	S ^B	S ^B	S ^B	S ^B				S ^M	S ^M	S ^M	S ^B			S ^M										

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Lewis's woodpecker (<i>Melanerpes lewis</i>) [‡]	BLM, UTSC, NPS	S ^M			S ^M	S ^M						S ^M											S ^M	S ^M		S ^M			S ^M					S ^M	
Loggerhead shrike (<i>Lanius ludovicianus</i>)	BLM, NPS	S ^B	S ^M	S ^M	S ^B	S ^B	S ^B	ES ^B	S ^M	S ^M	S ^M	S ^B	S ^M	S ^B	S ^B	S ^B	S ^B	S ^B	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	ES ^B	ES ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B
Long-billed curlew (<i>Numenius americanus</i>)	BLM, UTSC, NPS	S ^M				S ^M			S ^M			S ^M				S ^M	S ^M				S ^M		S ^M			S ^B	ES ^B	ES ^B	S ^M	S ^B	S ^M	S ^B	S ^M	S ^B	
Long-eared owl (<i>Asio otus</i>)	BLM	S ^B			S ^M	S ^B	S ^M	S ^M	S ^M	S ^M		S ^B		S ^M				S ^M		S ^M	S ^M					S ^B	S ^B	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M
Mallard (<i>Anas platyrhynchos</i>)	MC	S ^B			S ^M	S ^B			ES ^M			S ^B		S ^M	S ^M	S ^M						S ^B				S ^B	ES ^B	S ^B	S ^M	S ^B	S ^M	S ^M	S ^M	S ^B	S ^B
Mourning dove (<i>Zenaidura macroura</i>)	MC	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	ES ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	ES ^B	ES ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B
Northern goshawk (<i>Accipiter gentiles</i>)	BLM, NPS	S ^B							S ^M			S ^B							S ^M	S ^M				S ^M	S ^M	S ^B	S ^B	ES ^B	S ^M		S ^M	S ^M	S ^M	S ^M	
Northern pintail (<i>Anas acuta</i>)	MC	S ^M			S ^M	S ^B			S ^B			S ^M				S ^M										S ^M	S ^M	S ^B		S ^B	S ^M			S ^M	
Northern harrier (<i>Circus cyaneus</i>)	MC	S ^M	S ^M	S ^M	S ^M	S ^B	R ^c S ^M	ES ^M	R ^c ES ^M	S ^M	S ^M	S ^B	S ^B	S ^B	S ^M	S ^M	S ^M	S ^B	S ^B	S ^B	S ^B	S ^M	S ^M	S ^M	S ^M	S ^B	ES ^B	ES ^B	S ^M	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B
Olive-sided flycatcher (<i>Contopus cooperi</i>)	MC	S ^M			S ^M	S ^B						S ^B														S ^M	S ^M	S ^B		S ^M				S ^M	
Peregrine falcon (<i>Falco peregrinus</i>)	BLM, NVP, NPS	S ^B	S ^M	S ^M	S ^B	S ^B					S ^B	S ^M	S ^M	S ^M	S ^M	S ^B			S ^M			S ^M				S ^M	S ^M	ES ^B		S ^M	S ^M	S ^B	S ^M		
Pinyon jay (<i>Gymnorhinus cyanocephalus</i>)	BLM	S ^B			S ^M	S ^B	S ^B	S ^B	S ^M	S ^M	S ^M	S ^B	S ^M	S ^M				S ^M		S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^B	ES ^B	ES ^B	S ^M	S ^B	S ^B	S ^v	S ^B	S ^B	
Prairie falcon (<i>Falco mexicanus</i>)	BLM	S ^B	S ^M	S ^M	S ^B	S ^B	R ^c ES ^B	ES ^B	S ^M	S ^B	S ^M	S ^B	S ^B	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^B	S ^M	S ^M	S ^M	ES ^B	ES ^B	S ^M	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	
Red-headed woodpecker (<i>Melanerpes erythrocephalus</i>)	MC	S ^M										S ^B	S ^B												S ^M			S ^M							
Red-naped sapsucker (<i>Sphyrapicus nuchalis</i>)	MC	S ^M			S ^M																	S ^B				S ^B	S ^B	S ^M							
Rufous hummingbird (<i>Selasphorus rufus</i>)	MC	S ^M																	S ^M							S ^M	S ^M		S ^M						
Sage sparrow (<i>Amphispiza belli</i>)	MC	S ^B	S ^M		S ^M	S ^M			RES ^B			S ^B			S ^B				S ^B	S ^M	S ^M					S ^B	ES ^B	ES ^B	S ^M	S ^B	S ^B	S ^B	S ^B	S ^B	
Short-eared owl (<i>Asio flammeus</i>)	BLM, UTSC, NPS	S ^M			S ^d	S ^B	S ^B	S ^B		S ^B	S ^M	S ^B														S ^M	S ^M		S ^M	S ^B	S ^M	S ^M	S ^M	S ^M	S ^B
Song sparrow (<i>Melospiza melodia</i>)	MC	S ^M			S ^M	S ^B				S ^M		S ^B		S ^B	S ^M	S ^M						S ^B		S ^B		S ^B	S ^B	S ^B		S ^B	S ^B			S ^B	
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	FE, NVP	S ^M				S ^B							S ^B	S ^B		S ^M						S ^B													
Spotted towhee (<i>Pipilo maculatus</i>)	MC	S ^M	S ^M	S ^M	S ^M	S ^M		S ^M	S ^B	S ^M	S ^B	S ^B			S ^B			S ^M	S ^B	S ^B	S ^B		S ^B		S ^M	S ^B	ES ^B	ES ^B	S ^M	S ^M	S ^B	S ^B	S ^B	S ^B	

Table F3.6-1 Species of Management Concern and Special Status Terrestrial Wildlife Species in the Project Study Area (Continued)

Species [†]	Status Designations	Hydrographic Basins																																		
		*Las Vegas Valley ¹	*Garnet Valley ²	*Hidden Valley (North) ²	*Coyote Spring Valley ²	*Pahranagat Valley ²	*Delamar Valley ²	*Dry Lake Valley ²	*Cave Valley ²	Kane Springs Valley ²	Pahroc Valley ²	White River Valley ²	Muddy River Springs Area ²	Lower Moapa Valley ²	California Wash ²	Black Mountains Area	*Lake Valley ³	Patterson Valley ³	Spring Valley (basin #201) ³	Eagle Valley ³	Panaca Valley ³	Lower Meadow Valley Wash ³	Dry Valley ³	Clover Valley ³	Rose Valley ³	*Steptoe Valley ⁴	*Snake Valley ⁵	*Spring Valley (basin #184) ⁵	*Hamlin Valley ⁵	Fish Springs Flat ⁵	Tule Valley ⁵	Pine Valley ⁵	Wah Wah Valley ⁵	Deep Creek Valley ⁵		
Swainson's hawk (<i>Buteo swainsoni</i>)	BLM, NPS	S ^M				S ^M						S ^M														S ^M	S ^M	S ^M		S ^M	S ^M			S		
Vesper sparrow (<i>Pooecetes gramineus</i>)	MC	S ^M			S ^M	S ^M	S ^M		ES ^B			S ^B		S ^M			S ^M							S ^M		S ^B	ES ^B	ES ^B	S ^B	S ^B		S ^B	S ^B	S ^B	S ^B	
Virginia's warbler (<i>Vermivora virginiae</i>)	MC	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^B	S ^M	S ^M	S ^B	S ^M	S ^M					S ^M				S ^B			S ^B	S ^B			S ^M						
Western burrowing owl (<i>Athene cucularia hypugea</i>)	BLM, NVP, UTSC, NPS	RS ^B	S ^M	S ^M	S ^M	S ^M	S ^B	ES ^B	S ^M	S ^M	S ^M	S ^B	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	S ^M	ES ^B	RES ^B	S ^M	S ^B	S ^B	S ^B	S ^B	S ^B	S ^B	
Western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	BLM, NVP	S ^M										S ^M															S ^M	S ^M		S ^M						
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	FC, NVP	S ^M				S ^M	ES ^M					S ^M	S ^B	S ^M								S ^M								S ^M						
Willet (<i>Tringa semipalmata</i>)	MC	S ^M				S ^M						S ^M		S ^M												S ^M	S ^M	S ^B		S ^B				S ^B		
Williamson's sapsucker (<i>Sphyrapicus thyroideus</i>)	MC	S ^M																								S ^{BO}	S ^B	S ^M								
Wilson's phalarope (<i>Phalaropus tricolor</i>)	MC	S ^M				S ^M						S ^M	S ^M	S ^M	S ^M											S ^B	S ^M	S ^B		S ^B				S ^B		
Yellow warbler (<i>Dendroica petechia</i>)	MC, NPS	S ^B			S ^M	S ^B						S ^B		S ^M	S ^B	S ^M						S ^B		S ^M		S ^B	S ^B	S ^B		S ^B			S ^B	S ^B		
Yuma clapper rail (<i>Rallus longirostris yumanensis</i>)	FE, UTSC	S ^M											S ^M	S ^M		S ^M																				
Reptiles																																				
Banded gila monster (<i>Heloderma suspectum cinctum</i>)	BLM, NVP	S	S	S	S	S	S				S			S	S	S	S																			
Common chuckwalla (<i>Sauromalus ater</i>)	BLM, UTSC	S	S	S	S	S	S				S			S	S	S	S																			
Desert horned lizard (<i>Phrynosoma platyrhinos</i>)	MC	S	S	S	S	S	S	RES	RES	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	RES	S	S	S						
Desert iguana (<i>Dipsosaurus dorsalis</i>)	MC	S	S	S	S								S	S	S	S						S														
Desert night lizard (<i>Xantusia vigilis</i>)	MC	S	S	S	S		S	S							S																					
Desert tortoise (<i>Gopherus agassizii</i>)	FT, NVP	RS	RS	RS	RS	RS	S				S			S	S	S	S						S													
Gilbert's skink (<i>Eumeces gilberti</i>)	MC	S	S	S																							S	ES								
Great Basin collared lizard (<i>Crotaphytus bicinctores</i>)	MC	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Greater short-horned lizard (<i>Phrynosoma hernandesi</i>)	BLM, MC								ES								S		S							S	S	ES	S							
Long-nosed leopard lizard (<i>Gambelia wislizenii</i>)	MC	S	S	S	S	S	S	ES	ES	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	ES	S	RS	S						

Table F3.6-1 Species of Management Concern and Special Status Terrestrial Wildlife Species in the Project Study Area (Continued)

Species [†]	Status Designations	Hydrographic Basins																																	
		*Las Vegas Valley ¹	*Garnet Valley ²	*Hidden Valley (North) ²	*Coyote Spring Valley ²	*Pahranagat Valley ²	*Delamar Valley ²	*Dry Lake Valley ²	*Cave Valley ²	Kane Springs Valley ²	Pahroc Valley ²	White River Valley ²	Muddy River Springs Area ²	Lower Moapa Valley ²	California Wash ²	Black Mountains Area	*Lake Valley ³	Patterson Valley ³	Spring Valley (basin #201) ³	Eagle Valley ³	Panaca Valley ³	Lower Meadow Valley Wash ³	Dry Valley ³	Clover Valley ³	Rose Valley ³	*Steptoe Valley ⁴	*Snake Valley ⁵	*Spring Valley (basin #184) ⁵	*Hamlin Valley ⁵	Fish Springs Flat ⁵	Tule Valley ⁵	Pine Valley ⁵	Wah Wah Valley ⁵	Deep Creek Valley ⁵	
Long-tailed brush lizard (<i>Urosaurus graciosus</i>)	MC	S	S	S	S									S							S														
Sonoran lyre snake (<i>Trimorphodon biscutatus</i>)	MC	S	S	S																	S														
Sonoran mountain kingsnake (<i>Lampropeltis pyromelana</i>)	BLM, NPS, NVP																S	S	S	S	S	S	S	S	S	S	S	S			S ^c				
Western banded gecko (<i>Coleonyx variegatus</i>)	MC	S	S	S	S	S	S			S											S														
Invertebrates																																			
Aegialian scarab beetle (<i>Aegialia knighti</i>)	BLM												S																						
Baking Powder Flat blue (<i>Euphilotes bernardino minuta</i>)	BLM																										E ^a S								
MacNeill sooty wing skipper (<i>Hesperopsis gracielae</i>)	BLM												S																						
Mojave gypsum bee (<i>Andrena balsamorhizae</i>)	BLM	S													S																				
Mojave poppy bee (<i>Perdita meconis</i>)	BLM				RS							S			S																				
Nevada admiral (<i>Limnitis weidermeyerii nevadae</i>)	BLM	S			S																														
Steptoe Valley crescent-spot (<i>Phyciodes pascoensis arenacolor</i>)	BLM																								S										
White River Valley skipper (<i>Hesperia uncas grandiosa</i>)	BLM																	S			S									S					
White River wood nymph (<i>Cercyonis pegala pluviialis</i>)	BLM																	S			S					S		S							

[†] = Species listed in alphabetical order by common name.

* = A basin that has ROW and/or groundwater exploratory area(s).

¹Las Vegas Wash Flow System.

²White River Flow System.

³Meadow Valley Wash Flow System.

⁴Goshute Valley Flow System.

⁵Salt Lake Desert Flow System.

Status: FE = Federally endangered; FT = Federally threatened; FC = Federal candidate; P = petitioned for federal listing; BLM = BLM sensitive species; NVP = Nevada Protected; UTSC = Utah Special Concern; CA = Conservation agreement species; USFS = USFS sensitive species; NPS = National Park Service sensitive species; and MC = Nevada and/or Utah wildlife species of management concern.

R = Species is present in the ROW; E = Species is present in one or more of the groundwater exploratory areas; and S = reasonable expectation of occurrence based on best available knowledge by wildlife management agencies.

Birds: ^B = Confirmed breeding, ^M = Migrant, or not confirmed breeding.

^a = Updated based on NNHP 2010 data

^b = Updated based on SNWA pygmy rabbit survey 2008

^c = Updated based on Utah NHP data

^d = Updated based on Jones and Stokes 2005 report

^e = Updated based on GBBO Winter raptor survey data 2005-2009

Table F3.6-2

Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area

Species	Habitat Requirements	Life History
Big Game Mammals		
Pronghorn (<i>Antilocapra americana</i>)	Found mainly in grasslands, sagebrush plains, deserts, and foothills. Birth and fawn bedding sites typically found in sagebrush-steppe communities with dense shrub cover.	Large winter herds disperse in the spring. Usually found in small separate bachelor bands and female-kid bands in spring and summer. Breeding occurs mid-September to early October in northern states, late July to early October in southern states. Seasonal movement occurs in some populations with movements as much as 160 km (99 mi) from summering areas. Need for free water varies with succulence of vegetation in the diet.
Elk (<i>Cervus canadensis</i>)	Typical habitat varies from state to state. Uses open areas such as alpine pastures, marshy meadows, river flats, and aspen parkland, as well as coniferous forests, brushy clear cuts or forest edges, and semi-desert areas.	Primarily a grazer, but also consumes forbs and may browse on willow, aspen, oak, etc., where grasses are unavailable. Also commonly feeds on mushrooms, especially in late summer and fall. Mature males defend female herd during rut (September-October). Home range of non-migratory herd is 1.8-5.3 km ² (0.7-2.0 mi ²). Rarely moves more than 1600 m (1 mi) in one day. Exhibits high fidelity to home range, but may abandon if excessively disturbed.
Mule Deer (<i>Odocoileus hemionus</i>)	Found in coniferous forests, desert shrub, chaparral, and grasslands with shrubs. Species often associated with early succession vegetation, especially near agricultural lands. Often found on south facing slopes in winter.	Browses on wide variety of woody plants and grazes on grasses and forbs. Deer may occasionally feed on agricultural crops. Throughout the year, most activity occurs at dawn and dusk, though nocturnal and daytime activity is common. Breeding peaks mainly late November to mid-December. Home range size may be 30-240 ha (74-593 acres) or more; directly correlated with availability of food, water, and cover.
Rocky Mountain bighorn sheep (<i>Ovis canadensis canadensis</i>)	Prefer steep, rocky slopes. Escape terrain (cliffs, talus slopes, etc.). Spend as much as 86% of time within 100 m (328 foot) of escape terrain in winter and usually stay within 800 m (2,625 foot) throughout the year.	Primarily grazes on grasses and forbs, but diet can also include significant amounts of shrubs. Access to mineral licks, especially in spring, is very important, as the soils are generally low in mineral content. Sheep acquire water from succulents in the summer and snow or ice in the winter. Lambing generally peaks April-June. Downward migration motivated by snow depth in the high elevation summer ranges.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Small Mammals		
Brush mouse (<i>Peromyscus boyleyi</i>)	Found in rough, rocky canyons with brush. Also in open pine forests, riparian zones, oak woodland, scrub oak on flats, and steep slopes, juniper woodland, around buildings, in caves and mineshafts. Usually rocks and heavy brush are present.	Usually places nest in natural cavity, rocky crevice, or under brushpile. Diet consists of a variety of plant items, including pine nuts, acorns, berries (e.g., manzanita, juniper), and insects and other arthropods (may comprise a large portion of the diet). Often climbs into vegetation to feed. Completely nocturnal. Active year-round.
Dark Kangaroo Mouse (<i>Microdipodops megacephalus</i>)	Associated with Intermountain Cold Desert Scrub, Sagebrush, Grasslands and Meadows, Badlands and Dunes, Desert Playas and Ephemeral Pools. Restricted to fine, gravelly soils. Found in Shadscale Scrub, Sagebrush Scrub, and Alkali Sink plant communities exclusively in the Upper Sonoran life zone. May occur in sand dunes near margins of range.	Underground when inactive. Seeds are the primary food source. Also eats some insects. Does not appear to utilize free water. Believed to store food in seed caches within burrow system (O'Farrell and Blaustein 1974). Activity observed March-October. Peak nocturnal activity occurs in first 2 hours after sunset. Moonlight and ambient temperature influence activity (O'Farrell and Blaustein 1974). Predators include owls, foxes, and badgers. In west-central NV mean yearly circular home range for males was 6,613 m ² (1.6 acres); for female, 3,932 m ² (0.97 acres) (O'Farrell and Blaustein 1974). Majority of young are born in May and June. Litter size is 2-7.
Desert kangaroo rat (<i>Dipodomys deserti</i>)	Low deserts, sandy soil with sparse vegetation; alkali sink, shadscale scrub, and creosote bush scrub, Lower and Upper Sonoran life zones. Mostly restricted to deposits of deep wind-blown sand (sometimes including deposits formed as result of human activity); less abundant near edge of dunes; recorded from gravelly soil in one area in Arizona.	Nests in burrows dug in mounds, usually under vegetation. Pregnant females have been recorded December-August in different areas. Gestation lasts 29 to 32 days. Litter size is 1 to 6 (usually 3 to 4). Young weaned in 15 to 25 days, reach adult size in about 3 months. Reproductive success closely follows success of winter annuals. Colonies may die out following successive years of drought. May form widely spaced colonies comprising 6 to 12 large burrows. Basically solitary except female with young. Feeds on seeds and green vegetation. Stores large quantities of seeds underground. May feed opportunistically on moths, beetles, and other insects.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Desert pocket mouse (<i>Chaetodipus pencillatus</i>)	Sparsely vegetated sandy desert floors. Seems to prefer rock-free bottomland soils along rivers and streams.	Sleeps and rears young in underground burrow. Home range size for adults and juveniles of both sexes probably is about 0.2 ha (½ acre). The annual population turnover probably is almost complete. Feeds on seeds, including those of mesquite, and creosote bush. Stores food in underground burrow system. Probably not as active in winter as in summer; may become torpid for several days. Breeds in spring and summer. Litter size is about 2-5. Females commonly become pregnant while in juvenile pelage.
Inyo shrew (<i>Sorex tenellus</i>)	Canyon bottoms; rocky mountain habitat protected by logs, boulders, or sagebrush scrub. Also found in riparian habitat as well as red fir communities. May be more tolerant of dry habitat than other closely related shrews.	Active throughout the year. A voracious hunter. Feeds primarily on insects and other small invertebrates (worms, molluscs, centipedes, etc.). May feed on bodies of wind-borne insects deposited at higher elevations. No reproductive information available.
Kit fox (<i>Vulpes macrotis</i>)	Primarily open desert, shrubby or shrub-grass habitat. In the Mojave Desert, species occurs in creosote bush communities. In the Great Basin, species occurs in shadscale, greasewood and sagebrush.	Primary food item is usually the most abundant nocturnal rodent or lagomorph in the area. May also feed opportunistically on birds, reptiles, insects. Basically nocturnal but young may play outside mouth of den in late afternoon. Breeds from December-February. Females are monestrous. Gestation lasts probably 49-56 days. One litter of 4-5 is produced usually in February or March. Pups first emerge from the den at about 1 month. Young are tended by both sexes. Family groups usually split up in October. Maximum population density in optimum habitat in western UT was about 2 adults/259 ha (2/640 acres). Home ranges vary from 260 to 520 ha (640-1,285 acres) up to 1160 ha (2,866 acres) during times of prey scarcity.
Merriam's shrew (<i>Sorex merriami</i>)	Arid Upper Sonoran and Lower Transition life zones, primarily in various grassland habitats, including grasses in sagebrush, scrub/piñon-juniper habitat, and also in mountain-mahogany and mixed woodlands. Seems to prefer drier habitats than other shrews. May utilize burrows and runways of other animals.	Active throughout the year. <i>S. m. leucogenys</i> apparently restricted to Great Basin - Mojave Desert transition zone in Tikaboo Valley in western Lincoln County. Feeds primarily on caterpillars, beetles, cave crickets, ichneumon wasps, and spiders as well as other arthropods. Has the highest relative bite force of all western shrews studied, indicating that it is adapted to forage on relatively large, hard-bodied prey.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Ringtail (<i>Bassariscus astutus</i>)	Typically found in rocky areas with cliffs or crevices for daytime shelter; desert scrub, chaparral, pine-oak and conifer woodland. Usually found within 1 km (0.5 mile) of water. Dens are usually in rock shelters; also in tree hollows, under tree roots, in burrows dug by other animals, in remote buildings, or underbrush piles.	Omnivorous, but prefers animal matter. Principal foods are arthropods, small mammals, and fruits; proportions vary seasonally. Also eats various birds, reptiles, and amphibians. Primarily nocturnal, though sometimes crepuscular. Active throughout the year. Secretive, may be common in areas where seldom observed. Occurs singly or as pairs in local concentrations. Breeds February-May, mainly March-April.
Vagrant shrew (<i>Sorex vagrans</i>)	Found in a wide variety of habitats: forest, meadow, and riparian, but usually mesic.	Known to nest in decayed logs. The nests are approximately 10 cm (4 inches) in diameter and are made of dry grass. Primarily feeds on forest insects (eggs, larvae, pupae, and adults), slugs, earthworms, and other invertebrates. Occasionally may feed on salamanders and other small vertebrates. Throughout the year most active at night. In spring, diurnal activity increases. Breeding may occur from March-September, but most activity occurs in spring between March and May. Average litter size is 5.2, but may range from 2-9. Gestation lasts approximately 20 days.
Water shrew (<i>Sorex palustris</i>)	In the mountains, the species is most abundant along cold, fast mountain streams with abundant cover. At the other extreme, it also is found in stagnant water of marshes or bogs, and several have been caught in places with very little water. The water shrew appears to have some flexibility in adapting to habitats with little water or even to habitats where water is present only seasonally.	Nest sites are near water in underground burrows, rafted logs, beaver lodges, and other areas providing shelter. Primarily dependent upon aquatic insects; also eats various other invertebrates. May take small vertebrates (fishes, amphibians) when available. Hunts under and on top of water. May even be seen running across the water surface. Water shrews, with their high metabolic rates, need to consume approximately their weight in food every day. In the wild, they seem unable to store significant body fat and can die of starvation within a few hours. When a surplus of food is available, it is often hoarded, the shrew sometimes defecating on it to keep other shrews away. Two major activity-periods are reported: sunset to 4 hours after, and just before sunrise. Generally active throughout the day but secretive and seldom seen.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Birds Covered Under the MBTA		
Upland Game Birds		
Band-tailed pigeon (<i>Patagioenas fasciata</i>)	Generally inhabits montane conifer or mixed-species forest dominated by pines and oaks. Generally absent from intervening, large, lower-elevation desert scrub community except for over-flying and localized feeding (NatureServe 2011).	Pair bonding may occur in the wintering range. Active nests have been reported during most months of the year with a progressive change in earliest dates with latitude. Diet is herbivorous; principally grain seeds, fruit, acorns, pine nuts, and inflorescences of trees and shrubs. This species is partially migrant, with northern groups moving south beyond the U.S.-Mexico border (NatureServe 2011).
Mourning dove (<i>Zenaidura macroura</i>)	Open habitats and on edges of woodlands. The highest densities occur in agricultural areas (NatureServe 2011).	Breeding occurs from February through October, but can also occur throughout the year. Nests contain only two eggs. Food intake is 99% seeds with a minimal amount of animal matter. Fall and spring migrations both occur with some individuals over-wintering in the southern states (NatureServe 2011).
Waterfowl* Birds covered under the MBTA, but also hunted		
*Canada goose (<i>Branta canadensis</i>)	Found in a broad range of habitats in temperate to low-arctic regions, including treeless and forested areas; prairies and parklands; flat, featureless arctic coastal plains and high mountain meadows; as well as a variety of managed refuge conditions and areas of human habitation. (NatureServe 2011).	Breederers are monogamous, with life-long pair bonds formed usually during the second year. Nest construction begins before the first egg and consists of an area on the ground that has limited wind exposure and lined with near by vegetation and down. Food is primarily grasses and sedges, but also berries or seeds. Annual medium- to long-distance migrant; some populations winter within their breeding area, and a few have lost their migratory habit (NatureServe 2011).
*Mallard (<i>Anas platyrhynchos</i>)	Breeding habitat consists of lakes, rivers, marshes and ponds in grasslands, or cultivated fields.	Pairs form in wintering ground between September and November with nesting in the spring and early summer. Nests have an avg. of 20 eggs. An omnivorous and opportunistic feeder, the mallard eats mostly animal food including insects and larvae. A partial migrant with many populations in North America being sedentary (NatureServe 2011).

