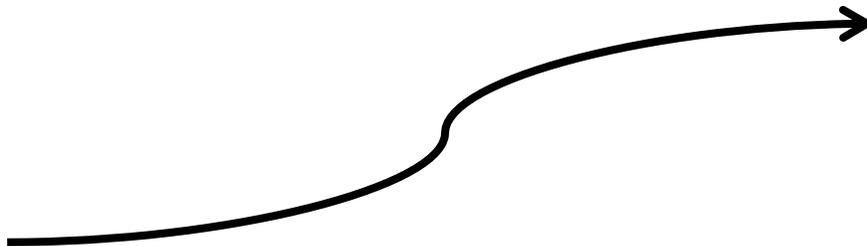


**El Mirage Cooperative Management Area
ENVIRONMENTAL ASSESSMENT
CA-680-08-865**

Twin Hills Road



**California Desert District, Barstow Field Office
Bureau of Land Management
CA-680-08-865**

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1.0 PURPOSE AND NEED

Background: This project consists of re-locating, designing and building Twin Hills Road along a new alignment using sustainable concepts, plus the installation of vault toilets near the visitor center and along the existing stretch of Twin Hills Rd. The Twin Hills Road is a key component of the primary internal access road network in the El Mirage Cooperative Management Area Management Plan. The road is intended to disperse visitor use.

The El Mirage Cooperative Management Area is a popular multiple-use off-highway vehicle recreation area situated near the town of Adelanto and El Mirage in the western end of San Bernardino County, near the Los Angeles County Line, about 30 miles northwest of Victorville, California.

1.1 Purpose

The purpose of the proposed action is to develop additional facilities to address the issues of access and sanitation. First priority is to expand the developed internal road system and provide access for primary, service, and emergency vehicles into the eastern portion of the recreation area. This is intended to distribute staging, camping and riding activities into the lightly used northeastern portions of the recreation area, including the reserved group area; thereby reducing congestion around the lakebed. Vault toilets are for human waste.

The Management Plan for the El Mirage Cooperative Management Area (1990) incorporates the principles of multiple-use, including but not limited to recreation, mining, grazing, and filming. The plan provides for long-term acquisition, development and management of the recreation area. This includes developing an internal road network and installing vault toilets. The proposed action details site specific improvements and supplements the management plan.

1.2 Need

Public use of the El Mirage Cooperative Management Area has remained constant or increased each of the last fifteen years¹, and is expected to continue, based on projections of population growth and limits to opportunities for open space recreation in the high desert/Victor Valley area. Currently most use is along the main access road and around the lakebed because of limited access. This is why additional vault toilets are proposed near the visitor center. Twin Hills Road will provide long-term opportunities for new staging and camping areas to help disperse visitor use into the north-eastern portion where there is currently little use.

1.3 Land Use Plan Conformance

The proposed actions occur on public land & recently acquired lands, within the CDCA Plan (as amended) multiple use class I (intensive) and vehicle access designation open. The proposed actions are in conformance with the approved activity Management Plan for the El Mirage Cooperative Management Area (August 1990), land use terms and conditions required by 43 CFR 1610.5, the CDCA Plan (1980, as amended), and the Federal Land Policy and Management Act (FLPMA) of 1976 [43 USC para. 1701 et seq.]. The location of the new road

¹ Increase based on automatic vehicle counts thru 90s on main entrance routes into the OHV area; and on staff observations in more recent years.

alignment and vault toilets is different from the locations in the management plan. The changes are a result of new site specific detailed planning, changing visitor patterns and new sustainable road design concepts. Therefore, while the proposed developments were consulted on, the precise locations have evolved to avoid potential negative impacts and reduce long-term maintenance requirements. The proposed action conforms with the desert tortoise protective measures, and the terms and conditions presented in Biological Opinion 1-6-90-F-36, Formal Consultation (Appendix). This EA addresses potential new site specific issues.

One of the major issues in the management plan is the lack of facilities, which to some extent limits use of the area to visitors with self-contained camping equipment. Other issues address concerns about visitor safety and riding behaviors. The new road alignment and vault toilets support management plan goals 4 and 7 because they provide structures to help accommodate visitor needs and therefore help prevent negative impacts to natural resources. The proposed project is in conformance with the following previous environmental documents:

- Environmental Assessment CA-068-0-7, dated January 19, 1990 for the El Mirage Cooperative Management Area
- Environmental Assessment EA CA680-03-02, dated October 2002 for the El Mirage Cooperative Management Area
- Environmental Assessment CA-680-03-36 SUPPLEMENT to CA-680-