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
*Northern pintail <i>(Anas acuta)</i>	Breeding habitat consists of lakes, rivers, marshes and ponds in grasslands, or cultivated fields.	Most breeding associated with seasonal and semi-permanent wetlands. Often nests near freshwater lakes and ponds, but may nest some distance from water. May nest under cover of low vegetation or in the open. Broods use emergent vegetation for escape cover. Feeds on seeds and nutlets of aquatic plants (sedges, grasses, pondweeds, smartweeds); also eats mollusks, crabs, minnows, worms, fairy shrimp, and aquatic insects. Animal foods important to nesting females during pre-laying and laying periods. Diet of juveniles includes mostly insects. Dabbles for food; may also feed on waste grain in fields.
Shorebirds, Wading birds, and Seabirds		
American avocet <i>(Recurvirostra americana)</i>	Found in lowland marshes, mudflats, ponds, alkaline lakes, and estuaries. Usually nests on open flats or areas with scattered tufts of grass on islands or along lakes (especially alkaline) and marshes. Readily nests on artificial islands (such as those created for waterfowl) within impoundments.	Walks slowly through the water; often feeding in flocks that number 12-300 birds. Eats a variety of aquatic insects and their larvae, crustaceans, and seeds of aquatic plants, obtained mainly from soft muddy bottom or water surface. May extend head, or dive under surface of water while feeding. Breeding begins in mid-April in the south, as late as mid-May in the north. Clutch size usually is 3-4. Incubation lasts 23-25 days, by both sexes. Young are precocial, tended by both adults, independent in about 6 weeks. Usually nests in a loose colony. Northern interior breeding populations make extensive seasonal migrations. Migrates mainly through western U.S.
Wilson's phalarope <i>(Phalaropus tricolor)</i>	Breeding habitat consists of shallow freshwater and saline ponds, marshes and wet meadows. Non-breeding habitat consists of lakeshores, mudflats, salt marshes, freshwater marshes, alkaline ponds; rarely along seacoasts; stages on salt lakes (NatureServe 2011).	Breeding occurs April through September. Typically migrates between breeding and wintering areas in the fall (September) and spring (April) (NatureServe 2007). May renest after nest failure, and females are capable of laying multiple clutches. Polyandry is common in most populations. Reproductive success varies greatly (17-56%); most clutch failures result from predation. Exhibits annual variation in nest site selection, moving to deeper, more permanent wetlands in dry years. Feeds on insects and aquatic material in shallow water.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Willet (<i>Tringa semipalmata</i>)	Marshes, lake margins, and, less frequently, open grassland. Prefer native grass to tame vegetation. They prefer pastures that are idle during the nesting season, and to a lesser extent actively grazed pasture, to other land-use types. Although tilled lands usually avoided, nests have been reported in hayland and cropland, including small-grain and stubble fields. In wetlands, avoids dense, emergent vegetation, preferring shallow-water areas with short, sparse shoreline vegetation. Suitable wetlands range in salinity from fresh to saline, and vary widely in size and permanence.	Nests on the ground in open places, wet grasslands by lakes, short grass, or bare ground by water. Breeding requires large expanses of short, sparse grasslands for nesting and foraging, and wetland complexes for foraging. In both upland and wetland habitats, adults with broods use somewhat taller, denser grass cover than do breeding pairs during nesting. During the non-breeding period, forages singly or small loose groups but will often gather in large flocks to sleep or rest. Eats mainly small invertebrates (crustaceans, mollusks, insects, worms) obtained from surface, in mud, and in shallow water.
Raptors		
Flammulated owl (<i>Otus flammeolus</i>)	Found in open coniferous forests of ponderosa pine, Douglas fir, limber pine, Jeffrey pine, white fir, and subalpine fir. Tends to prefer old growth (200 - 400 years old) stands of ponderosa pine and Douglas fir. Home range is 3 – 16 ha (7 – 40 ac).	Clutch size is two to four (usually two to three); incubation lasts 21-26 nights, by female (male brings food); nestling period reported as 22-24 nights and 21-23 days; fledglings are tended by both parents, Independent about 1 month after fledging. Fledging occurs in July-August. Brood size most often is two. Individuals occupy same breeding territory in successive years. Territory size about 5.2 square kilometers; males show strong territory fidelity. Mainly hunts at night and eats nocturnal arthropods. Feeds on various insects (e.g., moths, beetles, grasshoppers, crickets, and caterpillars).
Northern harrier (<i>Circus cyaneus</i>)	Breeding habitat consists of marshes, meadows, grasslands, and cultivated fields. Harriers roost on the ground in open habitats such as agricultural and abandoned fields, and saltmarshes (NatureServe 2011). Home range size varies among sites from 170 – 15,000 ha due to differences in food availability and habitat quality (Slater and Rock 2005).	Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog. Depending on availability, eats small mammals (especially voles and cotton rats), small and medium-size birds (especially passerines), and some reptiles, amphibians, large insects, carrion. Hunts over open land or marshes; usually flies low when hunting, captures prey on ground. May aggregate in communal roosts in winter in areas of high prey density (NatureServe 2011).

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Passerines and Others		
Bell's vireo (<i>Vireo bellii</i>) Arizona bell's Vireo from NWAP	Found in dense, low, shrubby vegetation, in early successional stages in riparian areas, brushy fields, young second-growth forest or woodland, scrub oak, and mesquite brushlands. Often found near water in arid regions. Largely absent in intensively cultivated areas, forests, pure grasslands, open deserts, and elevations > 1,300 m (4,265 foot).	Diet is 99.3% insects and spiders, 0.7% vegetable matter (fruit); no other vireo consumes as many large insects. Nests suspended from small, lateral or terminal forks of low, pendant branches (or even horizontal parallel stems) in dense bushes, small trees, and occasionally herbaceous vegetation. Most nests located 0.5 to 1.5 m (1.6 - 4.9 foot) above ground, ranging from 0.2 to 8.0 m (0.7 - 26 foot).
Black-throated gray warbler (<i>dendroica nigrescens</i>)	Habitat preferences include a mix of conifers, montane shrubs, and junipers. Found in riparian habitats during migration. In the Sheep Range of Clark County, found in close association with mature pinyon featuring canopy heights up to 15.2 meters. The mix of juniper can vary from small (less than three meters) pointed-top trees to large, old roundedtop trees that often reach 9.1 meters in height. Understory vegetation can be sparse, particularly in southern Nevada ranges.	This species is insectivorous, gleaning directly from the dense terminal foliage of pinyon and juniper. Tree density may have an influence on feeding efficiency and the cover/concealment preferences for the species. Food abundance may vary with climate. Wildfires, which consume tree canopies may be detrimental to the species, but controlled burning, may not bear a significant negative impact.
Brewer's sparrow (<i>Spizella breweri</i>)	Breeding birds strongly associated with sagebrush in areas with scattered shrubs and short grass. Can also be found to lesser extent in mountain mahogany, rabbit brush, bunchgrass grasslands with shrubs, bitterbrush, ceonothus, manzanita and large openings in pinyon-juniper. In migration and winter uses low, arid vegetation, desert scrub, sagebrush, and creosote bush habitats (NatureServe 2011).	In spring and summer consumes many insects. In fall and winter feeds on seeds. Forages mainly on the ground. Drinks free water when available and will bathe in standing water; but adapted to arid environments and can physiologically adjust to water deprivation, obtaining water from foods (NDOW).
Cactus wren (<i>Campylorhynchus brunneicapillus</i>)	Found mainly in desert scrub habitats. Prefers cholla cactus, yucca, and desert riparian shrubs for perching and nesting. Found in high abundance in the Mojave desert.	Clutch size is 3-7 (usually 3-5). Incubation lasts 15-18 days. Young are tended by both parents, leave nest in about 21 days. Two to three broods per year. Nesting success and timing of breeding may vary annually. Nest may be relined and used as a winter roost. Feeds on insects (beetles, ants, wasps, bugs, grasshoppers) and spiders. Occasionally eats small lizards and tree frogs. Also eats fruit (cactus, elderberries, cascara berries) and some seeds. Often forages on ground; also in Joshua trees.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Caspian tern (<i>Sterna caspia</i>)	Prefers aquatic environments such as rivers, lakes, salt marshes, and reservoirs. Often nests on barren islands free of terrestrial predators.	Nests on sandy or gravelly beaches and shell banks along coasts or large inland lakes; sometimes with other water birds. Pacific coast populations formerly nested mainly in inland marshes, now mainly on human-created habitats (e.g., salt pond dikes and levees) along coast; nests on dredge-spoil islands. Eats mainly fishes obtained at surface of water by diving from air; sometimes feeds from surface like a gull and eats eggs and young of other terns and gulls (Terres 1980).
Cassin's sparrow (<i>Aimophila cassini</i>)	Open grassland and short-grass plains with scattered bushes or shrubs, sagebrush, mesquite or yucca. In southeastern Arizona, avoided recently burned grassland habitats.	Nests on or near ground. May nest in grasses, in patch of ground cactus, at base of shrub, or in lower branches of bush or cactus. Breeds July-August in southeastern Arizona. Clutch size 3-5 (mean = 3 in southeastern Arizona). Young tended by both adults. During the spring and summer feeds mostly on insects (e.g., beetles and caterpillars). During the winter feeds primarily on seeds. Capable of surviving without drinking water.
Costa's hummingbird (<i>Calypte costae</i>)	Desert and semi-desert, arid brushy foothills, chaparral; in migration and winter also in adjacent mountains and in open meadows and gardens. Most commonly along canyons and washes when nesting.	Nests in tree, shrub, vine, or cactus; often about 1.5 m from ground. In chaparral, nests often at breaks along edges or in tall bushes. Feeds on nectar; also insects and spiders found in or near flowers. Nectar sources include: ocotillo, chuparosa, boxthorn, desert lavender, desert willow, sage, larkspur, etc.). Nesting season varies with location; begins in winter in some areas, over by late spring or early summer. Female incubates 2 eggs for 15-18 days. Young are tended by female, leave nest in 20-23 days. Males defend large territory, often 1-1.5 ha (2.5-3.75 acres). Home range of breeding females "probably at least 1-km radius".
Crissal thrasher (<i>Toxostoma crissale</i>)	Desert scrub, mesquite, tall riparian brush and, locally, chaparral. Usually beneath dense cover.	Nests in low tree or shrub, usually in a fork, 0.8-2.5 m (3-8 ft) above ground (Terres 1980). Known to eat insects, berries, and small lizards. Clutch size 2-4 (usually 3). Incubation 14 days, by both sexes. Nestlings altricial. Young tended by both adults, leave nest 11-12 days after hatching.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Grace's warbler (<i>Dendroica graciae</i>)	Montane pine and pine-oak forest. Breeds in ponderosa pine. Nearly always seen in pine canopy, only occasionally in other vegetation. One study recorded between 2.7 - 27.3 % of observations in Gambel oak; the higher value where pines were severely thinned. At some sites on the edge of its range (e.g., NV), the species uses white fir.	Cup nest on a horizontal branch or in crown of pine; made of oak catkins, plant fibers, lined with fine materials. Usually nests on outer limb of pine, 6-18 m (20 - 60 ft) above ground. Clutch size 3-4; 2 broods. Migrants and vagrants reported in riparian woodlands, oaks, and saltcedar in addition to pines. Usually forages for active, mobile insects high in branches of pines; rarely in oaks, non-conifers. In the 1970s, expanded its range into CA and NV where it was previously unknown, and breeding populations were established in five mountain ranges in southern NV by the early 1970s.
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	Prefers grasslands of intermediate height and are often associated with clumped vegetation interspersed with patches of bare ground . Other habitat requirements include moderately deep litter and sparse coverage of woody vegetation. Breeds in both native and tame grassland vegetation.	Arrive on the breeding grounds in mid-April and depart for the wintering grounds in mid-September. In Saskatchewan and Manitoba, they arrive later (mid-May) and leave earlier (August). Throughout most of their range, are able to produce two broods, one in late May and a second in early July. However, in the northern part of its range, one brood is probably most common. Frequently renest after nest failure, and if unsuccessful in previous attempts, may renest 3-4 times during the breeding season. Eats insects other small invertebrates, excess grain, and seeds. Picks up food items from the ground surface.
Hooded oriole (<i>Icterus cucullatus</i>)	Found along wooded streams, palm oases, city trees, and riparian thickets in the southern portion of the U.S. Will often use riparian areas with willow thickets, mesquite shrubs, and introduced ornamentals for nesting.	Clutch size 3-5 (usually 4). Sometimes 2-3 broods per year. Incubation 12-14 days, by female. Young tended by both parents, leave nest at about 14 days. U.S. breeding populations generally migratory; return to California and Texas in March, Arizona in April. Eats mostly insects, also nectar; often probes flowers.
Horned Lark (<i>Eremophila alpestris</i>)	Grassland, tundra, sandy regions, areas with scattered low shrubs, desert playas, grazed pastures, stubble fields, open cultivated areas, and rarely open areas in forest (NatureServe 2011).	Nests in hollow on ground often next to grass tuft or clod of earth or manure. (NatureServe 2011). Egg laying occurs early to mid-June at northern end of range. Clutch size 2-7 (commonly 4). One brood annually at higher latitudes and elevations, 2 or possibly 3 at lower ones. Incubation 10-14 days, by female. Young tended by both parents, leave nest at 9-12 days. Breeding density 1.3-1.5 individuals/ha in shadscale habitat in eastern Nevada. Feeds on seeds, waste grain, and insects when available.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
LeConte's thrasher (<i>Toxostoma lecontei</i>)	Prefers desert scrub, particularly creosote bush associations. In NV, seems particularly associated with saltbush flats and wash systems.	Nests in cholla cacti, sagebrush, small trees, or shrubs. Usually nests 0.5-3.5 m (2-11.5 ft) above ground. Little information is available regarding diet; probably similar to other thrashers that feed on insects, berries, and seeds. Eggs are laid February-June. Both sexes incubate 3, sometimes 2-4, eggs. Young are tended by both adults. Home ranges in saltbush-cholla scrub averaged 40 hectares. Breeding territories were considerably smaller, averaging 6 hectares; defended most actively from early December to early February.
Olive-sided flycatcher (<i>Contopus cooperi</i>)	Includes a variety of forest, woodland, and open situations with scattered trees, especially where tall dead snags are present. Primary habitat is mature, evergreen montane forest. Breeds in forest and woodland habitats, especially in burned-over areas with standing dead trees, subalpine coniferous forest, and mixed coniferous-deciduous forest.	Most nesting sites contain dead standing trees, which are used as singing and feeding perches, and are bordered by forest. Birds also use small mountaintop ponds. Forests surrounding these sites are usually coniferous or mixed with deciduous trees. Nests are placed in conifers, on horizontal limbs from 2-15 m from the ground. Clutches of 3-4 eggs are typical. Although young rarely fledge before the end of July, flycatchers can become very difficult to find as singing begins to slow during late June. Possibly because of their dependence upon flying insects as prey, these birds arrive rather late on their breeding grounds from South America. Early fall migrants. Forages primarily by hovering or sallying forth, concentrating on prey available via aerial attack. The diet is made up almost entirely of flying insects, prefers wild honeybees and other Hymenoptera.
Red-headed woodpecker (<i>Melanerpes erythrocephalus</i>)	Open woodland, especially with beech or oak, open situations with scattered trees, parks, cultivated areas and gardens. Nests in hole excavated 2-25 meters above ground by both sexes in live tree, dead stub, utility pole, or fencepost. Sometimes uses existing holes in poles or posts. Individuals typically nest in the same tree or cavity in successive years.	Clutch size is four to seven (usually five). Incubation is typically around 14 days, by both sexes. Young are tended by both parents and leave nest at about 27 days. Woodpeckers do not necessarily incur a reduction in fecundity because they may be able to renest successfully later in the season, though this is not without its problems. Eats insects and other invertebrates, berries and nuts, sap, young and eggs of birds. Forages on ground and in trees (dead wood) and shrubs. Animal food about 50% of diet. Rarely drills into trees for insects. Caches food items in crevices for periods of food scarcity. Young eat insects, worms, spiders, and berries.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Red-naped sapsucker (<i>Sphyrapicus nuchalis</i>)	Found in low densities in lowland gallery cottonwood stands on the larger river systems. The presence of water has a positive effect on sapsucker distribution. Otherwise, sapsuckers seek out riparian habitats wherever they are found and do not seem to be affected by topography, slope, or aspect. Nesting pairs range from a few at 4,200 feet elevation to 8,700 feet and above, with the bulk of distribution in the aspen zone above 5,000 feet.	Builds its nest almost exclusively in cavities occurring in riparian woodland communities, usually near open water. Live trees that are infested with fomes rust are most desired for nest sites. A midstory of willows, alder, water birch, (<i>Betula occidentalis</i>), or younger age classes of aspen is preferred, where sap wells are maintained for feeding. Foraging territories range from 0.6 to 6.0 hectares and average about 3.2 hectares. Breeding densities can be quite high in limited habitat; one 2.4-hectare aspen clone was found to harbor six active sapsucker nests, and was also being shared with three other woodpecker species.
Rufous hummingbird (<i>selasphorus rufus</i>)	Migrant throughout NV; breeding in northwest corner of state possible but has not documented.	Species has strong fidelity to breeding sites, wintering sites, and migration routes. Will establish and defend territories around nectar sources at migration stopovers. Migrates northward along Pacific Coast and through lowlands west of Rockies in winter and early spring. Arrives in CA late February-early March, OR by March 1, AK by mid-April. Migrates south chiefly through mountains of Cascades/Sierras and Rocky Mountains, where migrating males arrive before females or juveniles and reach NV July and early August. Feeds on nectar, insects, and tree sap from sapsucker wells. Insect prey are important sources of fat, protein, and salts; include gnats, midges, whiteflies and aphids.
Sage sparrow (<i>Amphispiza belli</i>)	Found from 0-2,000 m (0 - 6,562 ft); strongly associated with sagebrush for breeding. Also found in saltbush brushland, shadscale, antelope brush, rabbitbrush, mesquite, and chaparral. During migration and winter months, also found in arid plains with sparse bushes, grasslands and open situations with scattered brush, mesquite, and riparian scrub; preferring to feed near woody cover (NatureServe 2011).	Nests on the ground or in a shrub, up to about 1 m above ground. Forms flocks of 25-50 individuals in winter. Migrations are more localized in the southwestern part of the range. Populations in the northern Mojave Desert (subspecies <i>canescens</i>) are migratory; after early spring breeding, they migrate uphill in late spring into the nesting range of <i>belli</i> ; in late summer and fall, they descend and spread southward and eastward to wintering grounds (NDOW). Feeds on insects, spiders and seeds (especially in the winter). Runs along the ground stopping to pick up food (NatureServe 2011).

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Song sparrow (<i>Melospiza melodia</i>)	Found in wetland and riparian habitats including along washes, creeks, lakes, and low elevation montane forests. May even occur in tamarisk stands.	Clutch size 3-6. Two, sometimes 3, broods per year. Incubation usually 12-13 days, by female. Young tended by both parents, leave nest at about 10 days, can fly well at 17 days, independent in 18-20 days more. Sexually mature in 1 year. Breeding territory usually is less than 0.4 ha. Eats mostly insects and seeds, some small fruits; forages in trees, grasses, bushes, and on open ground.
Spotted towhee (<i>Pipilo maculatus</i>)	Prefers undergrowth of open woodland, forest edge, second growth, brushy areas, chaparral, riparian thickets, woodland. Uses a wide variety of shrubby habitats characterized by deep litter and humus on ground, and sheltering vegetation overhead for breeding habitat (NatureServe 2011).	Constructs a well-built cup nest in litter on ground, under bush or brush pile, clump of grass, or elevated in vines, trees, or bushes. Forages on the ground beneath shrubs and undergrowth; eats various invertebrates, seeds, small fruits, some small vertebrates. In non-breeding season, forms loose flocks and can be somewhat gregarious (NatureServe 2011).
Vesper sparrow (<i>Pooecetes gramineus</i>)	Found in various open shrub habitats from high elevation valleys to higher mountain slopes and basins. Open areas with a scattered canopy of big sagebrush (Wyoming and mountain varieties) and a minimum ground cover of 20 percent grasses, forbs and young shrubs appears to be the preferred nesting habitat. Scattered shrubs are used as singing perches.	Nest from 5,500 feet in northern Nevada's foothills to approximately 9,000 feet in surrounding mountain ranges. Central Nevada's base nesting elevation may be closer to 7,000 feet. There is no information on topography, slope or aspect for the species, although anecdotal evidence suggests that the species nests successfully in both level environments and on steep mountain slopes. Average territory size is 1.6 to 3.2 hectares depending on the productivity of the ground cover component. Breeding densities in the Snake Range of eastern Nevada between 7.2 and 16 individuals per 40 hectares. Vesper Sparrows nest from late April to mid-August with the peak in May-June. It sometimes raises two broods per year. Vesper Sparrows eat both seeds and insects and can live on air-dried seeds without drinking.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Virginia's warbler (<i>Vermivora virginiae</i>)	Breeds in arid montane woodlands, oak thickets, piñon-juniper, coniferous scrub, chaparral. brushy steep mountain slopes within or near dry coniferous woodlands. In northern part of breeding range, generally use scrubby habitat below pine woodlands. Also found along mountain streams in sagebrush, or cottonwood and willow habitat at 1,800-2,800 m (5,900 to 9,186 ft).	Nests on ground among dead leaves, or in small depression under cover of bush, tufts of grass, or similar cover. Well-concealed by vegetation, of bark, grasses, roots, mosses, lichens; rim of nest may be level with surface. Clutch size 3-5. Young cared for by both parents. Young fed on caterpillars and are in nest when larvae most abundant. Males territorial on breeding grounds, but will tolerate other closely related warblers. Females territorial around nest. Territories often, but not always, bordered by natural edges such as canyon walls or thick forest. Migrates later than other warblers, arriving in NV in late April/May. Possibly disperse to lower elevations after breeding and before migration. Fall migration from mid-August, occur in mixed species flocks after breeding season. Feeds mainly on insects.
Williamson's sapsucker (<i>Sphyrapicus thyroideus</i>)	Found mainly in high elevation forests and along riparian areas with old-growth trees. Prefers aspen stands for nesting.	Clutch size is 3-7 (usually 5-6). Incubation, by both sexes, lasts 12-14 days. Young are tended by both adults; leave nest cavity about 28-35 days after hatching. Reported territory sizes vary from 4 hectares to 6-7 hectares. Home ranges reported to average 6.75 hectares in Colorado, range 4 to 9 hectares. Drills holes in trees and consumes sap, cambium and insects. Ants may comprise 86% of its animal food; also eats wood-boring larvae, moths of spruce budworms, etc.
Yellow warbler (<i>Dendroica petechia</i>)	Occurs in riparian areas including desert washes, montane rivers and creeks, and lower elevation cottonwood and willow-lined streams.	Nests in upright fork or crotch of bush (e.g., willow), sapling, or large tree, from less than a meter above ground to high in tall trees. Clutch size is 3-6 (usually 4-5, but mean of 2.5 in southern Florida). Incubation, by female, lasts 11-12 days. Young are tended by both parents, leave nest at 9-12 days. Eats insects (especially caterpillars) and spiders. Takes most food items from leaves or bark; sometimes flycatches; occasionally eats small fruits or probes in flowers.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Reptiles		
Desert horned lizard <i>(Phrynosoma platyrhinos)</i>	Arid regions; sandy flats, alluvial fans, washes, at the edge of dunes. Found in sagebrush habitat as well as creosote bush, greasewood, and cactus deserts.	Buried in soil when inactive. Diet mainly slow terrestrial insects (e.g., ants, beetles). Also eats spiders and some plant material (e.g., wolfberry berries). Sometimes found in same habitat as flat-tailed horned lizard. Density of 5/ha (5/2.5 acres) reported in NV. Eggs laid April-July (apparently mainly early June) in southern NV; clutch size averages about 7. Incubation about 50-60 days. Hatchlings appear mid-July-August. Mature in about 22 months. Duration of seasonal inactive period varies with local climate. Emerges usually in March in southern NV; adults scarce after mid-July. In south may be active on warm nights; in north, generally inactive at night.
Desert iguana <i>(Dipsosaurus dorsalis)</i>	In north, typically in creosote bush desert with hummocks of loose sand and patches of firm ground with scattered rocks. Northern limit appears to coincide with that of creosote bush. From below sea level in desert sinks to about 1,500 m (5,000 foot).	Feeds mainly on vegetable matter (e.g., leaves, buds, flowers) but also eats insects, carrion, and its own fecal pellets. Lizards are inactive during cold weather. This species is more tolerant of high temperatures than other lizards; it remains active on hot, sunny days. Remains close to hatching site (usually within 40 m (130 foot) after 3 years). Mates April to May. Lays clutch of 3-8 eggs June-August. In CA, reaches reproductive size in 31-33 months, other estimates higher. Annual survivorship high.
Desert night lizard <i>(Xantusia vigilis)</i>	Arid and semiarid granite outcrops and rocky areas, among fallen leaves and trunks of yuccas, agaves, Joshua trees. Ranges locally into piñon-juniper and chaparral-oak. Found among rocks or under vegetative debris.	Considered an abundant species throughout most of its range. Breeding occurs May to June. Female gives birth to 1-3 young/brood during August-October. Inactive in cold temperatures and extreme heat. May be active at night during the summer.
Gilbert's skink <i>(Eumeces gilberti)</i>	Habitat associations in NV appear to deviate from those described elsewhere in the species' range. Specimens in NV have been encountered in sagebrush with widely scattered junipers, the blackbrush/ sagebrush ecotone, and creosote bush; all have been encountered far from permanent water.	Lays a clutch of 3-9 eggs during the summer. Eats insects and spiders. Inactive in cold temperatures and extreme heat. In some areas, declines likely have occurred as a result of habitat destruction associated with residential and commercial development. However, the species remains fairly common in many areas.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Great Basin collared lizard (<i>Crotaphytus bicinctores</i>)	Occurs mainly in xeric, sparsely vegetated rocky areas; sometimes in adjacent areas lacking much rock; perches atop rocks; hides under rocks or in rodent burrows. Sea level to about 2,280 m (7,500 ft).	Clutch size 3-8. Deposits eggs in sandy soil, rodent burrows, or under rocks. Mainly feeds on arthropods and other reptiles (lizards), but is also known to eat small amounts of flowers and leaves. Inactive during cold winter weather; duration of inactive period varies with local climate. Activity begins as early as March in AZ.
Greater short-horned lizard (<i>Phrynosoma hernandesi</i>)	Frequents a variety of habitats including sagebrush, mountain brush, open piñon-juniper, pine-spruce, and spruce-fir forests. The ground may be stony, sandy, or firm, but usually some fine loose soil is present. More cold tolerant than other horned lizards.	Live-bearing, 5-36 young born July-Sept. Eats insects, including ants, spiders, and snails. The range limit in northern NV has not been precisely determined. An isolated population reported at Wadsworth.
Long-nosed leopard lizard (<i>Gambelia wislizenii</i>)	Desert and semi-desert areas with scattered shrubs or other low plants, especially areas with abundant rodent burrows. Ground dwelling but sometimes climbs into bushes.	When inactive, occupies burrows. Eggs laid in underground burrows, sometimes in same area in successive years. Lays clutch of 1-11 eggs, mainly late May-early July in different areas. Second clutch may be laid in south. Eggs hatch in 5-7 weeks. Population density in NV was about 5/ha (5/2.5 acres). Not active in cold weather; active mainly May-August in north, late March or early April through late August-late October in south. Eats insects, spiders, lizards, small rodents, and some plant material, especially wolfberry fruits.
Long-tailed brush lizard (<i>Urosaurus graciosus</i>)	Frequents areas of loose sand and scattered bushes and trees, creosote bush, burrowbush, galleta grass, catclaw, mesquite and paloverde. Usually on branches of trees and shrubs. May dig into sand or use burrows at night.	Eats insects (beetles, ants, bees, hemipterans, etc.), spiders, and some plant material. Mates during the spring. Lays 1 (perhaps 2) clutches of 2-10 eggs May-August. Inactive in cold temperatures and extreme heat. Some habitat has been lost or degraded as a result of human activities (e.g., urbanization, off-road vehicle use), but in some areas these lizards have colonized and established populations in planted trees.
Sonoran lyre snake (<i>Trimorphodon biscutatus</i>)	Primarily found in rocky areas of lowlands, mesas, and lower mountain slopes; desert grassland, desert scrub, chaparral, piñon-juniper and oak woodland, open coniferous forest, thorn-scrub, and thorn-forest.	Burrows in or uses soil, fallen log/debris. Found in crevices during the day. Eats mainly lizards, sometimes snakes and small mammals, including bats. Primarily nocturnal, it is seldom active during the day. Easily alarmed, the lyre snake will raise its body off the ground, shake its tail, hiss, and strike and bite the intruder if not left alone. This behavior, along with the body pattern, triangular head, and elliptical pupils, sometimes causes the lyre snake to be mistaken for a rattlesnake. As many as 20 eggs are laid during the summer.

Table F3.6-2 Habitat Requirements and Life History of Species of Management Concern Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History
Western banded gecko (<i>Coleonyx variegates</i>)	Creosote bush and sagebrush desert, piñon-juniper belt, catclaw-cedar-grama grass association in the eastern part of range, chaparral areas in West. Prefers rocky areas and barren dunes.	Under cover or underground when inactive. Nocturnal; most active just after dark, with activity declining gradually until ceasing at dawn. Inactive in cold temperatures and hot, dry weather. In southern California, active at air temperatures as low as 15 C, though females not found active below 22 C; males extended activity later into the night than did females, which were not found active more than 2.5 hours after sunset during April-June.

Table F3.6-3

Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area

Species	Habitat Requirements	Life History/Feeding
Mammals		
Pallid Bat (<i>Antrozous pallidus</i>)	Habitat consists of arid deserts and grasslands, often near rocky outcrops and water. Less abundant in evergreen and mixed conifer woodland. Usually roosts in rock crevices or buildings, less often in cave, tree hollow, mine, etc. Night roosts typically in caves, buildings, under rock overhangs, and under bridges. Prefers narrow crevices in caves as hibernation sites. Maternity colonies usually in rock crevices or buildings.	Primary diet is arthropods. A gregarious species; usually forms clusters in diurnal roosts and may also gather in night roosts that are frequently near, but separate from day roosts. Little migratory information is available, but appears to be relatively sedentary and probably does not move far between summer and winter roosts. Generally faithful to particular night roosts both within and between years. Breeds October through December.
Ringtail (<i>Bassariscus astutus</i>)	Typically found in rocky areas with cliffs or crevices within desert scrub, chaparral, pine-oak, and conifer woodlands. Usually found within 0.5 mile of water. Dens are typically found in rock shelters, tree hollows, under tree roots, burrows dug by other animals, buildings, or under brush piles.	Omnivorous, but prefers animal matter. Principal foods are arthropods, small mammals, and fruits; proportions vary seasonally. Also eats various birds, reptiles, and amphibians. Primarily nocturnal, though sometimes crepuscular. Active throughout the year. Breeds February-May.
Pygmy Rabbit (<i>Brachylagus idahoensis</i>)	Typically found in dense stands of big sagebrush growing in deep loose soils.	Big sagebrush is the primary food source, but grasses and forbs are consumed in mid- to late summer. Digs burrows 3 inches in diameter; burrow may have 3 or more entrances. Active throughout the year at any time of day or night, but generally crepuscular. Breeding period extends from spring to early summer.
Pacific Western (Townsend's) Big-Eared Bat (<i>Corynorhinus townsendii</i>)	Highly associated with mines and caves. Occasionally uses trees and buildings, but these roosts must have cave-like spaces in order to be suitable. Will night roost in more open settings, including under bridges. In northern Nevada, studies have shown over 95 percent of foraging activity to be concentrated in open forest habitats of pinyon and juniper.	Foraging for small moths occurs near vegetation and other surfaces where prey is gleaned. Roosts in colonies typically 20 to 200 individuals, although males are often observed singly. Hibernates in mines and caves, often singly or in small clusters in the open where they can take advantage of the coldest air making them highly susceptible to disturbance during winter. Maternity colonies are very sensitive to disturbance and will readily abandon a roost and their young.
Big Brown Bat (<i>Eptesicus fuscus</i>)	Various wooded and semi-open habitats, including cities. Much more abundant in regions dominated by deciduous forest than in coniferous forest areas. Summer roosts generally are in buildings; also hollow trees, rock crevices, tunnels, and cliff swallow nests. Maternity colonies form in attics, barns, and occasionally tree cavities. Caves, mines and especially buildings and man-made structures are used for hibernation.	Dependent upon flying insects; small beetles are the most common prey in many areas. Forages over land or water, clearings and lake edges; may forage around lights in rural areas. Most females return to same maternity roost site in successive years. Nursery colonies and winter colonies rarely number more than a few hundred. Fairly sedentary; probably remain within 31 miles of birthplace. Rarely moves more than 50 miles between summer and winter roosts.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Spotted Bat (<i>Euderma maculatum</i>)	Distribution is patchy and linked to the availability of cliff roosting habitat. Primarily roosts in crevices in cliff faces but there is some indication that mines and caves may be occasionally used. Have been found roosting on or in buildings. Hibernacula characteristics are completely unknown for this species in Nevada.	Food items include a variety of insects but predominantly consist of moths. Foraging occurs in canyons, in the open, over riparian vegetation, over meadows, along forest edges, or in open coniferous woodland. Species is a year round resident that hibernates during the winter but periodically arouses to forage and drink. Tend to roost singly or in small clusters.
Allen's Big-Eared Bat (<i>Idionycteris phyllotis</i>)	Prefers to roost in large dead snags in Nevada, although in Arizona, there is significant use of mines. Generally occupy high elevation pine and oak woodlands but also use a variety of riparian woodlands across a wide elevation gradient. In the winter, generally found at lower elevations in creosote bush and pinyon-juniper habitats.	Food items include a variety of insects but predominantly consist of moths. Probably a year round resident that hibernates but periodically arouses to actively forage and drink in the winter.
Silver-Haired Bat (<i>Lasiorycteris noctivagans</i>)	Prefers forested (frequently coniferous) areas adjacent to lakes, ponds, and streams.	Forages for small to medium-sized flying insects over small water bodies within forested areas. Breeds in late September. Usually roosts singly, but occasionally in groups of up to 3 to 6. Summer roosts and nursery sites are in tree foliage, cavities, or under loose bark, sometimes in buildings. Winter roosts are frequently in mines, caves, under loose bark, in rock crevices, and in houses. Occurs year-round throughout most of its range though some migration does occur as there is a southward range shift in the autumn and a northward range shift in the spring.
Western Red Bat (<i>Lasiurus blossevillii</i>)	Primarily found in forested habitats, including mesquite bosque and cottonwood/willow riparian areas. Roosts singly in tree foliage and possibly in leaf litter on the ground.	Food items consist of a wide variety of insects, taken opportunistically based on size rather than type. Generally forage high above the tree canopy, often making capture and detection of this species very challenging. Previously thought to be a migrant only, recent studies have indicated that it may be a summer resident in the Fallon and Muddy River areas. Probably migrates from Nevada in the winter.
Hoary Bat (<i>Lasiurus cinereus</i>)	Tree-associated species. Found primarily in forested upland habitats, as well as in gallery forest riparian zones (e.g., in cottonwoods along the Colorado River drainage), and agricultural habitats. Also found in valley basins in pure stands of Rocky Mountain juniper. May occur in park and garden settings in urban areas. Day roosts in trees, within foliage 10 to 39 feet above the ground in both coniferous and deciduous trees. Some unusual roosting situations have been reported in caves, beneath a rock ledge, in a woodpecker hole, and in a squirrel's nest.	Food items include a variety of insects but moths, dragonflies and beetles are most prominent. Foraging is generally high altitude and occurs over tree canopy. Will follow watercourses for foraging and drinking. Forages over long distances, up to 25 miles from its roost. Individuals roost singly; colonies are not formed.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Desert Valley Kangaroo Mouse (<i>Microdipodops megacephalus albiventer</i>) Subspecies of Dark Kangaroo Mouse	In loose sands and gravel. Found in Shadscale Scrub, Sagebrush Scrub, and Alkali Sink plant communities in the Upper Sonoran life zone. May occur in sand dunes near margins of range.	Seeds are the primary food source. Also eats some insects. Does not appear to utilize free water. Believed to store food in seed caches within burrow system. Activity observed March-October. Underground when inactive. Majority of young are born in May and June.
Pahrnagat Valley Montane Vole (<i>Microtus montanus fucosus</i>)	Wet meadows, cropland, especially fields and pastures of grass and legumes along fence rows; grassy areas by streams and lakes.	Eats greases and sedges; leaves, stems, and roots of a wide variety of forbs. Occupies shallow burrows and surface runways. Active throughout the year. Breeds April-October, usually 2 to 3 litters per year.
California Myotis (<i>Myotis californicus</i>)	Western lowlands; sea coast to desert, oak-juniper, canyons, riparian woodlands, desert scrub, and grasslands. Maternity colonies are often in rock crevices, under bark or under eaves of buildings. Often uses man-made structures for night roosts. Uses various kinds of crevices, including those in buildings, for summer day roosts. May roost also on small desert shrubs or on the ground. Hibernates in caves, mines, tunnels, or buildings.	Insectivorous. Forages along margins of tree clumps, around edge of tree canopy, over water, and well above ground in open country. Females give birth to single young in late May to mid-June. Maternity colonies are usually small, up to about 25 individuals.
Western Small-Footed Myotis (<i>Myotis ciliolabrum</i>)	Uses mines, caves, buildings, rock crevices, hollow trees, and exfoliating barks for crevice roosting. It is found in a variety of habitats including desert scrub, grasslands, sagebrush steppe, blackbrush, greasewood, pinyon-juniper woodlands, pine-fir forests, agriculture, and urban areas.	Forages for small moths, flies, ants, and beetles in open areas. Hibernates individually or in large colonies, and in some areas may tolerate drier and colder hibernacula than some other species.
Long-Eared Myotis (<i>Myotis evotis</i>)	Mostly forested areas, especially those with broken rock outcrops, shrublands, over meadows near tall trees, along wooded streams, and over reservoirs. Often roosts in buildings, also in hollow trees, mines, caves, fissures, etc. Day roosts are frequently in abandoned buildings, hollow trees, behind loose bark, among timbers of unused railroad trestles, caves and mines, fissures of cliffs, and sink holes.	Insectivorous. Usually feeds by picking prey from surface of foliage, tree trunks, rocks, or ground. Also forages over water or among trees. Small maternity colonies of 12 to 30 individuals have been found in buildings and in crevices in small basalt rock formations. Young are born June-July.
Little Brown Bat (<i>Myotis lucifugus</i>)	Day roosts in hollow trees, rock outcrops, buildings, and occasionally mines and caves. Night roosts may be the same structures as the day roost but locations nearest the entrance are preferred. One of the species most commonly found in human structures. This species is known to hibernate in mines or caves, although no hibernacula in Nevada has ever been found.	Feeds heavily on small aquatic insects, including mosquitoes. Forages in open areas, along water margins, and sometimes about 3 feet above the water surface. Form large maternity colonies, although in the west, colony sizes seem to be much smaller than those found in the eastern U.S.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Fringed Myotis (<i>Myotis thysanodes</i>)	Have been found day and night roosting in mines, caves, trees, and buildings. Found in a wide range of habitats from low desert scrub to high elevation coniferous forests.	Food items vary but there appears to be a selection for small beetles. Foraging occurs in and among vegetation, with some gleaning activity. Hibernates in mines and caves, but is capable of periodic winter activity. Maternity colonies of females and their young can number into the hundreds whereas males often roost singly or in small groups.
Yuma Myotis (<i>Myotis yumanensis</i>)	More closely associated with water than most other North American bats. Found in a wide variety of upland and lowland habitats, including riparian, desert scrub, moist woodlands and forests, but usually found near open water. Availability of day roosts may be a limiting factor in some areas. Females form maternity colonies in buildings, caves and mines, and under bridges.	Insectivorous. Small moths are believed to be the primary food source with dipterans and ground beetles being the other common prey items. Often feeds over ponds and streams, flying just above the water surface. Females form maternity colonies in April. Single young born late May-July. Are considered to be non-migratory; however, the locations of winter roost sites are unknown.
Big Free-Tailed Bat (<i>Nyctinomops macrotis</i>)	Associated primarily with very rocky country in arroyo, scrub desert, and riparian habitats. Primarily roosts in groups of less than 100 individuals in crevices in cliff faces, although this species is occasionally found in buildings and caves.	Foraging for a variety of insects, including moths, occurs in the open and ranges to high altitudes. Mainly transient visitors in Nevada although it is possible that this species summers here. Acoustic records in the Muddy River area show relatively large numbers of bats September through October.
Western Pipistrelle (<i>Pipistrellus hesperus</i>)	Deserts and lowlands, desert mountain ranges, desert scrub flats, and rocky canyons. Day and night roosts include rock crevices, under rocks, burrows and sometimes buildings or mines. May hibernate in caves, mines, or rock crevices.	Forages along short circuits 7 to 49 feet above the ground for small insects; especially those in swarms. Typically visits water and drinks immediately after emergence each evening. Maternity colonies comprise no more than a dozen individuals and births may occur solitarily. Young are born June and July.
Desert Bighorn Sheep (<i>Ovis canadensis nelsoni</i>)	Occurs in open rocky areas of desert mountain ranges in the southwestern U.S. and northern Mexico.	Opportunistic feeders, eating a variety of plant material, including cacti. Obtain a great deal of moisture from the foods they eat and can live long periods without drinking water. However, individuals may be dependent on access to free water during the summer. Access to a mineral lick may be important, especially in spring. Primarily active during the day, with peak activity periods occurring during the early morning and late evening hours. Peak breeding occurs November-December. Lambing generally peaks in March.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Brazilian Free-Tailed Bat (<i>Tadarida brasiliensis</i>)	Roosts primarily in buildings (generally old structures) and caves. May use rock crevices, bridges, signs, or cliff swallow nests as roosts during migration.	Opportunistic insectivore. Often preys on densely swarming insects. May fly considerable distances (often 31 miles) or more) to favorite feeding areas. Breeds late February-March or early April in North America. If a nursery fall below about 20,000 females it is usually abandoned. In Texas and Great Plains through southwestern U.S., most migrate to Mexico or to southwestern U.S. usually toward the end of October and return in March. Generally roosts high (at least 10 feet) above the ground to allow free fall required to attain flight. Tend to return to natal cave to breed.
Birds		
Northern Goshawk (<i>Accipiter gentilis</i>)	Forages in both heavily forested and relatively open habitats. In Nevada, forages in open sagebrush (<i>Artemisia</i> spp.) adjacent to riparian aspen stands. Nests in a wide variety of forest types; aspens a key feature in most of Nevada, though in the Sierra Mountains. will use conifers. Typically nests in mature or old-growth forests and generally selects larger tracts of forest over smaller tracts. Habitat requirements during winter are poorly understood. Home range is 570 – 3,500 ha (1,400 – 8,700 ac).	Nests are generally constructed in the largest trees of dense, old or mature stands with high canopy closure (60 to 95 percent) and sparse groundcover, near the bottom of moderate slopes, and near water or dry openings. Generally a permanent resident or conducts only short-distance movements over most of range. Fall migration appears to be influenced by prey availability.
Golden Eagle (<i>Aquila chrysaetos</i>)	Generally open country, in prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions. Home range is variable by location, prey density, and season, but typical home range of approximately 250km ² / pair (60,000 ac / pair) is utilized during the breeding season; and individuals may defend a territory of 20 – 35 km ² (5,000 – 8,600 ac) or more.	Feeds primarily on small mammals (e.g., rabbits, marmots, ground squirrels). May also eat insects, snakes, birds, juvenile ungulates, and carrion. Hunts while soaring or from perch. Nests on rock ledge of cliff or in large trees. Pair may have several alternate nests; may use same nest in consecutive years or shift to alternate nest used in different years. Golden eagles begin nesting in late January (Herron et al 1985) through August with peak activity in March through July (Polite and Pratt 1999). Eggs generally laid late-February – March. Semi-migrant. Some northernmost populations withdraw southward for winter, but some individuals may remain. Tend to vacate hot deserts during the summer.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Short-Eared Owl (<i>Asio flammeus</i>)	Breeding habitat includes broad expanses of open land with low vegetation for nesting and foraging. Habitat types frequently noted as suitable include fresh and saltwater marshes, grassy plains, old fields, river valleys, meadows, and open woodland. Winter roosts have been reported in abandoned dumps, quarries, gravel pits, storage yards, stump piles, old fields, small evergreen groves, and open, abandoned cellars. The home range for this species is poorly known for western populations, but could possibly be as large as 200 ha (500 ac).	Eats mainly rodents (commonly <i>Microtus</i>), small birds, and insects. Sometimes caches food. In areas with abundant food resources, owls may breed in large numbers and produce super-normal clutches. Nests on ground, generally in slight depression, often beside or beneath a bush or clump of grass. Same nest site may be used in successive years. Tend to congregate and roost communally in the winter, often in sheltered sites near hunting areas. May roost directly on the ground in tall grasses, possibly choosing vegetation of a coloration that blends with their plumage.
Long-Eared Owl (<i>Asio otus</i>)	Deciduous and evergreen forests, orchards, wooded parks, farm woodlots, riparian woodlands, desert oases. Wooded areas with dense vegetation needed for roosting and nesting. Open areas required for hunting. Home ranges vary from 34 – 106 ha.	Opportunistically feeds on available small mammals. Primary prey includes <i>Microtus</i> , <i>Peromyscus</i> , and <i>Perognathus</i> . Typically forages in open grassy areas, but may forage in forests in some areas. Nests mainly mid-March to mid-May. High rodent numbers are essential for nesting success. Nests in trees usually in old nest of crow, squirrel, hawk, magpie, or heron; sometimes in tree cavity; rarely on ground. Commonly nests in same site in successive years. Migratory in most of Canada and north-central U.S.
Western Burrowing Owl (<i>Athene cunicularia</i>)	Optimum habitat is defined by short vegetation and presence of fresh small mammal burrows. Found in open grasslands, sagebrush, and sagebrush-steppe, sometimes in open areas such as vacant lots near human habitation. Home range is 50 – 500 ha (120 – 1,200 ac), but most activity occurs within 600 m (2,000 ft) of burrow.	Concentrate nocturnal foraging efforts in areas with high small mammal abundance (e.g., deer mice and meadow voles), which account for the bulk of their caloric intake. Diurnal foraging chiefly for invertebrates is concentrated in the vicinity of the nest burrow. Spends much time on the ground or on low perches such as fence posts or dirt mounds. Nests and roosts in abandoned burrows dug by mammals (especially ground squirrel, badger, fox) and tortoises. Rarely excavates own burrow, preferring to enlarge or modify existing burrow. Uses satellite burrows around nest burrows, moving chicks at 10 to 14 days, presumably to reduce risk of predation.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Ferruginous Hawk <i>(Buteo regalis)</i>	Open country, sagebrush, saltbush-greasewood shrubland, periphery of pinyon-juniper woodlands, and desert scrub. Home range is 590 – 760 ha (1,450 – 1,900 ac).	Mammals are the primary prey during the breeding season, although birds, amphibians, reptiles, and insects also are taken. Primary prey in western shrub-steppe is jackrabbits, followed by ground squirrels and pocket gophers. Nests primarily in live Utah juniper trees. Some nesting found also on pillar rock outcrops, tall trees, willows, steep slopes, river-cut banks, hillsides, on power line towers, sometimes on sloped ground on the plains or on mounds in open desert. Generally avoids areas of intensive agriculture or human activity. Occupy breeding areas from late February to early October. Long or peripheral trees are preferred over densely wooded areas as nesting sites. Tree-nesting hawks seem to be less sensitive to surrounding land use, but they still avoid areas of intensive agriculture or high human disturbance.
Swainson's Hawk <i>(Buteo swainsoni)</i>	Savannah, open pine-oak woodlands and cultivated lands (e.g., alfalfa and other hay crops, grain and row croplands) with scattered trees. Tolerates extensive cultivation in nesting areas. Also found in grasslands and other open country. Home range is 70 – 8,700 ha (170 – 21,500 ac).	Vertebrates (mainly mammals) dominate the diet during the breeding season; invertebrates (especially crickets and grasshoppers) are common food at other times and sometimes for non-breeders in summer. Hunts while soaring or from perch. Migrants may roost at night on ground in very large fields. Nests typically in solitary tree, bush, or small grove; may nest in old-black-billed magpie nests; sometimes on rock ledges. Nests in trees in shelterbelts and similar situations produced by humans and in junipers not near riparian zones. In some areas may compete with ferruginous hawks or be limited by presence of and predation by great horned owls.
Greater Sage-Grouse <i>(Centrocercus urophasianus)</i>	Foothills, plains, and mountain slopes where sagebrush is present. Mixture of sagebrush, meadows with wet areas in close proximity. Use a wide variety of sagebrush mosaic habitats.	Social species in which males and females can flock separately. In March and April males perform elaborate mating displays at lek sites adjacent to suitable nesting and brood-rearing habitat. Nests on ground under thick sagebrush cover. In summer feeds on fruiting heads of sagebrush, a variety of other plants, and insects. In winter feeds almost exclusively on sagebrush leaves. Some populations migrate short distances seasonally, but some populations are non-migratory.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Western Snowy Plover (<i>Charadrius alexandrinus nivosus</i>)	Beaches, dry mud or salt flats, sandy shores of rivers, lakes, and ponds.	Eats insects, small crustaceans and other small invertebrates. Picks food items from substrate, probes in sand or mud in or near shallow water, sometimes uses foot to stir up prey in shallow water. Nests on the ground where vegetation is sparse or absent (small clumps of vegetation are used for cover by chicks); nests beside or under object or in open. In northern Utah, usually nested in areas devoid of vegetation and selected brine fly exuviae for a nesting substrate when available. Clutch initiation in northern Utah ranged from mid-April to mid-July. May nest in a loose colony. Usually solitary or in twos during non-breeding, though may form pre-migratory flocks of hundreds in some areas.
Western Yellow-Billed Cuckoo (<i>Coccyzus americanus occidentalis</i>)	Tall cottonwood/willow riparian woodlands. May also occur in deciduous woodlands, moist thickets, orchards, overgrown pastures. Requires patches of at least 25 acres of dense riparian forest with a canopy cover of at least 50 percent in both the understory and overstory.	Nests in tree, shrub, or vine, an average of 3 to 10 feet above ground. Eats mainly caterpillars; also other insects, some fruits, sometimes small lizards and frogs and bird eggs. Gleans food from branches or foliage, or sallies from a perch to catch prey on the wing. Individuals can make long dispersal flights, apparently exploring for habitable sites.
Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>)	Thickets, scrubby and brushy areas, open second growth, and open [riparian] woodlands. Occurs primarily in marshy thickets, especially of willow, tamarisk, vines, or other plants where vegetation is 13 to 23 feet or more in height. Habitat patches as small as 1.25 acres can support one or 2 nesting pairs.	Eats mainly insects caught in flight, sometimes gleans insects from foliage; occasionally eats berries. In breeding range, forages within and occasionally above dense riparian vegetation. Nests in fork or on horizontal limb of small tree, shrub, or vine at height of 2 to 21 feet, with dense vegetation above and around the nest. Nesting occurs usually from early June through the end of July. Typically raises one brood per year. May incur a high rate of cowbird parasitism. Spring migration peaks in mid-May; fall migration extends from mid-August to early September.
Peregrine Falcon (<i>Falco peregrinus</i>)	Various open situations including steppe, open water, desert shrub, especially where there are suitable nesting cliffs, to mountains, open forested regions, and human population centers. When not breeding, occurs in areas where prey concentrate, including farmlands, marshes, lake shores, rivers, broad river valleys, cities, and airports. Home range is typically 300 – 1,500 km ² (75,000 – 375,000 ac) but varies greatly with prey abundance. This species typically forages approximately 10 km (6 mi) from the nest site.	Feeds primarily on birds (medium-size passerines up to small waterfowl); rarely or locally, small mammals (e.g., bats), lizards, fishes, and insects (by young birds) may be taken. Prey pursuit initiated from perch or while soaring. May hunt up to several km from nest site. Often nests on ledge or hole on face of rocky cliff or crag. River banks, large stick nests of other bird species, tree hollows, and man-made structures (e.g., ledges of city buildings) are used locally. Nests typically are situated on ledges of vertical rocky cliffs, commonly with a sheltering overhang. Arrives in northern breeding areas late April to early May; departure begins late August to early September.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Prairie Falcon (<i>Falco mexicanus</i>)	Primarily open situations, especially in mountainous areas, steppe, plains or prairies. Typically nests in pot hole or well-sheltered ledge on rocky cliff or steep earth embankment, 30 to more than 300 feet above base. During winter, utilizes dryland wheat fields, irrigated winter wheat and other croplands for foraging. Home range is 5,000 – 7,500 ha (12,400 – 18,500 ac) or more.	Primarily feeds opportunistically on mammals (especially ground squirrels), lizards, and birds, generally up to size of quail and rabbits. In winter, often takes horned larks on fields of winter wheat. Young may take large insects. May cache prey in vegetation, on ledge, or in small crevice or cavity. Egg laying typically occurs March-April. High fidelity to breeding territories. Defend relatively small areas around the nest sites. These may extend 900 to 1,200 feet around the typical cliff nest and about 100 meters above the site.
Common Yellowthroat (<i>Geothlypis trichas</i>)	Marshes (especially cattail), thickets near water, bogs, brushy pastures, old fields, and locally, undergrowth of humid forest. In migration and winter, also inhabit brushy and shrubby areas in both moist and arid regions.	Eats various small invertebrates (primarily insects and spiders) obtained among low growing plants. Nests just above ground or over water, in weeds, reeds, cattails, tules, grass tussocks, brier bushes, and similar situations. Nests often at base of shrub or sapling, sometimes higher in weeds or shrubs up to about 3 feet. Breeding generally March-April.
Pinyon Jay (<i>Gymnorhinus cyanocephalus</i>)	Pinyon-juniper woodland, less frequently pine; in non-breeding season also occurs in oakbrush and sagebrush.	Eats pinyon and other pine seeds, berries, small seeds, and grain. Also eats insects. May eat bird eggs and hatchlings. Communally caches large numbers of seeds. Non-migratory, but may wander long distances in search of food when seed crop is low. Flocks may move attitudinally in search of food. Nests in shrubs or trees (e.g., pine, oak, or juniper), about 5 to 29 feet above the ground. Nests when and where adequate numbers of pine seeds are available. Complex social organization with adults remaining paired throughout the year
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Nests on cliffs and rock pinnacles as well as trees including pines, spruces, firs, and cottonwoods typically near water. Preferentially roosts in conifers or other sheltered sites in winter. Will use deciduous trees where conifers are not available. The home range during the breeding season is 5-20 km ² (1,200 – 4,800 ac) and approximately 300 km ² (74,000 ac) in winter. The typical territory size is 1 – 2 km ² (250 – 500 ac).	Feeds opportunistically on fishes, injured waterfowl, various mammals, and carrion. Hunts live prey, scavenges, and pirates food from other birds. Breeding habitat most commonly includes areas close to rivers, lakes, or other bodies of water that reflect the general availability of primary food sources including fish and waterfowl. Same nest may be used year after year, or may alternate between two nest sites in successive years. Winter roost sites vary in their proximity to food resources (up to 20.5 miles) and may be determined to some extent by a preference for a warmer microclimate at these sites. In winter, may associate with waterfowl concentrations or congregate in areas with abundant dead fish.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Breeds in open country with scattered trees and shrubs, savanna, desert scrub, and open woodlands. Often perches on poles, wires, or fence posts. Suitable hunting perches are an important part of the habitat.	Feeds primarily on large insects (especially beetles and orthopterans), small birds, lizards, frogs, and rodents. Diet varies with season and location. Captures prey usually via a short flight from a perch, often hovers kestrel-like or walks when foraging. Sometimes impales food items on a plant thorn or on barbed wire; such items may be eaten later or fed to young. Males and females defend separate territories during the non-breeding season.
Lewis's Woodpecker (<i>Melanerpes lewis</i>)	Important habitat features include an open tree canopy, a brush understory with ground cover, dead trees for nest cavities, dead or downed woody debris, perching sites, and abundant insects. Uses open ponderosa pine forests, open riparian woodlands dominated by cottonwood and logged or burned pine. Also uses orchards, pinyon-juniper woodlands, other open coniferous forests, and agricultural lands. Apparently prefers open ponderosa pine at high elevations and open riparian forests at lower elevations.	Tends to nest in natural cavities, abandoned northern flicker holes, or previously used cavities. Mated pairs may return to the same nest sites in successive years. Territorial in immediate space around nest sites, however, may nest semi-gregariously where several nest cavities are close together. In late summer, wandering flocks move from valleys into mountains or from breeding habitat to orchards. Nomadic flocks have been observed in fall and winter. Aggressively defend food caches from all comers. Feeds on adult emergent insects (e.g., ants, beetles, flies, grasshoppers, tent caterpillars, mayflies) in summer and ripe fruit and nuts in fall and winter.
Long-Billed Curlew (<i>Numenius americanus</i>)	Breeds in grassy meadows, generally near water.	Fairly opportunistic. Feeds on various insects (grasshoppers, beetles, caterpillars, etc.). Eats some berries. During migration also feeds on crayfish, crabs, snails, and toads. Grasshoppers and carabid beetles are dominant in the chick diet in Idaho. May obtain insect larvae by probing into loose soil. Nests on ground usually in flat area with short grass, sometimes on more irregular terrain, often near rock or other conspicuous object. In northern Utah, nests tended to be in small patches of short vegetation near barren ground. Occupy breeding areas in Nevada and Utah from April to early August. Non-breeding areas are located in coastal California and through Mexico.
Flammulated Owl (<i>Otus flammeolus</i>)	Breeding habitat is montane forests, usually open conifer forests containing pine, with some brush or saplings. Shows a strong preference for ponderosa and Jeffrey pines throughout its range. Home range is 3 – 16 ha (7 – 40 ac).	Mainly hunts at dawn and dusk and feeds on various insects (e.g., moths, beetles, grasshoppers, crickets, caterpillars). Nearctic migrant and arrives in North America mostly in late-April and early May. Departs by the end of October. Most often nests in an abandoned tree cavity made by pileated woodpecker, flicker, sapsucker or other large primary cavity nester at heights from 3 to 52 feet. Uses dead, large-diameter pine, Douglas-fir or aspen tree; occasionally uses natural cavity or nest box. Adults tend to maintain pair-bonds between years and utilize the nest sites in successive years. Breeds May-October

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Yuma Clapper Rail (<i>Rallus longirostris yumanensis</i>)	Freshwater marshes containing dense stands of cattails and bulrushes. Prefers mature stands along margins of shallow ponds with stable water levels. Generally in freshwater and alkali marshes dominated by stands of emergent vegetation interspersed with areas of open water and drier, upland benches.	Eats crayfish, small fishes, clams, isopods, and various insects. Probes in mud or sand near shallow water or picks items off substrate. Nests on dry hummocks or in small shrubs among dense cattails or bulrushes along the edges of shallow ponds in freshwater marshes with stable water levels.
LeConte's Thrasher (<i>Toxostoma lecontei</i>)	Desert scrub, particularly creosote bush associations, also <i>Atriplex</i> , <i>Opuntia</i> , etc. Nests in cholla cactus, sagebrush, small trees, or shrubs.	Little information is available regarding diet. Probably similar to other thrashers that feed on insects, berries, and seeds. Territories defended most actively from early December to early February. Eggs are laid February-June. Sensitivity to habitat alteration makes this species a good indicator of habitat quality.
Gray Vireo (<i>Vireo vicinor</i>)	Breeds primarily in hot, semi-arid, shrubby habitats, especially mesquite and pinyon-juniper woodlands. In southern Nevada, nests in pinyon, juniper and sagebrush with interspersed mountain mahogany, Gambel oak, Mexican Manzanita, squaw apple, and cliffrose.	When breeding, feeds on insects (Orthoptera, Coleoptera). Arrives in nesting areas in March-April. Builds cup nest suspended from forked twig in a shrub or tree 1.6 to 6.6 feet tall; nests usually 1.6 to 11.5 feet above the ground.
Reptiles		
Desert Tortoise (Mojave Desert Pop.) (<i>Gopherus agassizii</i>)	Inhabits warm upland plateaus and mountain slopes in deserts west of the Continental Divide and north of Baja California. In the Mojave Desert, occurrences typically are between 1,000 to 4,000 feet elevation. A completely terrestrial desert species, requiring firm, but not hard, ground for construction burrows in banks of washes or compacted sand; and adequate ground moisture for survival of eggs and young. Creosote bush is often present in its habitat.	Predominantly herbivorous and semi-fossorial. Feeds predominantly on forbs, grass and cacti. Frequents desert oases, riverbanks, washes, dunes, and occasionally rocky slopes. Burrows may be occupied by one-to-many individuals. Short tunnels afford temporary shelter, longer tunnels (dens) are used for estivation and hibernation.
Banded Gila Monster (<i>Heloderma suspectum cinctum</i>)	Inhabits shrubby, grassy, and succulent desert, occasionally enters oak woodlands. Frequents the lower slopes of mountains and nearby plains, found in canyon bottoms or arroyos with permanent or intermittent streams where it digs burrows or uses those of other animals. Seems to prefer rocky areas with scattered bushes.	Eats small mammals, lizards, insects, carrion, and eggs of ground-nesting birds and reptiles. Basically solitary but may use communal overwintering sites. Clutch of 1-8 eggs laid July – August. May migrate locally (usually < 0.6 mile) between highland winter retreat and lowland summer habitat. Seeks shelter in mammal burrows, woodrat nests, dense thickets, and under rocks.
Sonoran mountain kingsnake (<i>Lampropeltis pyromelana</i>)	Great Basin populations distributed on mesic mountain ranges separated by xeric valleys. Elevation range from 2,000 to 9,100 feet. Habitat includes riparian canyon bottoms, mountain slopes and hillsides, talus slopes, rock outcrops, and riparian vegetation, steep woody canyons, with abundant rocks, leaf litter and canopy cover, mountain habitats ranging from oak-juniper and pinyon-juniper woodland and chaparral to pine, oak and fir woodlands.	Diurnal. Active from May to October in Utah, presumably hibernating for the remainder of the year. Mating takes place in spring, a clutch of up to 9 eggs is laid. Hatchlings emerge in late summer. A relatively powerful constrictor. Feeds on lizards, rodents, birds, and bats.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
Greater short-horned lizard (<i>Phrynosoma hernandesi</i>)	Inhabits a variety of habitats including sagebrush, mountain brush, open pinyon-juniper, pine-spruce, and spruce-fir forests. Ground may be stony, sandy or firm, but with fine loose soil. Often encountered in open, sunlit areas within mountainous terrain.	A diurnal, cold-tolerant lizard that basks in mid-morning sun. Hibernation occurs during late fall and winter. Mating takes place in spring, a litter of up to 48 young is born in summer. Young are born live in a clear amniotic sac and must break out to survive. Feeds on insects, including ants, spiders, and snails.
Common Chuckwalla (<i>Sauromalus ater</i>)	Occupies rocky desert, lava flows, hillsides, and outcrops.	Browses on a wide variety of leaves, buds, flowers, and fruit. Occasionally eats insects. Basks on rocks during the day. Largest native iguanid in U.S. Inactive in cold temperatures or extreme heat. Takes shelter in rock crevices. Mating occurs May – June. Females may only nest every second year.
Invertebrates		
Aegialian Scarab Beetle (<i>Aegialia knighti</i>)	Site is comprised by typical Mojave Desert vegetation characterized by creosote bush, Mojave yucca, white bur sage, brittlebush, Opuntia cactus, and <i>Atriplex</i> sp.	Known only from low, red sand hills and sand blow-outs in an area of approximately 5 miles ² that extends south of Mormon Mesa ridge and north and east of the Meadow Valley Wash/Weiser Wash/Muddy River drainage system from the Logandale-Overton exchange on I-15 southward approximately 4 miles to Logandale, Nevada.
Mojave Gypsum Bee (<i>Andrena balsamorhizae</i>)	Found in habitats where its host plant, sunray (<i>Enceliopsis argophylla</i>) is found. Sunray is restricted to gypsum soils.	Endemic to Clark County, Nevada and Arizona side of Lake Mead. Feeds on pollen from sunray. Flight period is from March to early May and nests on the ground or in natural cavities.
White River Wood Nymph (<i>Cercyonis pegala pluvialis</i>)	No information available.	Known to occur in White Pine County, NV, in a narrow, marshy area in the channel of the White River. Information on the subspecies was not found, but the species host plants include purpletop (<i>Tridens flavus</i>), <i>Leymus</i> , and other grasses. The species has one flight from late May through October and its larvae hatch and hibernate until spring.
Baking Powder Flat Blue (<i>Euphilotes bernardino minuta</i>)	No information available.	Known only from one small area in the vicinity of Baking Powder Flat in White Pine County, Nevada. Shockley's buckwheat (<i>Erigeron shockleyi shockleyi</i>) is a known host plant and adults also feed on its nectar. Flight period is from February to late August.
White River Valley Skipper (<i>Hesperia uncas grandiosa</i>)	Known habitats include alkaline, saltgrass flats.	Known from White River Valley in White Pine County, Nevada, from Sunnyside north to White River Valley one mile north of the Nye County line and possibly Big Smoky Valley. Threatened by drought, overgrazing, and drawdown of water. Apparent host plant is Mexican rush (<i>Juncus mexicanus</i>). Flight period is from mid June to mid July.

Table F3.6-3 Habitat Requirements and Life History of Special Status Terrestrial Wildlife Species Potentially Occurring Within the Project Study Area (Continued)

Species	Habitat Requirements	Life History/Feeding
MacNeill's Sooty Wing Skipper (<i>Hesperopsis graciellae</i>)	Tangles of quailbrush (<i>Atriplex lentiformis</i>) along flats adjacent to river sources as well as desert washes and alkali flats.	Endemic to a section of the Colorado River from the Arizona-Nevada-Utah border region south to a tiny area in adjacent Baja California, Mexico. Also ranges east along Salt River of Arizona. <i>Atriplex lentiformis</i> is a known host plant. Adults consume nectar of saltcedar, seaside heliotrope, and alfalfa. Adults have 2 flights, April-May and July-October, which actually suggests three broods and have also been observed in March and June.
Nevada admiral (<i>Limentis weidermeyerii nevadae</i>)	Species is found between 4,920 and 9,200 feet in elevation in the Spring Mountains and the Sheep Range. Found in riparian and other areas with poplars, willows, and serviceberry.	Larval host plants are <i>Populus</i> , <i>Salix</i> , and <i>Amelanchier</i> . Flight period is from May to August with peak activity late June to early July.
Mojave Poppy Bee (<i>Perdita meconis</i>)	Host plants are of the genus <i>Arctomecon</i> and <i>Argemone</i> . Host plants are patchily distributed and the bee is not present at most populations of the host plants.	Known to occur in the eastern Mojave Desert from Kelso, California, to near St George Utah. Species of bee belonging to the complex of poppy specialists.
Steptoe Valley Crescentspot (<i>Phyciodes cocyta (pascoensis) arenacolor</i>)	No information available.	Recorded in White Pine County, Nevada; Steptoe Valley, Warm Springs. Known host plant is long-leaved aster (<i>Aster ascendens</i>). Flight period is from early July to mid August.

Sources: BLM (2007); NatureServe (2010, 2011); UDWR (2005); Wildlife Action Plan Team (2006), Warren et al (2010), Austin (1998a, b), Austin and McGuire (1998), Austin and Leary (2008), Opler et al (2010), SAM 2010.

Table F3.6-4

Groundwater Development Areas – Habitat within Areas for Proposed Action

Table F-3.6-4 Groundwater Development Areas- Habitat within Areas for Proposed Action

By Valley	Delamar (acres)		Dry Lake (acres)		Cave (acres)		Spring (acres)		Snake (acres)		Total (acres)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Groundwater Development Area ^a	71,889		168,769		34,787		361,795		92,703		729,943	
Temporary Construction Disturbance	940-2,034		395-834		565-1,623		1,187-2,805		443-969		3,530-8,265	
Permanent Conversion	627-1,356		263-556		379-1,084		804-1,885		301-654		2,374-5,536	
Acreage and Percent of GWD Areas that is:	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Mule Deer Crucial Summer	0	0%	800	<1%	2,884	8%	1,827	1%	11,282	12%	16,793	2%
Mule Deer Crucial Winter	0	0%	27,533	16%	0	0%	30,826	9%	0	0%	58,359	8%
Mule Deer Year Round	3,196	4%	50,465	30%	31,887	92%	94,894	26%	22,237	24%	202,679	28%
Pronghorn Crucial Winter	0	0%	0	0%	0	0%	24,813	7%	0	0%	24,813	3%
Pronghorn Year Round	61,896	86%	121,659	72%	32,319	93%	343,249	95%	90,163	97%	649,286	89%
Elk Year Round	0	0	41,346	24%	34,787	100%	115,873	32%	3,121	3%	195,127	27%
Desert Bighorn Sheep Occupied	703	1%	4,886	3%	3,680	11%	0	0%	0	0%	9,269	1%
Rocky Mtn Bighorn Sheep Occupied	0	0%	0	0%	0	0%	3,585	1%	3,079	3%	6,664	1%
Greater Sage-grouse Habitat ^b	0	0%	21,708	13%	26,363	76%	306,772	85%	73,089	79%	427,932	59%
# Active leks within GWD areas	0	--	0	--	1	--	11	--	1	--	13	--
# Active leks w/in 2 Mi. of GWD areas	0	--	0	--	6	--	11	--	1	--	18	--
Western Burrowing Owl modeled habitat ^c	71,449	99%	148,813	88%	23,778	68%	318,528	88%	79,858	86%	642,427	88%
Pygmy Rabbit modeled habitat ^c	11,481	16%	59,551	35%	18,054	52%	141,200	39%	6,732	7%	237,018	32%
Western Pipistrelle modeled habitat ^c	71,889	100%	168,769	100%	34,764	100%	361,743	100%	92,703	100%	729,868	100%
Long-Eared Myotis modeled habitat ^c	23,986	33%	34,463	20%	5,572	16%	24,966	7%	23,625	25%	112,612	15%
Dark Kangaroo Mouse modeled habitat ^{c, d}	43,327	60%	127,514	76%	25,467	73%	274,962	76%	49,281	53%	520,552	71%

^a Only a portion of the groundwater development areas would be impacted by future facilities, estimated acres to be impacted are provided in the rows below.

^b Nesting brooding, Summer and Winter habitats combined into one layer.

^c Acreages for these species are based on SWreGAP animal habitat models (USGS 2007).

^d Acreage for dark valley kangaroo mouse. Habitat in Dry Lake and Delamar valleys is most likely Desert valley kangaroo mouse habitat (the subspecies considered sensitive for this EIS).

Table F3.6-5

Groundwater Development Areas – Habitat within Areas for Alternatives A and C

Table F-3.6-5 Groundwater Development Areas- Habitat within Areas for Alternatives A and C

By Valley	Delamar		Dry Lake		Cave		Spring		Snake		Total	
Groundwater Development Area ^a	71,889		168,769		34,787		361,795		92,703		729,943	
Temporary Construction Disturbance	291-563		395-834		226-738		813-1,873		311-723		2,035-4,732	
Permanent Conversion	193-375		263-556		151-493		551-1,260		212-487		2,374-5,536	
Acreage and Percent of GWD Areas that is:	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Mule Deer Crucial Summer	0	0%	800	<1%	2,884	8%	1,827	1%	11,282	12%	16,793	2%
Mule Deer Crucial Winter	0	0%	27,533	16%	0	0%	30,826	9%	0	0%	58,359	8%
Mule Deer Year Round	3,196	4%	50,465	30%	31,887	92%	94,894	26%	22,237	24%	202,679	28%
Pronghorn Crucial Winter	0	0%	0	0%	0	0%	24,813	7%	0	0%	24,813	3%
Pronghorn Year Round	61,896	86%	121,659	72%	32,319	93%	343,249	95%	90,163	97%	649,286	89%
Elk Year Round	0	0	41,346	24%	34,787	100%	115,873	32%	3,121	3%	195,127	27%
Desert Bighorn Sheep Occupied	703	1%	4,886	3%	3,680	11%	0	0%	0	0%	9,269	1%
Rocky Mtn Bighorn Sheep Occupied	0	0%	0	0%	0	0%	3,585	1%	3,079	3%	6,664	1%
Greater Sage-grouse Habitat ^b	0	0%	21,708	13%	26,363	76%	306,772	85%	73,089	79%	427,932	59%
# Active leks within GWD areas	0	--	0	--	1	--	11	--	1	--	13	--
# Active leks w/in 2 Mi. of GWD areas	0	--	0	--	6	--	11	--	1	--	18	--
Western Burrowing Owl modeled habitat ^c	71,449	99%	148,813	88%	23,778	68%	318,528	88%	79,858	86%	642,427	88%
Pygmy Rabbit modeled habitat ^c	11,481	16%	59,551	35%	18,054	52%	141,200	39%	6,732	7%	237,018	32%
Western Pipistrelle modeled habitat ^c	71,889	100%	168,769	100%	34,764	100%	361,743	100%	92,703	100%	729,868	100%
Long-Eared Myotis modeled habitat ^c	23,986	33%	34,463	20%	5,572	16%	24,966	7%	23,625	25%	112,612	15%
Dark Kangaroo Mouse modeled habitat ^{c, d}	43,327	60%	127,514	76%	25,467	73%	274,962	76%	49,281	53%	520,552	71%

^a Only a portion of the groundwater development areas would be impacted by future facilities, estimated acres to be impacted are provided in the rows below.

^b Nesting brooding, Summer and Winter habitats combined into one layer.

^c Acreages for these species are based on SWReGAP animal habitat models (USGS 2007).

^d Acreage for dark valley kangaroo mouse. Habitat in Dry Lake and Delamar valleys is most likely Desert valley kangaroo mouse habitat (the subspecies considered sensitive for this EIS).

Table F3.6-6

Groundwater Development Areas – Habitat within Areas for Alternative B

Table F-3.6-6 Groundwater Development Areas- Habitat within Areas for Alternative B

By Valley	Delamar		Dry Lake		Cave		Spring		Snake		Total	
Groundwater Development Area ^a	8,042		8,042		4,021		28,075		18,094		66,274	
Temporary Construction Disturbance	336		318		307		2,461		1,163		4,484	
Permanent Conversion	224		212		206		1,653		781		3,077	
Acreage and Percent of POD Areas that is:	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Mule Deer Crucial Summer	0	0%	0	0%	0	0%	111	0%	3,265	18%	3,376	5%
Mule Deer Crucial Winter	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Mule Deer Year Round	1,162	14%	939	12%	4,021	100%	5,877	21%	7,776	43%	19,775	30%
Pronghorn Crucial Winter	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Pronghorn Year Round	8,042	100%	8,042	100%	4,021	100%	26,651	95%	14,764	82%	61,520	93%
Elk Year Round	0	0	0	0	4,021	100%	7,492	27%	3,620	20%	15,133	23%
Desert Bighorn Sheep Occupied	0	0%	0	0%	148	4%	0	0%	0	0%	148	0.22%
Rocky Mtn Bighorn Sheep Occupied	0	0%	0	0%	0	0%	410	1%	249	1%	659	1%
Greater Sage-grouse Habitat ^b	0	0%	0	0%	3,023	75%	26,066	93%	14,529	80%	43,618	66%
# Active leks within GWD areas	0	--	0	--	1	--	1	--	0	--	2	--
# Active leks w/in 2 Mi. of GWD areas	0	--	0	--	2	--	5	--	1	--	8	--
Western Burrowing Owl modeled habitat ^c	7,935	99%	8,008	100%	2,644	66%	26,056	93%	11,186	62%	55,830	84%
Pygmy Rabbit modeled habitat ^c	742	9%	1,494	19%	1,759	44%	11,332	40%	1,111	6%	16,438	25%
Western Pipistrelle modeled habitat ^c	8,042	100%	8,042	100%	4,021	100%	27,887	99%	18,068	100%	66,060	100%
Long-Eared Myotis modeled habitat ^c	3,296	41%	1,933	24%	105	3%	1,783	6%	7,040	39%	14,157	21%
Dark Kangaroo Mouse modeled habitat ^{c, d}	5,519	69%	7,351	91%	3,526	88%	24,380	87%	5,299	29%	46,075	70%

^a Only a portion of the groundwater development areas would be impacted by future facilities, estimated acres to be impacted are provided in the rows below.

^b Nesting brooding, Summer and Winter habitats combined into one layer.

^c Acreages for these species are based on SWReGAP animal habitat models (USGS 2007).

^d Acreage for dark valley kangaroo mouse. Habitat in Dry Lake and Delamar valleys is most likely Desert valley kangaroo mouse habitat (the subspecies considered sensitive for this EIS).

Table F3.6-7

Groundwater Development Areas – Habitat within Areas for Alternative D

Table F-3.6-7 Groundwater Development Areas- Habitat within Areas for Alternative D

By Valley	Delamar		Dry Lake		Cave		Spring		Snake		Total	
Groundwater Development Area ^a	71,889		168,769		34,787		59,748		0		335,193	
Temporary Construction Disturbance	291-563		395-834		226-738		1,559-1,801		0		2,470-3,936	
Permanent Conversion	193-375		263-556		151-493		1,048-1,211		0		1,655-2,635	
Acreage and Percent of GWD Areas that is:	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Mule Deer Crucial Summer	0	0%	800	<1%	2,884	8%	1,461	2%	0	0%	5,145	2%
Mule Deer Crucial Winter	0	0%	27,533	16%	0	0%	4,672	8%	0	0%	32,205	10%
Mule Deer Year Round	3,196	4%	50,465	30%	31,887	92%	8,738	15%	0	0%	94,286	28%
Pronghorn Crucial Winter	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Pronghorn Year Round	61,896	86%	121,659	72%	32,319	93%	54,645	91%	0	0%	270,519	81%
Elk Year Round	0	0	41,346	24%	34,787	100%	12,843	21%	0	0%	88,976	27%
Desert Bighorn Sheep Occupied	703	1%	4,886	3%	3,680	11%	0	0%	0	0%	9,269	3%
Rocky Mtn Bighorn Sheep Occupied	0	0%	0	0%	0	0%	721	1%	0	0%	721	0.2%
Greater Sage-grouse Habitat ^b	0	0%	21,708	13%	26,363	76%	50,434	84%	0	0%	98,505	29%
# Active leks within GWD areas	0	--	0	--	1	--	2	--	0	--	3	--
# Active leks w/in 2 Mi. of GWD areas	0	--	0	--	6	--	2	--	0	--	8	--
Western Burrowing Owl modeled habitat ^c	71,449	99%	148,813	88%	23,778	68%	53,498	90%	0	0%	297,539	89%
Pygmy Rabbit modeled habitat ^c	11,481	16%	59,551	35%	18,054	52%	39,901	67%	0	0%	128,987	38%
Western Pipistrelle modeled habitat ^c	71,889	100%	168,769	100%	34,764	100%	59,748	100%	0	0%	335,170	100%
Long-Eared Myotis modeled habitat ^c	23,986	33%	34,463	20%	5,572	16%	6,178	10%	0	0%	70,199	21%
Dark Kangaroo Mouse modeled habitat ^{c, d}	43,327	60%	127,514	76%	25,467	73%	50,139	84%	0	0%	246,447	74%

^a Only a portion of the groundwater development areas would be impacted by future facilities, estimated acres to be impacted are provided in the rows below.

^b Nesting brooding, Summer and Winter habitats combined into one layer.

^c Acreages for these species are based on SWReGAP animal habitat models (USGS 2007).

^d Acreage for dark valley kangaroo mouse. Habitat in Dry Lake and Delamar valleys is most likely Desert valley kangaroo mouse habitat (the subspecies considered sensitive for this EIS).

Table F3.6-8

Groundwater Development Areas – Habitat within Areas for Alternative E

Table F-3.6-8 Groundwater Development Areas- Habitat within Areas Alternative E

By Valley	Delamar		Dry Lake		Cave		Spring		Snake		Total	
Groundwater Development Area ^a	71,889		168,769		34,787		361,795		0		637,240	
Temporary Construction Disturbance	291-563		395-832		226-736		813-1,855		0		1,725-3,987	
Permanent Conversion	193-375		263-554		151-491		551-1,242		0		1,158-2,661	
Acreage and Percent of GWD Areas that is:	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Mule Deer Crucial Summer	0	0%	800	<1%	2,884	8%	1,827	1%	0	0%	5,511	1%
Mule Deer Crucial Winter	0	0%	27,533	16%	0	0%	30,826	9%	0	0%	58,359	9%
Mule Deer Year Round	3,196	4%	50,465	30%	31,887	92%	343,249	95%	0	0%	428,797	67%
Pronghorn Crucial Winter	0	0%	0	0%	0	0%	24,813	7%	0	0%	24,813	4%
Pronghorn Year Round	61,896	86%	121,659	72%	32,319	93%	94,894	26%	0	0%	310,768	49%
Elk Year Round	0	0	41,346	24%	34,787	100%	115,873	32%	0	0%	192,006	30%
Desert Bighorn Sheep Occupied	703	1%	4,886	3%	3,680	11%	0	0%	0	0%	9,269	1%
Rocky Mtn Bighorn Sheep Occupied	0	0%	0	0%	0	0%	3,585	1%	0	0%	3,585	1%
Greater Sage-grouse Habitat ^b	0	0%	21,708	13%	26,363	76%	306,772	85%	0	0%	354,843	56%
# Active leks within GWD areas	0	--	0	--	1	--	11	--	0	--	12	--
# Active leks w/in 2 Mi. of GWD areas	0	--	0	--	6	--	11	--	0	--	17	--
Western Burrowing Owl modeled habitat ^c	71,449	99%	148,813	88%	23,778	68%	318,528	88%	0	0%	562,569	88%
Pygmy Rabbit modeled habitat ^c	11,481	16%	59,551	35%	18,054	52%	141,200	39%	0	0%	230,287	36%
Western Pipistrelle modeled habitat ^c	71,889	100%	168,769	100%	34,764	100%	361,743	100%	0	0%	637,165	100%
Long-Eared Myotis modeled habitat ^c	23,986	33%	34,463	20%	5,572	16%	24,966	7%	0	0%	88,987	14%
Dark Kangaroo Mouse modeled habitat ^{c, d}	43,327	60%	127,514	76%	25,467	73%	274,962	76%	0	0%	471,270	74%

^a Only a portion of the groundwater development areas would be impacted by future facilities, estimated acres to be impacted are provided in the rows below.

^b Nesting brooding, Summer and Winter habitats combined into one layer.

^c Acreages for these species are based on SWReGAP animal habitat models (USGS 2007).

^d Acreage for dark valley kangaroo mouse. Habitat in Dry Lake and Delamar valleys is most likely Desert valley kangaroo mouse habitat (the subspecies considered sensitive for this EIS).

Table F3.6-9

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Proposed Action

Table F-3.6-9 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Proposed Action

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Spring [184]	3%	Spring [184]	13%	Spring [184]	19%
			Snake	25%	Snake	29%
					Pahrnagat	2%
					Steptoe	3
					Lake	35%
					LMVW	5%
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
	Spring [184]	1%	Spring [184]	20%	Spring [184]	28%
			Snake	8%	Snake	10%
			Hamlin	1%	Hamlin	1%
					Cave	6%
					Lake	26%
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
	Spring [184]	WM 1% - BS 12%	Spring [184]	WM27% - BS66%	Spring [184]	WM34% - BS71%
			Snake	WM29% - BS16%	Snake	WM29%-BS21%
			Hamlin	WM100%-BS 94%	Hamlin	WM100%-BS94%
					Lake	WM91% - BS78%
					LMVW	WM1% -BS2%
				Pahrnagat	WM5%-BS1%	
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	1		3		8	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	0		2 IBAs: D.E. Moore and GBNP		4 IBAs: D.E. Moore, GBNP, Lower Meadow Valley Wash, and Pahrnagat Valley Complex	

LMVW = Lower Meadow Valley Wash

Table F3.6-10

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative A

Table F-3.6-10 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative A

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Spring [184]	<1%	Spring [184]	3%	Spring [184]	7%
			Snake	24%	Snake	28%
					Steptoe	3%
					Lake	13
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Spring [184]	<1%	Spring [184]	8%	Spring [184]	13%
			Snake	7%	Snake	9%
			Hamlin	1%	Hamlin	1%
					Cave	2%
					Lake	17%
					Steptoe	<1%
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Spring [184]	WM 1% - BS 8%	Spring [184]	WM20% - BS49%	Spring [184]	WM23% - BS53%
			Snake	WM29% - BS14%	Snake	WM29%-BS16%
			Hamlin	WM100%-BS 79%	Hamlin	WM100%-BS94%
					Lake	WM75% - BS14%
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	1		3		6	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	0		2 IBAs: D.E. Moore and GBNP		2 IBAs: D.E. Moore and GBNP	

LMVW = Lower Meadow Valley Wash

Table F3.6-11

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative B

Table F-3.6-11 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative B

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Spring [184]	2%	Spring [184]	9%	Spring [184]	16%
			Snake	31%	Snake	34%
			Steptoe	3%	Steptoe	4%
			Lake	12%	Lake	35%
					Pahranagat	2%
					LMVW	5%
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
	Spring [184]	6%	Spring [184]	12%	Spring [184]	21%
			Steptoe	<1%	Steptoe	<1%
			Hamlin	1%	Hamlin	1%
			Snake	11%	Snake	13%
					Lake	30%
				Cave	6%	
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
	Spring [184]	WM 4% - BS 13%	Spring [184]	WM29% - BS47%	Spring [184]	WM43% - BS52%
			Snake	WM28% - BS11%	Snake	WM29%-BS14%
			Hamlin	WM100%-BS 94%	Hamlin	WM100%-BS94%
			Lake	WM 8%-BS 3%	Lake	WM91% - BS78%
					LMVW	WM1%-BS2%
				Pahranagat	WM5%-BS1%	
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	1		5		8	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	0		2 IBAs: D.E. Moore and GBNP		4 IBAs: D.E. Moore, GBNP, Lower Meadow Valley Wash, and Pahranagat Valley Complex	

LMVW = Lower Meadow Valley Wash

Table F3.6-12

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative C

Table F-3.6-12 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative C

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Spring [184]	<1%	Spring [184]	2%	Spring [184]	2%
			Snake	15%	Snake	25%
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Spring [184]	<1%	Spring [184]	5%	Spring [184]	6%
			Hamlin	<1%	Hamlin	<1%
			Snake	3%	Snake	7%
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Spring [184]	WM 1% - BS 8%	Spring [184]	WM6% - BS16%	Spring [184]	WM13% - BS18%
			Snake	WM22% - BS8%	Snake	WM24%-BS10%
					Hamlin	WM5%-BS58%
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	1		3		3	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	0		0		2 IBAs: D.E. Moore and GBNP	

LMVW = Lower Meadow Valley Wash

Table F3.6-13

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative D

Table F-3.6-13 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative D

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	none	~	Spring [201]	5%	Spring [201]	26%
			Snake	<1%	Snake	12%
			Lake	22%	Lake	35%
					Steptoe	3%
					Spring [184]	2%
Impact Indicator by Timeframe	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Hamlin	<1%	Hamlin	<1%	Hamlin	1%
			Spring [184]	3%	Spring [184]	6%
			Lake	11%	Lake	41%
			Snake	<1%	Snake	3%
			Spring [201]	4%	Spring [201]	17%
					Cave	2%
					Steptoe	<1%
				Patterson	25%	
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	~	~	Spring	WM 11% - BS10%	Spring	WM18% - BS23%
			Snake	WM 1% - BS 0%	Snake	WM 8%-BS 4%
			Hamlin	WM 68%-BS 73%	Hamlin	WM 100%-BS94%
					Lake	WM 91% - BS78%
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	1		5		8	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	0		0		1 IBAs: GBNP	

LMVW = Lower Meadow Valley Wash

Table F3.6-14

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative E

Table F-3.6-14 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative E

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Spring [184]	<1%	Spring [184]	3%	Spring [184]	7%
					Snake	1%
					Steptoe	3%
					Lake	13%
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Spring [184]	<1%	Spring [184]	8%	Spring [184]	13%
			Hamlin	<1%	Hamlin	<1%
					Cave	2%
					Lake	11%
					Steptoe	<1%
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Spring	WM 1% - BS 8%	Spring	WM 20% - BS 49%	Spring	WM 22% - BS 53%
			Hamlin	WM 2% - BS 6%	Hamlin	WM 3% - BS 20%
					Lake	WM 65% - BS 12%
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	1		2		6	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	0		0		1 IBAs: GBNP	

LMVW = Lower Meadow Valley Wash

Table F3.6-15

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – No Action

Table F-3.6-15 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - No Action

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Panaca	35%	Panaca	35%	Panaca	43%
	Clover	<1%	Clover	<1%	Clover	84%
	LMVW	6%	LMVW	7%	LMVW	8%
			White River	11%	White River	11%
			Lake	22%	Lake	22%
			Spring [201]	<1%	Spring [201]	41%
					Spring [184]	<1%
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
	Steptoe	<1%	Steptoe	~	Steptoe	~
	Lake	18%	Lake	27%	Lake	39%
	Patterson	25%	Patterson	39%	Patterson	43%
	Panaca	5%	Panaca	10%	Panaca	15%
	Clover	4%	Clover	4%	Clover	33%
	LMVW	11%	LMVW	13%	LMVW	13%
			White River	2%	White River	2%
			Dry	8%	Dry	8%
			Spring [184]	<1%	Spring [184]	<1%
					Las Vegas	17%
					Spring [201]	18%
				Eagle	9%	

Table F-3.6-15 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - No Action (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Lake	WM 0% - BS 23%	Lake	WM 0% - BS 59%	Lake	WM 46% - BS 73%
	Panaca	WM 0% - BS 1%	Panaca	WM 4% - BS 26%	Panaca	WM 4% - BS 26%
			White River	WM 2% - BS 3%	White River	WM 10% - BS 4%
					Clover	WM 26% - BS 22%
					Spring [184]	WM 0% - BS 1%
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	6		10		12	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	1 IBA: Lower Meadow Valley Wash		1 IBA: Lower Meadow Valley Wash		1 IBA: Lower Meadow Valley Wash	

LMVW = Lower Meadow Valley Wash

Table F3.6-16

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – No Action Cumulative

Table F-3.6-16 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - No Action Cumulative

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Pahranagat	2%	Pahranagat	2%	Pahranagat	2%
	Lower Moapa	14%	Lower Moapa	26%	Lower Moapa	38%
	Panaca	35%	Panaca	35%	Panaca	47%
	Clover	97%	Clover	97%	Clover	97%
	LMVW	6%	LMVW	9%	LMVW	33%
			White River	12%	White River	12%
			Lake	22%	Lake	22%
			MRSA	2%	MRSA	15%
			Spring [201]	<1%	Spring [201]	41%
					Spring [184]	<1%
				Dry	3%	
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Steptoe	<1%	Steptoe	2%	Steptoe	2%
	Lake	18%	Lake	27%	Lake	39%
	Patterson	25%	Patterson	39%	Patterson	43%
	Panaca	10%	Panaca	20%	Panaca	20%
	Clover	48%	Clover	52%	Clover	52%
	LMVW	11%	LMVW	13%	LMVW	17%
			White River	2%	White River	2%
			Coyote Springs	8%	Coyote Springs	8%
			Spring [184]	<1%	Spring [184]	<1%
			Dry	8%	Dry	8%
					Pahranagat	5%
					Las Vegas Valley	33%
					Spring [201]	18%
				Eagle	9%	
				Rose	100%	
				MRSA	11%	

Table F-3.6-16 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - No Action Cumulative (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Clover	WM 47% - BS 59%	Clover	WM 53% - BS 62%	Clover	WM 53% - BS 62%
	Lake	WM 0% - BS 23%	Lake	WM 0% - BS 59%	Lake	WM 46% - BS 73%
	Lower Moapa	WM 17% - BS 13%	Lower Moapa	WM 27% - BS 20%	Lower Moapa	WM 33% - BS 27%
	Pahrnagat	WM 5% - BS 1%	Pahrnagat	WM 5% - BS 1%	Pahrnagat	WM 5% - BS 1%
	Panaca	WM 1% - BS 11%	Panaca	WM 4% - BS 28%	Panaca	WM 7% - BS 47%
	Steptoe	WM 1% - BS 9%	Steptoe	WM 1% - BS 13%	Steptoe	WM 1% - BS 14%
			White River	WM 3% - BS 3%	White River	WM 10% - BS 4%
					Dry	WM 18% - BS 22%
					Eagle	WM 14% - BS 22%
					LMVW	WM 9% - BS 4%
				MRSA	WM 3% - BS 10%	
				Spring	WM 0% - BS 1%	
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	8		13		17	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	1 IBA: Lower Meadow Valley Wash		1 IBA: Lower Meadow Valley Wash		3 IBAs: Lower Meadow Valley Wash; Pahrnagat Valley Complex; and Muddy River Springs Area	

LMVW = Lower Meadow Valley Wash, MRSA = Muddy River Springs Area

Table F3.6-17

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Proposed Action Cumulative

Table F-3.6-17 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Proposed Action Cumulative

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Pahranagat	2%	Pahranagat	2%	Pahranagat	2%
	Lower Moapa	14%	Lower Moapa	26%	Lower Moapa	38%
	Spring [184]	4%	Spring [184]	14%	Spring [184]	19%
	Panaca	35%	Panaca	35%	Panaca	52%
	Clover	97%	Clover	97%	Clover	97%
	LMVW	6%	LMVW	15%	LMVW	38%
			White River	12%	White River	12%
			Snake	26%	Snake	29%
			Lake	22%	Lake	35%
			MRSA	2%	MRSA	15%
					Cave	18%
					Steptoe	3%
					Hamlin	21%
					Eagle	28%
				Dry	3%	
				Spring [201]	46%	
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Steptoe	<1%	Steptoe	1%	Steptoe	3%
	Spring [184]	5%	Spring [184]	21%	Spring [184]	31%
	Lake	18%	Lake	29%	Lake	41%
	Patterson	25%	Patterson	39%	Patterson	43%
	Panaca	10%	Panaca	20%	Panaca	20%
	Clover	48%	Clover	52%	Clover	52%
	LMVW	11%	LMVW	13%	LMVW	17%
			White River	2%	White River	2%
			Coyote Springs	8%	Coyote Springs	8%
			Pahranagat	5%	Pahranagat	5%
			Hamlin	1%	Hamlin	1%
			Snake	8%	Snake	10%
			Dry	8%	Dry	8%
					Cave	6%

Table F-3.6-17 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Proposed Action Cumulative (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
					MRSA	15%
					Las Vegas	33%
					Spring [201]	22%
					Eagle	9%
					Rose	100%
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Clover	WM 47% - BS 59%	Clover	WM 53% - BS 62%	Clover	WM 53% - BS 62%
	Lake	WM 0% - BS 23%	Lake	WM 0% - BS 59%	Lake	WM 46% - BS 73%
	Lower Moapa	WM 17% - BS 13%	Lower Moapa	WM 27% - BS 20%	Lower Moapa	WM 33% - BS 28%
	Pahrnagat	WM 5% - BS 1%	Pahrnagat	WM 5% - BS 1%	Pahrnagat	WM 5% - BS 2%
	Panaca	WM 1% - BS 11%	Panaca	WM 4% - BS 28%	Panaca	WM 7% - BS 47%
	Spring	WM 4% - BS 16%	Spring	WM 29% - BS 68%	Spring	WM 36% - BS 72%
	Steptoe	WM 1% - BS 9%	Steptoe	WM 1% - BS 13%	Steptoe	WM 1% - BS 14%
			Hamlin	WM 100% - BS 94%	Hamlin	WM 100% - BS 94%
			LMVW	WM 1% - BS 2%	LMVW	WM 11% - BS 5%
			Snake	WM 29% - BS 16%	Snake	WM 29% - BS 22%
			White River	WM 3% - BS 3%	White River	WM 10% - BS 4%
					Dry	WM 18% - BS 22%
					Eagle	WM 14% - BS 22%
				MRSA	WM 3% - BS 10%	
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	9		15		20	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	2 IBAs: Lower Meadow Valley Wash; Pahrnagat Valley Complex		5 IBAs: Lower Meadow Valley Wash; Pahrnagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP		5 IBAs: Lower Meadow Valley Wash; Pahrnagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP	

LMVW = Lower Meadow Valley Wash, MRSA = Muddy River Springs Area

	New valley of potential impact (as compared to No Action cumulative)
	Incremental increase in Alternative contribution (above No Action cumulative)
	No difference or less as compared to No Action cumulative

Table F3.6-18

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative A Cumulative

Table F-3.6-18 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative A Cumulative

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Pahrana gat	2%	Pahrana gat	2%	Pahrana gat	2%
	Lower Moapa Valley	14%	Lower Moapa Valley	26%	Lower Moapa Valley	38%
	Spring Valley [184]	3%	Spring Valley (184)	6%	Spring Valley (184)	9%
	Panaca Valley	35%	Panaca Valley	35%	Panaca Valley	47%
	Clover Valley	97%	Clover Valley	97%	Clover Valley	97%
	LMVW	6%	LMVW	13%	LMVW	33%
			White River Valley	12%	White River Valley	12%
			MRSA	2%	MRSA	15%
			Snake Valley	25%	Snake Valley	29%
			Lake Valley	22%	Lake Valley	35%
			Spring Valley [201]	<1%	Spring Valley [201]	45%
					Steptoe Valley	3%
				Dry Valley	3%	
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Steptoe Valley	<1%	Steptoe Valley	2%	Steptoe Valley	3%
	Spring Valley [184]	3%	Spring Valley [184]	13%	Spring Valley [184]	15%
	Lake Valley	18%	Lake Valley	29%	Lake Valley	41%
	Patterson Valley	25%	Patterson Valley	39%	Patterson Valley	43%
	Panaca Valley	10%	Panaca Valley	20%	Panaca Valley	20%
	Clover Valley	48%	Clover Valley	52%	Clover Valley	52%
	LMVW	11%	LMVW	13%	LMVW	17%
			White River Valley	2%	White River Valley	2%
			Coyote Spring Valley	8%	Coyote Spring Valley	8%
			Hamlin Valley	1%	Hamlin Valley	1%
			Snake Valley	8%	Snake Valley	9%
			Dry Valley	8%	Dry Valley	8%
					Pahrana gat Valley	5%
					Cave Valley	4%
					Las Vegas Valley	33%
				MRSA	11%	

Table F-3.6-18 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative A Cumulative (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
					Spring Valley [201]	21%
					Eagle Valley	9%
					Rose Valley	100%
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Clover Valley	WM 47% - BS 59%	Clover Valley	WM 53% - BS 62%	Clover Valley	WM 53% - BS 62%
	Lake Valley	WM 0% - BS 23%	Lake Valley	WM 6% - BS 61%	Lake Valley	WM 91% - BS 78%
	Lower Moapa Valley	WM 17% - BS 13%	Lower Moapa Valley	WM 27% - BS 20%	Lower Moapa Valley	WM 33% - BS 27%
	Pahranagat Valley	WM 5% - BS 1%	Pahranagat Valley	WM 5% - BS 1%	Pahranagat Valley	WM 5% - BS 1%
	Panaca Valley	WM 1% - BS 11%	Panaca Valley	WM 4% - BS 28%	Panaca Valley	WM 7% - BS 47%
	Spring Valley [184]	WM 2% - BS 12%	Spring Valley [184]	WM 23% - BS 52%	Spring Valley [184]	WM 24% - BS 56%
	Steptoe Valley	WM 1% - BS 9%	Steptoe Valley	WM 1% - BS 13%	Steptoe Valley	WM 1% - BS 14%
			Hamlin Valley	WM 65% - BS 94%	Hamlin Valley	WM 65% - BS 94%
			Snake Valley	WM 191% - BS 14%	Snake Valley	WM 191% - BS 16%
			White River Valley	WM 3% - BS 3%	White River Valley	WM 10% - BS 4%
					Dry Valley	WM 18% - BS 22%
					Eagle Valley	WM 14% - BS 22%
					LMVW	WM 9% - BS 4%
					MRSA	WM 3% - BS 10%
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	9		16		21	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	2 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex		5 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP		5 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP	

LMVW = Lower Meadow Valley Wash, MRSA = Muddy River Springs Area

	New valley of potential impact (as compared to No Action cumulative)
	Incremental increase in Alternative contribution (above No Action cumulative)
	No difference or less as compared to No Action cumulative

Table F3.6-19

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative B Cumulative

Table F-3.6-19 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin- Alternative B Cumulative

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Pahranagat Valley	2%	Pahranagat Valley	2%	Pahranagat Valley	2%
	Lower Moapa Valley	14%	Lower Moapa Valley	26%	Lower Moapa Valley	38%
	Spring Valley [184]	3%	Spring Valley [184]	9%	Spring Valley [184]	16%
	Panaca Valley	35%	Panaca Valley	35%	Panaca Valley	52%
	Clover Valley	97%	Clover Valley	97%	Clover Valley	97%
	LMVW	6%	LMVW	15%	LMVW	38%
			White River Valley	12%	White River Valley	12%
			Snake Valley	31%	Snake Valley	34%
			Lake Valley	35%	Lake Valley	35%
			MRSA	2%	MRSA	15%
			Spring Valley [201]	<1%	Spring Valley [201]	46%
			Steptoe Valley	3%	Steptoe Valley	5%
					Dry Valley	3%
					Cave Valley	18%
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Steptoe Valley	<1%	Steptoe Valley	2%	Steptoe Valley	3%
	Spring Valley [184]	7%	Spring Valley [184]	12%	Spring Valley [184]	21%
	Lake Valley	18%	Lake Valley	41%	Lake Valley	41%
	Patterson Valley	25%	Patterson Valley	39%	Patterson Valley	43%
	Panaca Valley	10%	Panaca Valley	20%	Panaca Valley	20%
	Clover Valley	48%	Clover Valley	52%	Clover Valley	52%
	LMVW	11%	LMVW	13%	LMVW	17%
			Pahranagat Valley	5%	Pahranagat Valley	5%
			Hamlin Valley	1%	Hamlin Valley	1%
			Snake Valley	11%	Snake Valley	13%
			White River Valley	2%	White River Valley	2%
			Coyote Spring Valley	8%	Coyote Spring Valley	8%
			Dry Valley	8%	Dry Valley	8%
					Cave Valley	6%
				Las Vegas Valley	33%	

Table F-3.6-19 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin- Alternative B Cumulative (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
					MRSA	15%
					Spring Valley [201]	22%
					Eagle Valley	9%
					Rose Valley	100%
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Clover Valley	WM 47%-BS 59%	Clover Valley	WM 53%-BS 62%	Clover Valley	WM 53%-BS 62%
	Lake Valley	WM 0%-BS 27%	Lake Valley	WM 91%-BS 78%	Lake Valley	WM 91%-BS 71%
	Lower Moapa Valley	WM 17%-BS 13%	Lower Moapa Valley	WM 27%-BS 20%	Lower Moapa Valley	WM 33%-BS 28%
	Pahranaagat Valley	WM 5%-BS 1%	Pahranaagat Valley	WM 5%-BS 1%	Pahranaagat Valley	WM 5%-BS 2%
	Panaca Valley	WM 1%-BS 11%	Panaca Valley	WM 4%-BS 28%	Panaca Valley	WM 7%-BS 47%
	Spring Valley [184]	WM 7%-BS 15%	Spring Valley [184]	WM 29%-BS 47%	Spring Valley [184]	WM 43%-BS 52%
	Steptoe Valley	WM 1%-BS 9%	Steptoe Valley	WM 1%-BS 13%	Steptoe Valley	WM 1%-BS 14%
			Hamlin Valley	WM 65%-BS 94%	Hamlin Valley	WM 65%-BS 94%
			LMVW	WM 1%-BS 2%	LMVW	WM 11%-BS 5%
			Snake Valley	WM 28%-BS 11%	Snake Valley	WM 29%-BS 14%
			White River Valley	WM 3%-BS 3%	White River Valley	WM 12%-BS 4%
					Dry Valley	WM 18%-BS 22%
					Eagle Valley	WM 14%-BS 22%
					MRSA	WM 3%-BS 10%
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	8		16		20	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	2 IBAs: Lower Meadow Valley Wash; Pahranaagat Valley Complex		5 IBAs: Lower Meadow Valley Wash; Pahranaagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP		5 IBAs: Lower Meadow Valley Wash; Pahranaagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP	

LMVW = Lower Meadow Valley Wash, MRSA = Muddy River Springs Area

	New valley of potential impact (as compared to No Action cumulative)
	Incremental increase in Alternative contribution (above No Action cumulative)
	No difference or less as compared to No Action cumulative

Table F3.6-20

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative C Cumulative

Table F-3.6-20 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin- Alternative C Cumulative

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Pahrnagat Valley	2%	Pahrnagat Valley	2%	Pahrnagat Valley	2%
	Lower Moapa Valley	14%	Lower Moapa Valley	26%	Lower Moapa Valley	38%
	Spring Valley [184]	3%	Spring Valley [184]	4%	Spring Valley [184]	6%
	Panaca Valley	35%	Panaca Valley	35%	Panaca Valley	47%
	Clover Valley	97%	Clover Valley	97%	Clover Valley	97%
	LMVW	6%	LMVW	13%	LMVW	33%
			White River Valley	12%	White River Valley	12%
			Snake Valley	21%	Snake Valley	26%
			Lake Valley	22%	Lake Valley	35%
			MRSA	2%	MRSA	15%
			Spring Valley [201]	<1%	Spring Valley [201]	41%
					Steptoe Valley	<1%
					Dry Valley	3%
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Steptoe Valley	<1%	Steptoe Valley	2%	Steptoe Valley	2%
	Spring Valley [184]	3%	Spring Valley [184]	6%	Spring Valley [184]	9%
	Lake Valley	18%	Lake Valley	29%	Lake Valley	41%
	Patterson Valley	25%	Patterson Valley	39%	Patterson Valley	43%
	Panaca Valley	10%	Panaca Valley	20%	Panaca Valley	20%
	Clover Valley	48%	Clover Valley	52%	Clover Valley	52%
	LMVW	11%	LMVW	13%	LMVW	17%
			Coyote Spring Valley	8%	Coyote Spring Valley	8%
			White River Valley	2%	White River Valley	2%
			Hamlin Valley	<1%	Hamlin Valley	<1%
			Snake Valley	6%	Snake Valley	7%
			Dry Valley	8%	Dry Valley	8%
					Cave Valley	2%
					Spring Valley [201]	18%
					Pahrnagat Valley	5%
				Las Vegas Valley	33%	

Table F-3.6-20 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin- Alternative C Cumulative (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur					MRSA	11%
					Eagle Valley	9%
					Rose Valley	100%
	Clover Valley	WM 47%- BS 59%	Clover Valley	WM 53%- BS 62%	Clover Valley	WM 53%- BS 62%
	Lake Valley	WM 0%- BS 23%	Lake Valley	WM 6%- BS 61%	Lake Valley	WM 91%- BS 78%
	Lower Moapa Valley	WM 17%- BS 13%	Lower Moapa Valley	WM 27%- BS 20%	Lower Moapa Valley	WM 33%- BS 27%
	Pahranagat Valley	WM 5%- BS 1%	Pahranagat Valley	WM 5%- BS 1%	Pahranagat Valley	WM 5%- BS 1%
	Panaca Valley	WM 1%- BS 11%	Panaca Valley	WM 4%- BS 28%	Panaca Valley	WM 7%- BS 47%
	Spring Valley [184]	WM 2%- BS 12%	Spring Valley [184]	WM 9%- BS 20%	Spring Valley [184]	WM 14%- BS 24%
	Steptoe Valley	WM 1%- BS 9%	Steptoe Valley	WM 1%- BS 13%	Steptoe Valley	WM 1%- BS 14%
			Snake Valley	WM 161%- BS 9%	Snake Valley	WM 164%- BS 10%
			White River Valley	WM 3%- BS 3%	White River Valley	WM 10%- BS 4%
					Dry Valley	WM 18%- BS 22%
				Eagle Valley	WM 14%- BS 22%	
				Hamlin Valley	WM 56%- BS 90%	
				LMVW	WM 9%- BS 4%	
				MRSA	WM 3%- BS 10%	
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	9		16		20	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	2 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex		5 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP		5 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; Muddy River Springs Area; D.E. Moore and GBNP	

LMVW = Lower Meadow Valley Wash, MRSA = Muddy River Springs Area

	New valley of potential impact (as compared to No Action cumulative)
	Incremental increase in Alternative contribution (above No Action cumulative)
	No difference or less as compared to No Action cumulative

Table F3.6-21

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative D Cumulative

Table F-3.6-21 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative D Cumulative

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Pahranagat Valley	2%	Pahranagat Valley	2%	Pahranagat Valley	2%
	Lower Moapa Valley	10%	Lower Moapa Valley	26%	Lower Moapa Valley	38%
	Panaca Valley	26%	Panaca Valley	35%	Panaca Valley	47%
	Clover Valley	97%	Clover Valley	97%	Clover Valley	97%
	LMVW	6%	LMVW	9%	LMVW	33%
			White River Valley	12%	White River Valley	12%
			Spring Valley [184]	2%	Spring Valley [184]	2%
			Snake Valley	<1%	Snake Valley	12%
			Lake Valley	22%	Lake Valley	58%
			Spring Valley [201]	15%	Spring Valley [201]	10%
			MRSA	2%	MRSA	15%
					Steptoe Valley	3%
					Dry Valley	3%
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur			Name of basin	Percent of springs	Name of basin	Percent of springs
			Steptoe Valley	<1%	Steptoe Valley	2%
			Hamlin Valley	<1%	Hamlin Valley	1%
			Lake Valley	17%	Lake Valley	52%
			Patterson Valley	11%	Patterson Valley	41%
			Panaca Valley	10%	Panaca Valley	20%
			Clover Valley	48%	Clover Valley	52%
			LMVW	11%	LMVW	17%
			White River Valley	2%	White River Valley	2%
			Spring Valley [184]	5%	Spring Valley [184]	6%
			Coyote Spring Valley	8%	Coyote Spring Valley	8%
			Snake Valley	<1%	Snake Valley	3%
			Spring Valley [201]	9%	Spring Valley [201]	27%
			Dry Valley	8%	Dry Valley	8%
					Cave Valley	4%
					Pahranagat Valley	5%
					Las Vegas Valley	33%
				MRSA	11%	
				Eagle Valley	9%	
				Rose Valley	100%	

Table F-3.6-21 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin - Alternative D Cumulative (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Clover Valley	WM 47%- BS 54%	Clover Valley	WM 53%- BS 62%	Clover Valley	WM 53%- BS 62%
	Lake Valley	WM 0%- BS 13%	Lake Valley	WM 26%- BS 69%	Lake Valley	WM 91%- BS 78%
	Lower Moapa Valley	WM 14%- BS 10%	Lower Moapa Valley	WM 27%- BS 20%	Lower Moapa Valley	WM 33%- BS 27%
	Pahranagat Valley	WM 5%- BS 1%	Pahranagat Valley	WM 5%- BS 1%	Pahranagat Valley	WM 5%- BS 1%
	Panaca Valley	WM 1%- BS 6%	Panaca Valley	WM 4%- BS 26%	Panaca Valley	WM 7%- BS 47%
	Steptoe Valley	WM 1%- BS 9%	Steptoe Valley	WM 1%- BS 12%	Steptoe Valley	WM 1%- BS 14%
			Hamlin Valley	WM 44%- BS 82%	Hamlin Valley	WM 65%- BS 94%
			Snake Valley	WM 11%- BS 0%	Snake Valley	WM 52%- BS 4%
			Spring Valley [184]	WM 13%- BS 12%	Spring Valley [184]	WM 19%- BS 28%
			White River Valley	WM 3%- BS 3%	White River Valley	WM 10%- BS 4%
					Dry Valley	WM 18%- BS 22%
					Eagle Valley	WM 14%- BS 22%
					LMVW	WM 9%- BS 4%
				MRSA	WM 3%- BS 10%	
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	9		16		20	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	2 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex		3 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; and Muddy River Springs Area		5 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; D.E. Moore; GBNP; and Muddy River Springs Area	

LMVW = Lower Meadow Valley Wash, MRSA = Muddy River Springs Area

	New valley of potential impact (as compared to No Action cumulative)
	Incremental increase in Alternative contribution (above No Action cumulative)
	No difference or less as compared to No Action cumulative

Table F3.6-22

Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin – Alternative E Cumulative

Table F-3.6-22 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin- Alternative E Cumulative

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles	Name of basin	Percent of stream miles
Basins with potentially impacted perennial stream reaches and the percent of perennial stream miles within the basin where impacts to flow could occur	Pahranaagat Valley	2%	Pahranaagat Valley	2%	Pahranaagat Valley	2%
	Lower Moapa Valley	14%	Lower Moapa Valley	26%	Lower Moapa Valley	38%
	Spring Valley [184]	3%	Spring Valley [184]	6%	Spring Valley [184]	9%
	Panaca Valley	35%	Panaca Valley	35%	Panaca Valley	47%
	Clover Valley	97%	Clover Valley	97%	Clover Valley	97%
	LMVW	6%	LMVW	13%	LMVW	33%
			White River Valley	12%	White River Valley	12%
			Lake Valley	22%	Lake Valley	35%
			MRSA	2%	MRSA	15%
			Spring Valley [201]	<1%	Spring Valley [201]	41%
					Snake Valley	8%
					Steptoe Valley	3%
				Dry Valley	3%	
	Name of basin	Percent of springs	Name of basin	Percent of springs	Name of basin	Percent of springs
Basins with potentially impacted springs and the percent of springs within the basin where impacts to flow could occur	Steptoe Valley	<1%	Steptoe Valley	2%	Steptoe Valley	3%
	Spring Valley [184]	3%	Spring Valley [184]	13%	Spring Valley [184]	15%
	Lake Valley	18%	Lake Valley	29%	Lake Valley	41%
	Patterson Valley	25%	Patterson Valley	39%	Patterson Valley	43%
	Panaca Valley	10%	Panaca Valley	20%	Panaca Valley	20%
	Clover Valley	48%	Clover Valley	52%	Clover Valley	52%
	LMVW	11%	LMVW	13%	LMVW	17%
			Coyote Spring Valley	8%	Coyote Spring Valley	8%
			White River Valley	2%	White River Valley	2%
			Hamlin Valley	<1%	Hamlin Valley	<1%
			Dry Valley	8%	Dry Valley	8%
					Cave Valley	4%
					Pahranaagat Valley	5%
					Las Vegas Valley	33%
					MRSA	11%
				Snake Valley	<1%	

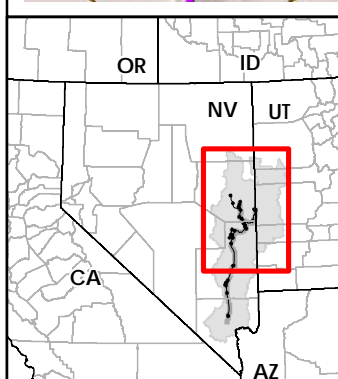
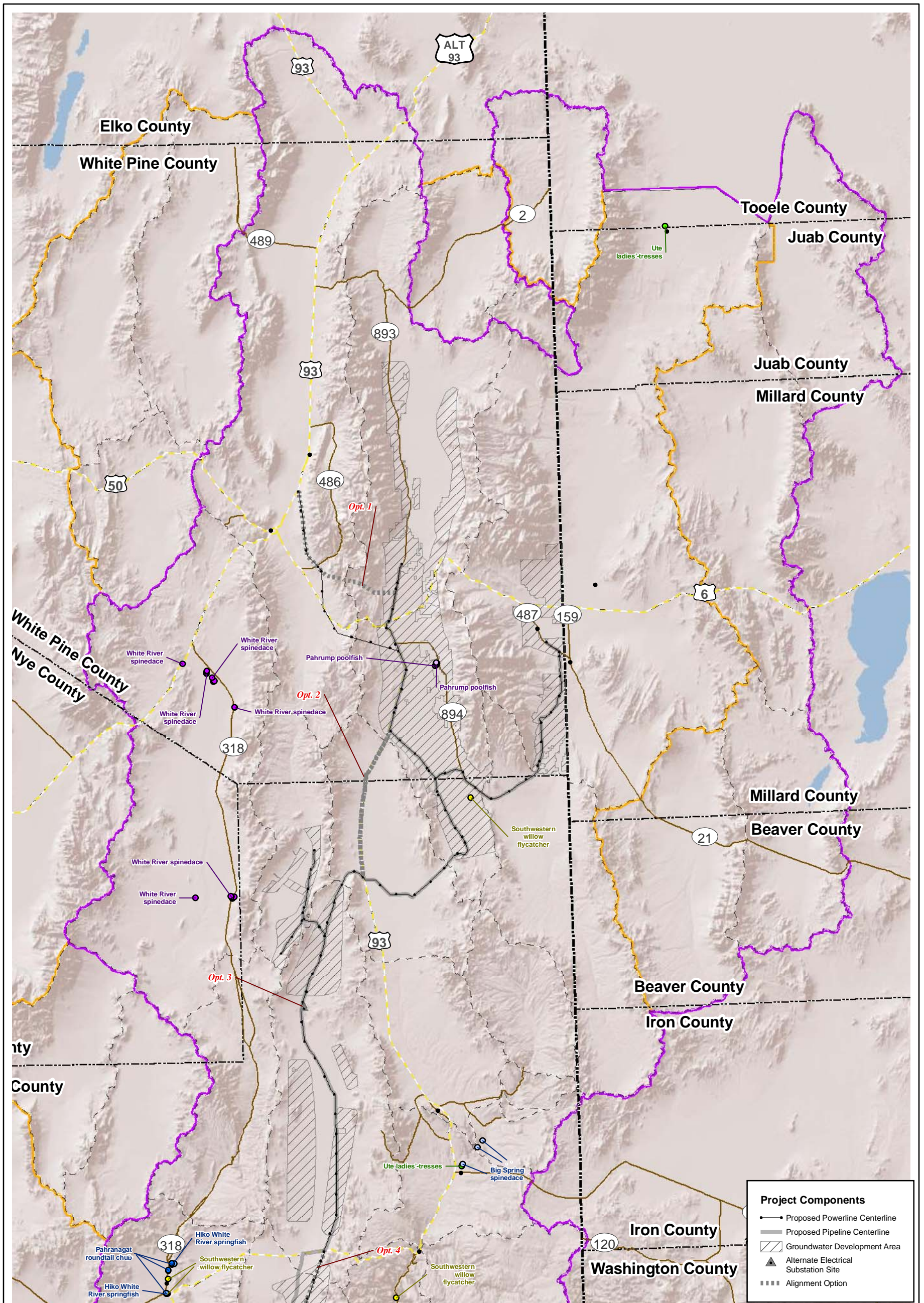
Table F-3.6-22 Groundwater Dependent Habitats for Terrestrial Wildlife by Model Timeframe and Basin- Alternative E Cumulative (Continued)

Impact Indicator by Timeframe	Full Build Out		Full Build Out Plus 75 Years		Full Build Out Plus 200 Years	
					Spring Valley [201]	19%
					Eagle Valley	9%
					Rose Valley	100%
	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS	Name of basin	Percent of ET WM and BS
Basins where impacts to ET vegetation are predicted and percent of ET Wetland/Meadow (WM) and/or ET Basin shrubland (BS) within the basin where impacts could occur	Clover Valley	WM 47%-BS 59%	Clover Valley	WM 53%-BS 62%	Clover Valley	WM 53%-BS 62%
	Lake Valley	WM 0%-BS 23%	Lake Valley	WM 6%-BS 61%	Lake Valley	WM 91%-BS 78%
	Lower Moapa Valley	WM 17%-BS 13%	Lower Moapa Valley	WM 27%-BS 20%	Lower Moapa Valley	WM 33%-BS 27%
	Pahranagat Valley	WM 5%-BS 1%	Pahranagat Valley	WM 5%-BS 1%	Pahranagat Valley	WM 5%-BS 1%
	Panaca Valley	WM 1%-BS 11%	Panaca Valley	WM 4%-BS 28%	Panaca Valley	WM 7%-BS 47%
	Spring Valley [184]	WM 28%-BS 12%	Spring Valley [184]	WM 285%-BS 52%	Spring Valley [184]	WM 293%-BS 56%
	Steptoe Valley	WM 1%-BS 7%	Steptoe Valley	WM 1%-BS 9%	Steptoe Valley	WM 1%-BS 10%
			Hamlin Valley	WM 1%-BS 4%	Hamlin Valley	WM 2%-BS 35%
			White River Valley	WM 3%-BS 3%	White River Valley	WM 10%-BS 5%
					Dry Valley	WM 18%-BS 22%
					Eagle Valley	WM 14%-BS 22%
					LMVW	WM 9%-BS 4%
				MRSA	WM 3%-BS 10%	
Number of basins with any of the potential habitat impacts (Springs, Streams or ET Vegetation) listed above	9		15		20	
Important Bird Areas (IBAs) with Springs or Streams where impacts to flow could occur	2 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex		3 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; and Muddy River Springs Area		4 IBAs: Lower Meadow Valley Wash; Pahranagat Valley Complex; GBNP; and Muddy River Springs Area	

LMVW = Lower Meadow Valley Wash, MRSA = Muddy River Springs Area

	New valley of potential impact (as compared to No Action cumulative)
	Incremental increase in Alternative contribution (above No Action cumulative)
	No difference or less as compared to No Action cumulative

Figure F3.6-1
Occurrence of Federally Listed Species (North)



<ul style="list-style-type: none"> Natural Resources Region of Study Water Resources Region of Study City or Town Interstate Highway US Highway Major Road State Boundary County Boundary Hydrographic Basins 	<ul style="list-style-type: none"> Desert Tortoise Critical Habitat Desert Tortoise Habitat 	<p>Birds</p> <ul style="list-style-type: none"> Yuma clapper rail Southwestern willow flycatcher <p>Plants</p> <ul style="list-style-type: none"> Ute ladies'-tresses 	<p>Fish</p> <ul style="list-style-type: none"> Big Spring spinedace Hiko White River springfish Moapa dace Pahranagat roundtail chub Pahump poolfish White River spinedace White River springfish
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Proposed Clark, Lincoln, and White Pine Counties Groundwater Development Project

Figure F3.6-1

Occurrence of Federally Listed Species (North)

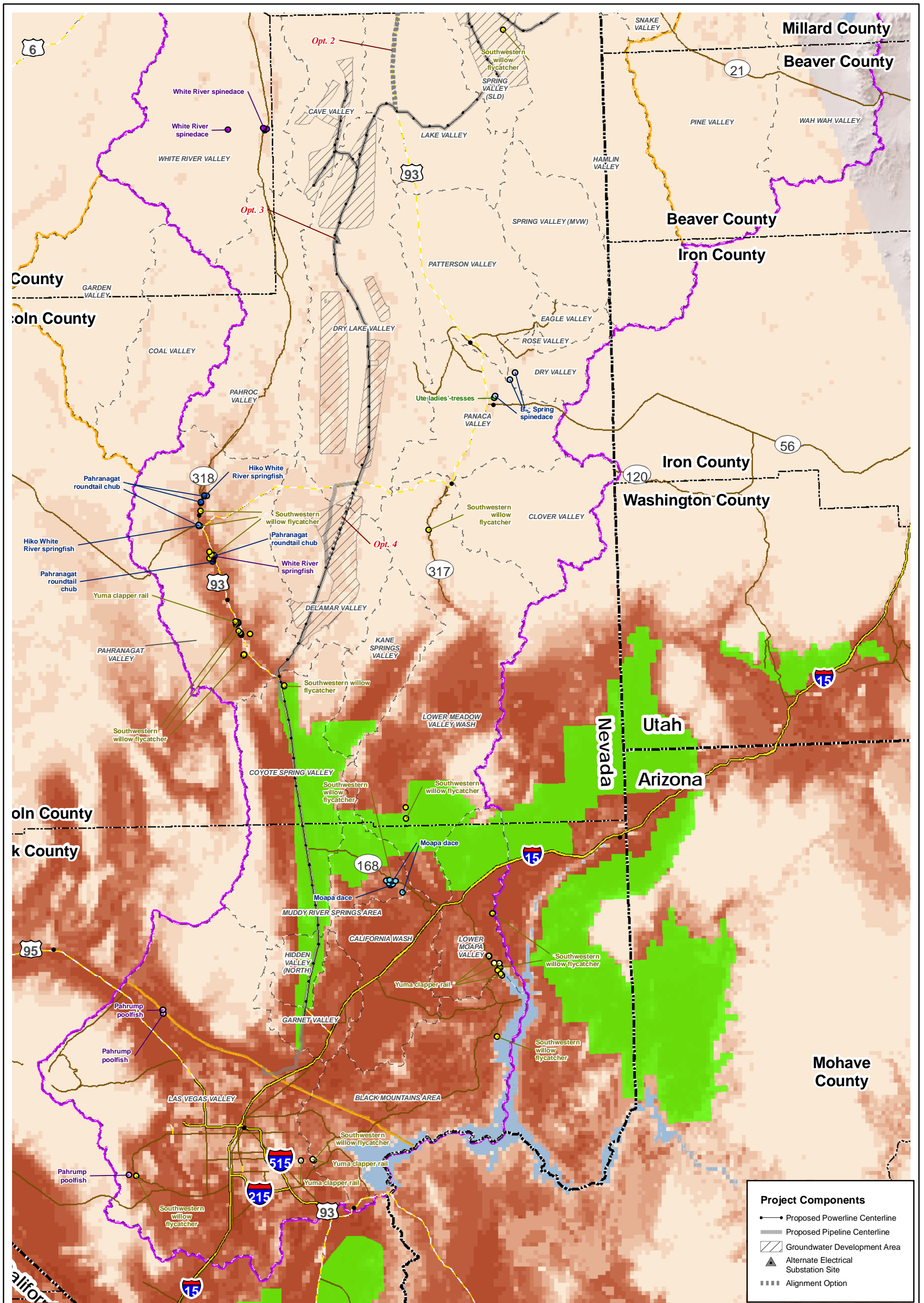
0 7.5 15 30 Miles

0 10 20 40 Kilometers

1 inch equals 15 miles

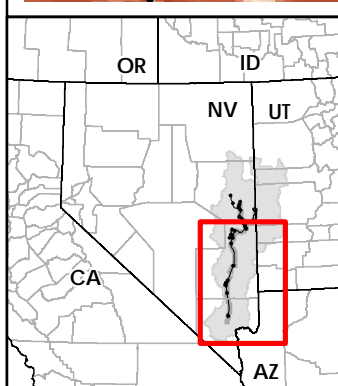
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-2
Occurrence of Federally Listed Species (South)



Project Components

- Proposed Powerline Centerline
- Proposed Pipeline Centerline
- ▨ Groundwater Development Area
- ▲ Alternate Electrical Substation Site
- Alignment Option



<ul style="list-style-type: none"> ▭ Natural Resources Region of Study ▭ Water Resources Region of Study • City or Town — Interstate Highway — US Highway — Major Road — State Boundary — County Boundary — Hydrographic Basins 	<p>USFWS Designated Desert Tortoise Critical Habitat</p> <p>USGS Modeled Potential Value</p> <p>High : 1</p> <p>Low : 0</p> <p>Birds</p> <ul style="list-style-type: none"> ○ Yuma clapper rail ● Southwestern willow flycatcher 	<p>Plants</p> <ul style="list-style-type: none"> ● Ute ladies'-tresses <p>Fish</p> <ul style="list-style-type: none"> ○ Big Spring spinedace ● Hiko White River springfish ● Moapa dace ● Pahrnanagat roundtail chub ● Pahrump poolfish ● White River spinedace ● White River springfish
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Proposed Clark, Lincoln, and White Pine Counties Groundwater Development Project

Figure F3.6-2

Occurrence of Federally Listed Species (South)

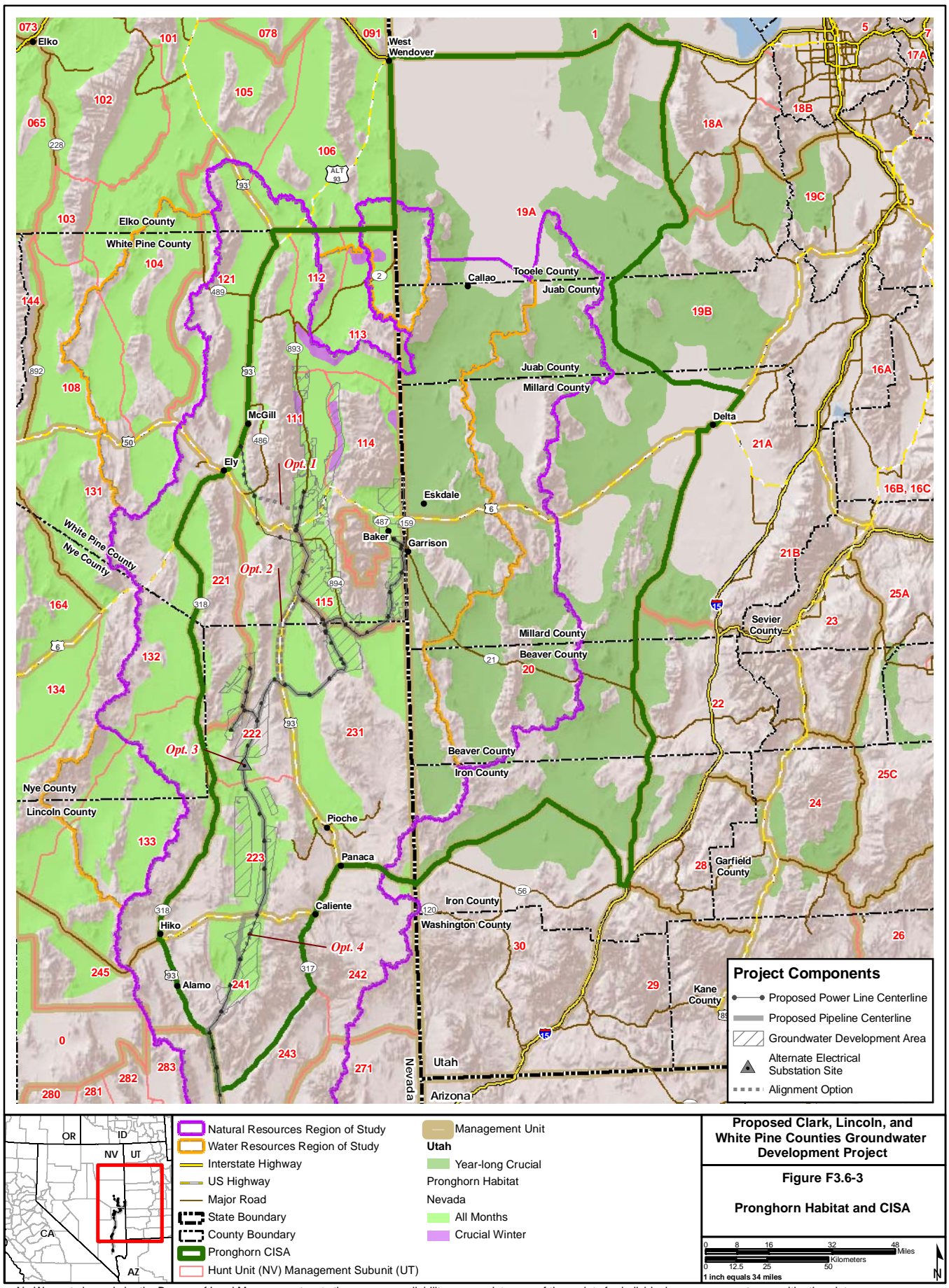
0 7.5 15 30 Miles

0 10 20 40 Kilometers

1 inch equals 15 miles

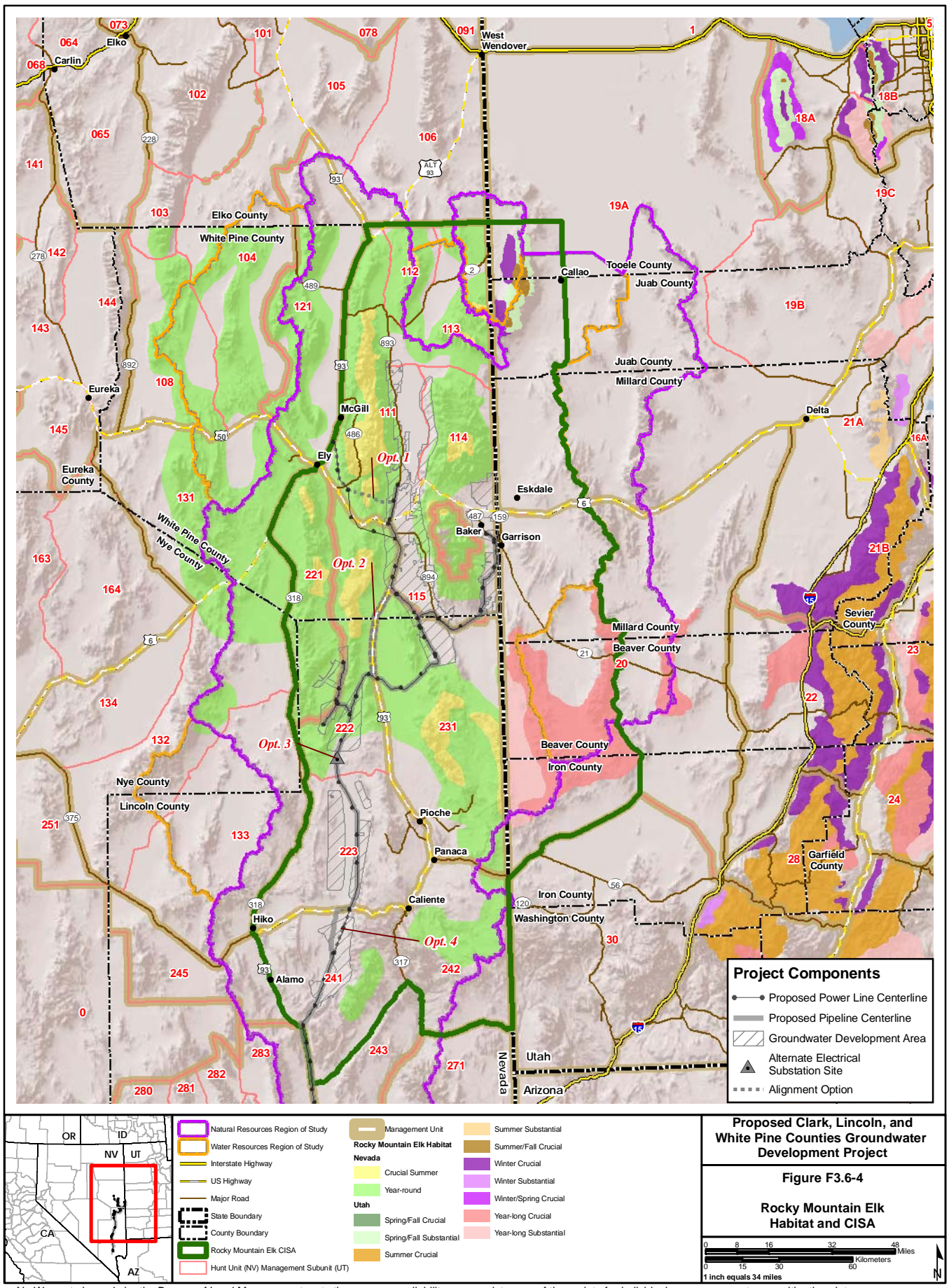
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-3
Pronghorn Habitat and CISA



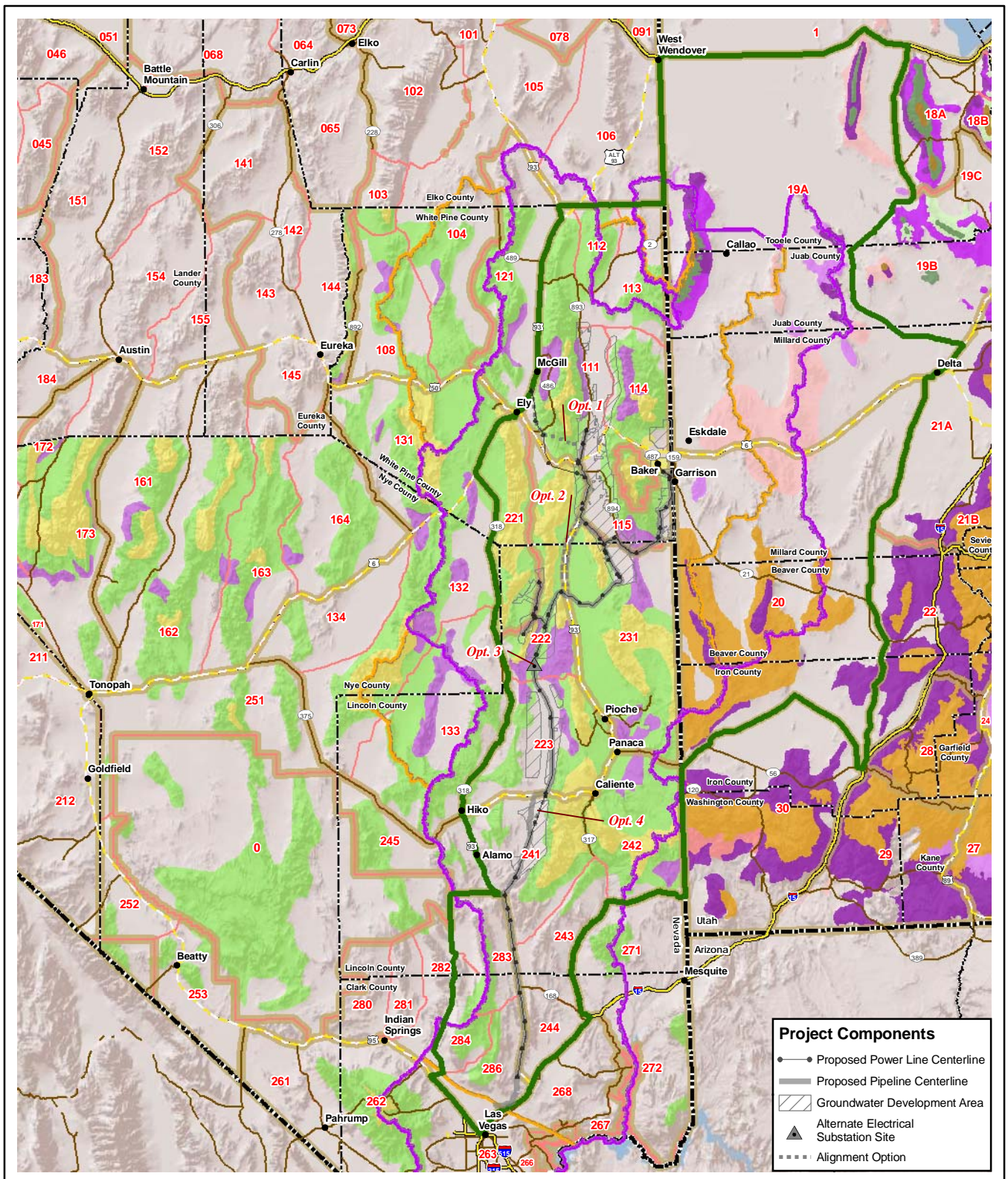
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-4
Rocky Mountain Elk Habitat and CISA



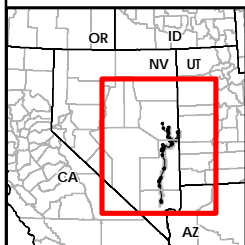
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-5
Mule Deer Habitat and CISA



Project Components

- Proposed Power Line Centerline
- Proposed Pipeline Centerline
- ▨ Groundwater Development Area
- ▲ Alternate Electrical Substation Site
- ⋯ Alignment Option

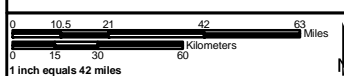


<ul style="list-style-type: none"> Natural Resources Region of Study Water Resources Region of Study Interstate Highway US Highway Major Road State Boundary County Boundary Hunt Unit (NV) Management Subunit (UT) Management Unit Mule Deer CISA 	<p>Mule Deer Habitat</p> <p>Nevada</p> <ul style="list-style-type: none"> Crucial Summer Crucial Winter Year-round <p>Utah</p> <ul style="list-style-type: none"> spring/fall crucial spring/fall substantial summer crucial 	<ul style="list-style-type: none"> summer substantial summer/fall crucial summer/fall substantial winter crucial winter substantial winter/spring crucial winter/spring substantial year-long crucial year-long substantial
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Proposed Clark, Lincoln, and White Pine Counties Groundwater Development Project

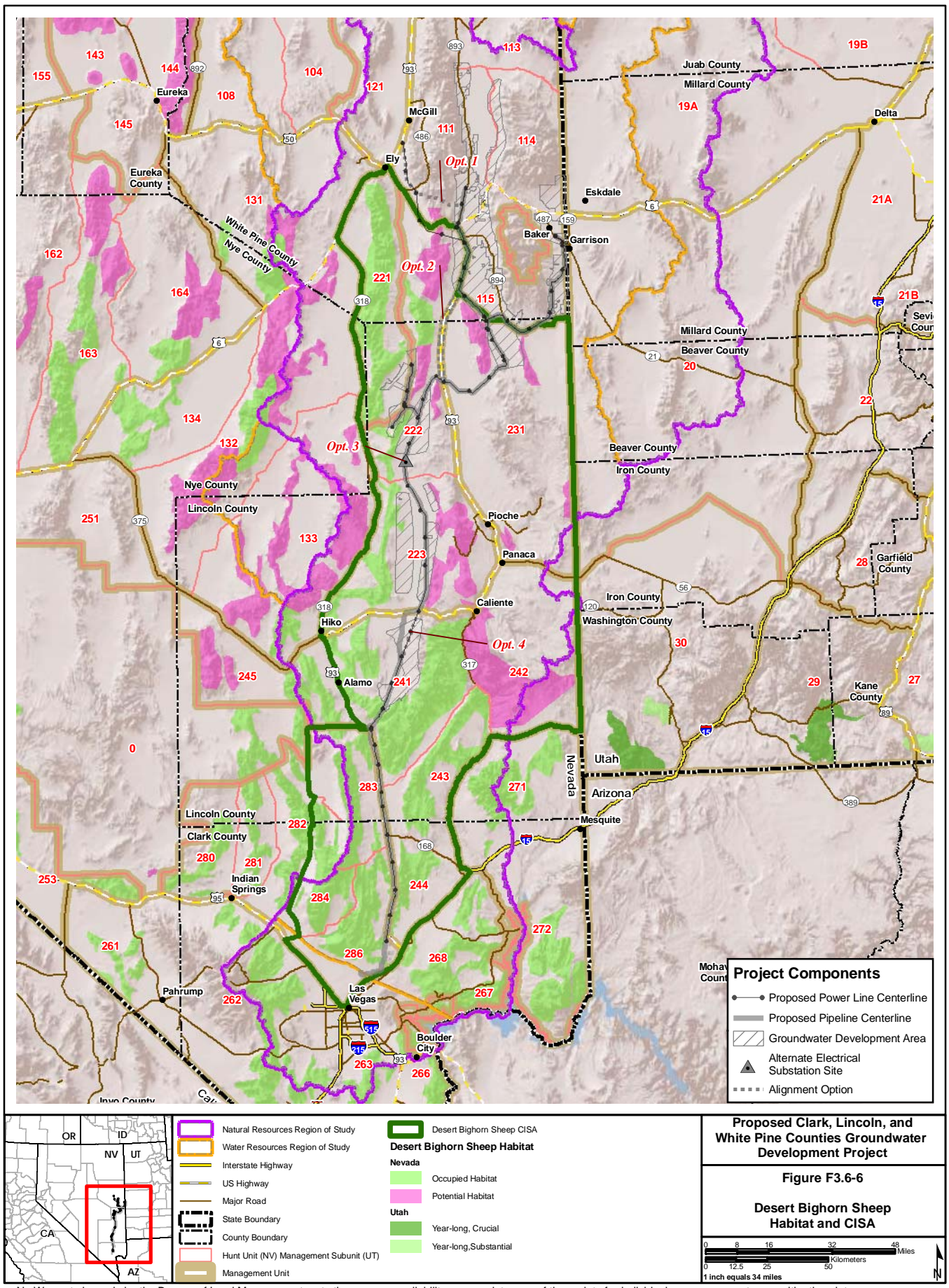
Figure F3.6-5

Mule Deer Habitat and CISA



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

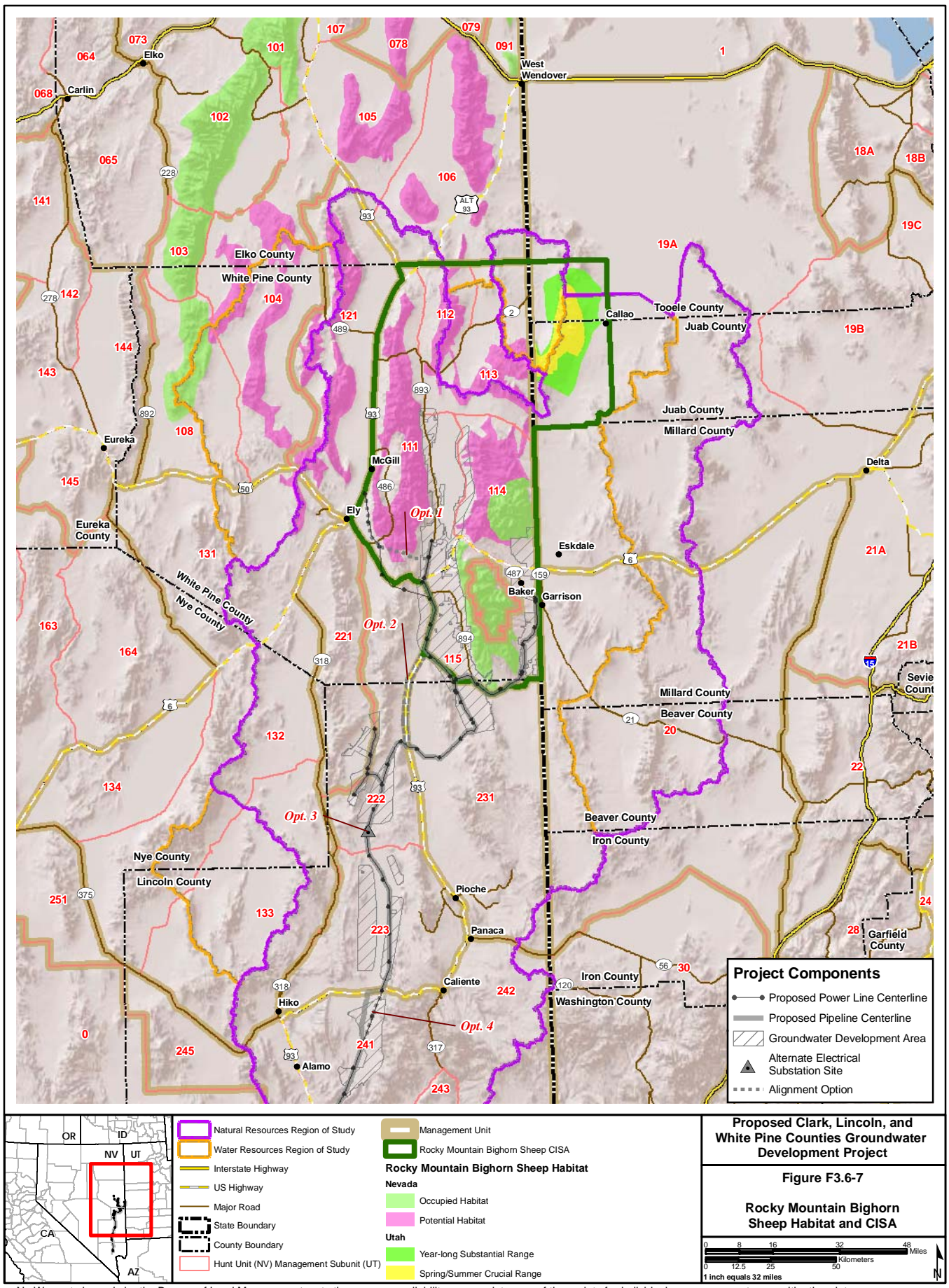
Figure F3.6-6
Desert Bighorn Sheep Habitat and CISA



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

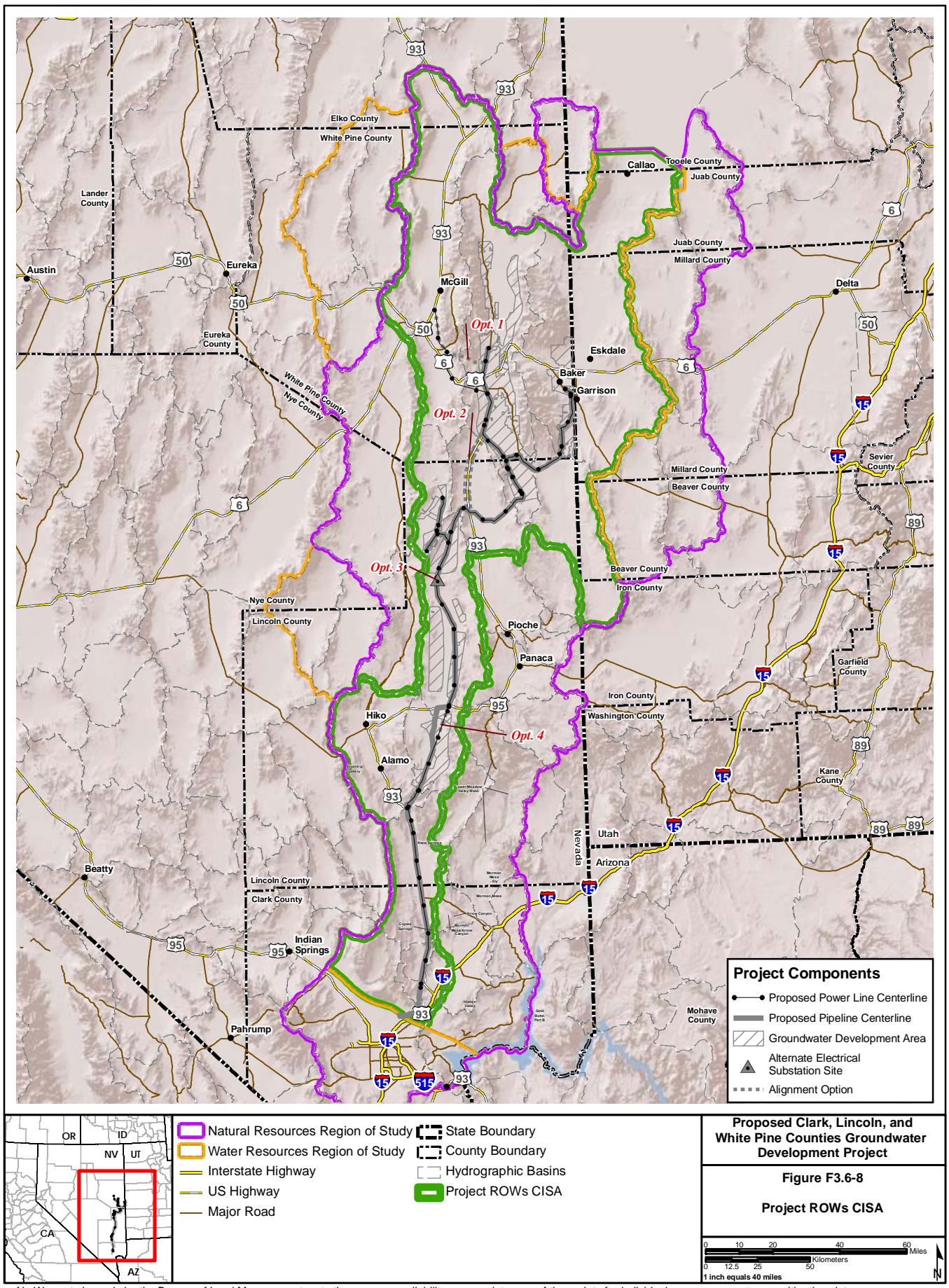
Figure F3.6-7

Rocky Mountain Bighorn Sheep Habitat and CISA



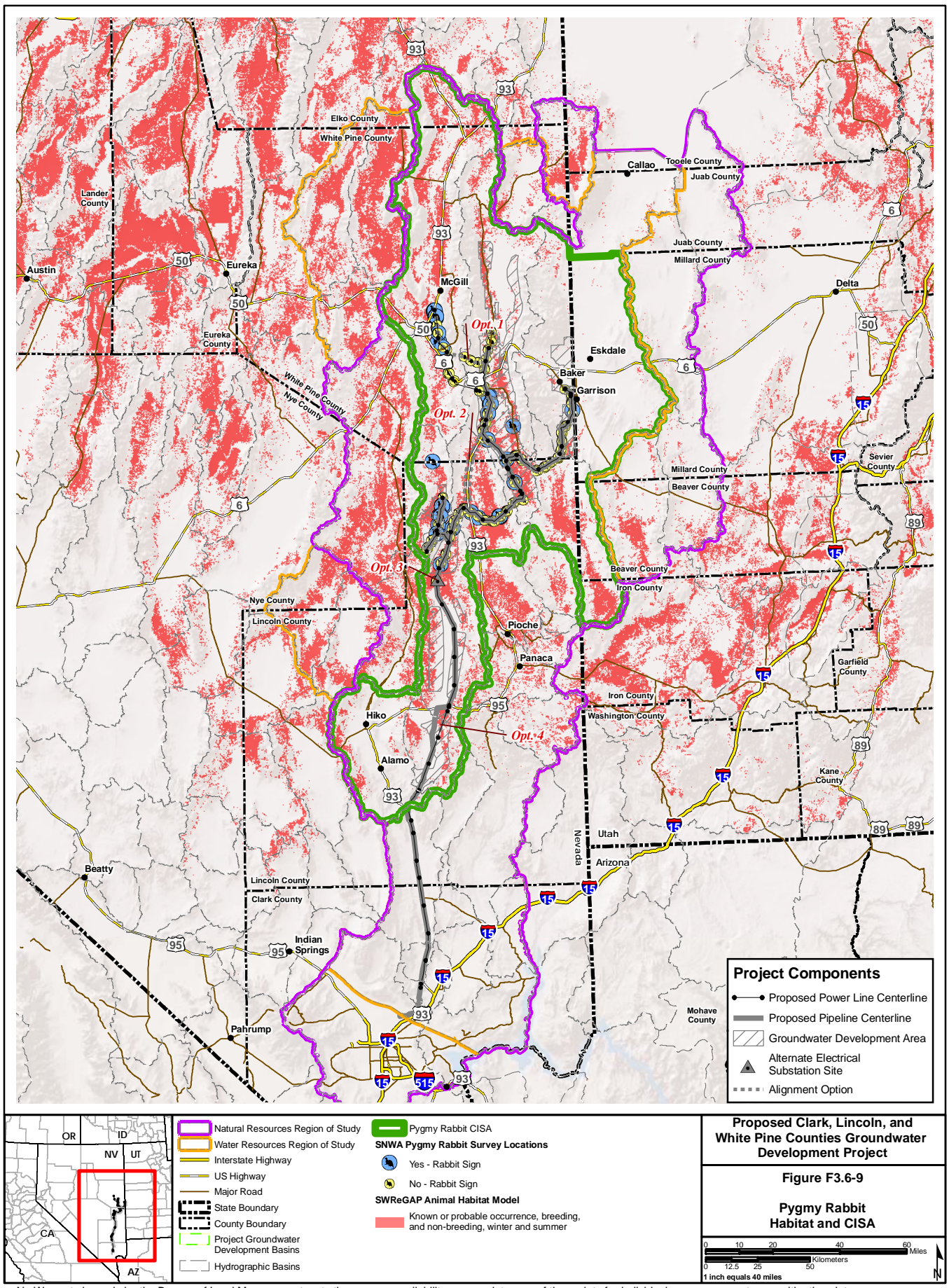
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-8
Project ROWs CISA



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-9
Pygmy Rabbit Habitat and CISA



Project Components

- Proposed Power Line Centerline
- Proposed Pipeline Centerline
- ▨ Groundwater Development Area
- ▲ Alternate Electrical Substation Site
- ⋯ Alignment Option

Natural Resources Region of Study

- Water Resources Region of Study
- Interstate Highway
- US Highway
- Major Road
- State Boundary
- County Boundary
- Project Groundwater Development Basins
- Hydrographic Basins

Pygmy Rabbit CISA

SNWA Pygmy Rabbit Survey Locations

- Yes - Rabbit Sign
- No - Rabbit Sign

SWReGAP Animal Habitat Model

- Known or probable occurrence, breeding, and non-breeding, winter and summer

Proposed Clark, Lincoln, and White Pine Counties Groundwater Development Project

Figure F3.6-9

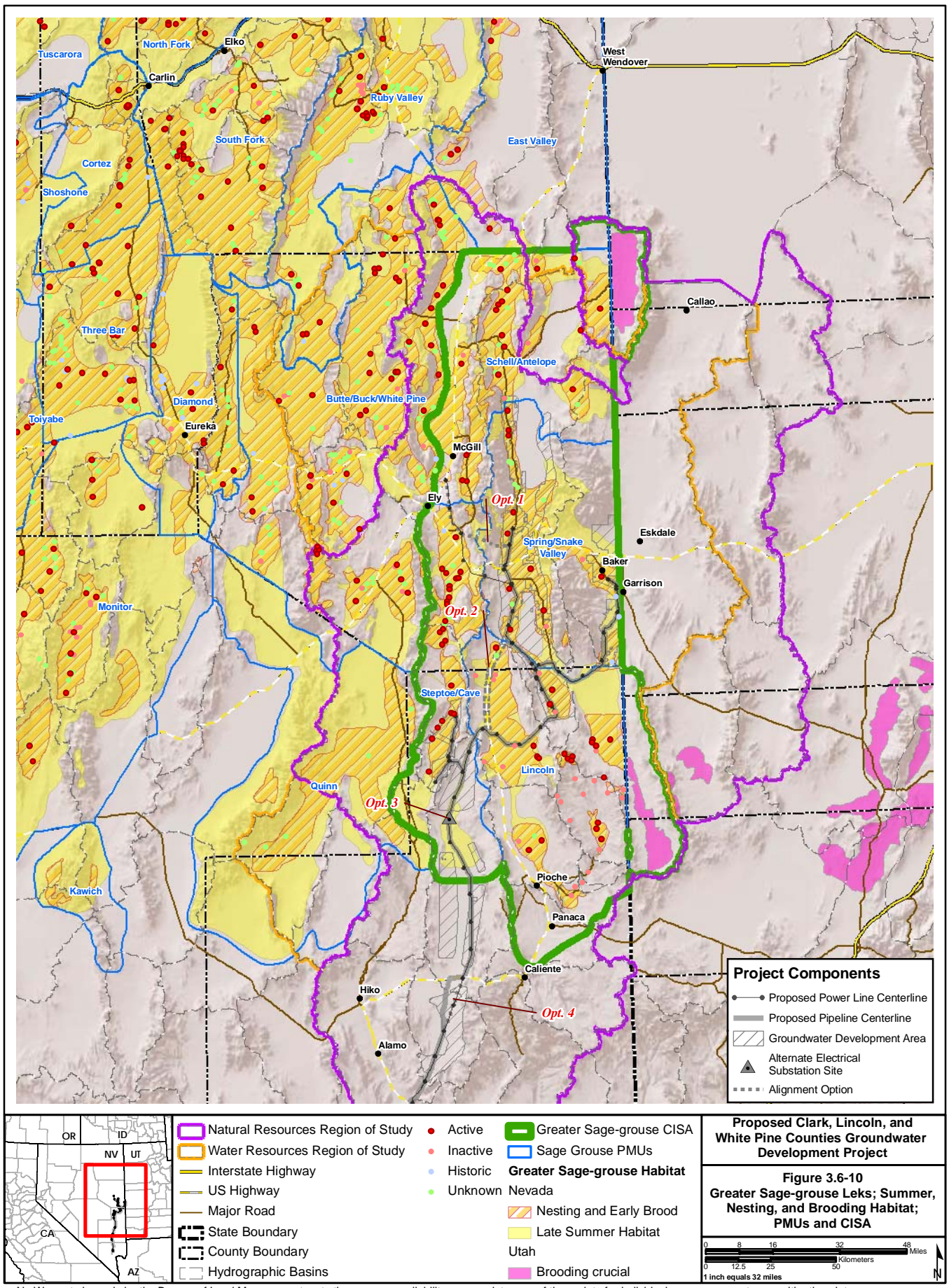
Pygmy Rabbit Habitat and CISA

0 10 20 40 60 Miles
0 12.5 25 50 Kilometers
1 inch equals 40 miles

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

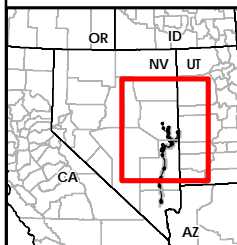
Figure F3.6-10

Greater Sage Grouse Leks; Summer, Nesting, and Brooding Habitat; PMUs and CISA



Project Components

- Proposed Power Line Centerline
- Proposed Pipeline Centerline
- ▨ Groundwater Development Area
- ▲ Alternate Electrical Substation Site
- ⋯ Alignment Option



<ul style="list-style-type: none"> ▭ Natural Resources Region of Study ▭ Water Resources Region of Study — Interstate Highway — US Highway — Major Road ▭ State Boundary ▭ County Boundary ▭ Hydrographic Basins 	<ul style="list-style-type: none"> ● Active ● Inactive ● Historic ● Unknown 	<ul style="list-style-type: none"> ▭ Greater Sage-grouse CISA ▭ Sage Grouse PMUs ▭ Greater Sage-grouse Habitat Nevada ▭ Nesting and Early Brood ▭ Late Summer Habitat ▭ Brooding crucial
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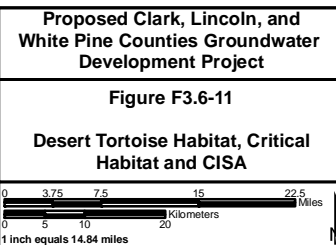
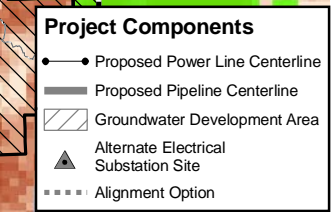
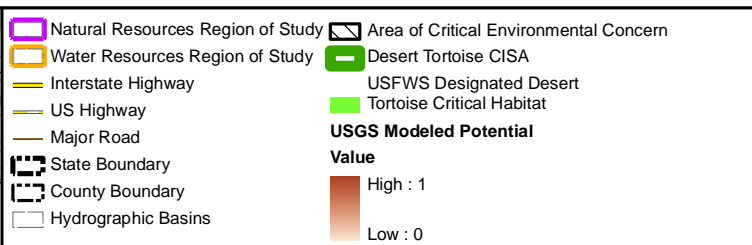
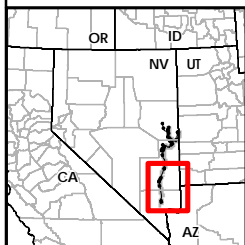
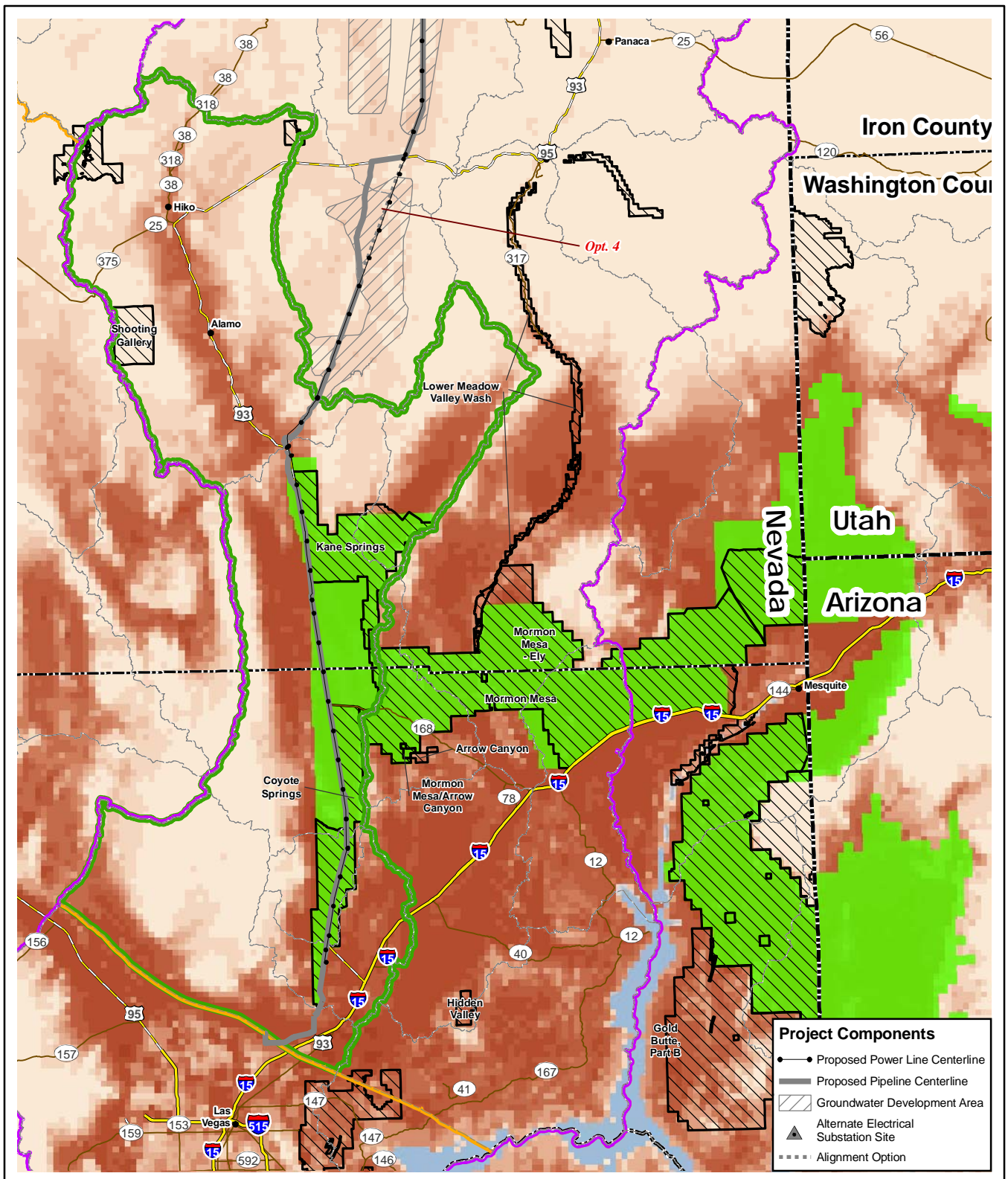
Proposed Clark, Lincoln, and White Pine Counties Groundwater Development Project

Figure 3.6-10
Greater Sage-grouse Leks; Summer, Nesting, and Brooding Habitat; PMUs and CISA

0 8 16 32 48 Miles
 0 12.5 25 50 Kilometers
 1 inch equals 32 miles

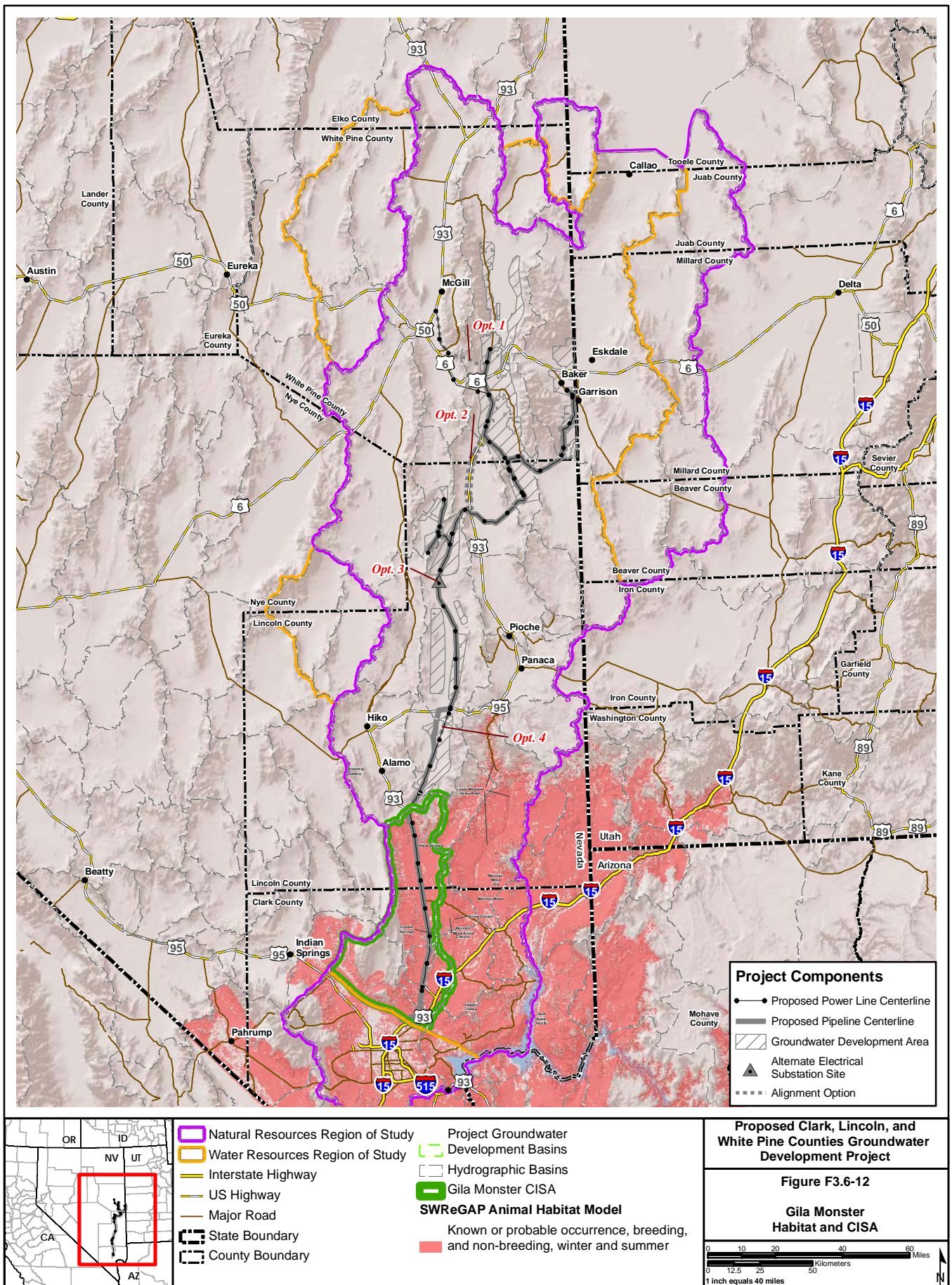
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-11
Desert Tortoise Habitat, Critical Habitat, and CISA



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Figure F3.6-12
Gila Monster Habitat and CISA



Project Components

- Proposed Power Line Centerline
- Proposed Pipeline Centerline
- ▨ Groundwater Development Area
- ▲ Alternate Electrical Substation Site
- ⋯ Alignment Option

Legend

- ▭ Natural Resources Region of Study
- ▭ Water Resources Region of Study
- Interstate Highway
- US Highway
- Major Road
- State Boundary
- County Boundary
- ▭ Project Groundwater Development Basins
- ▭ Hydrographic Basins
- ▭ Gila Monster CISA
- ▭ SWReGAP Animal Habitat Model
- ▭ Known or probable occurrence, breeding, and non-breeding, winter and summer

Proposed Clark, Lincoln, and White Pine Counties Groundwater Development Project

Figure F3.6-12

Gila Monster Habitat and CISA

0 10 20 40 60 Miles
0 12.5 25 50 Kilometers
1 inch equals 40 miles

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Appendix F3.6**Terrestrial Wildlife**

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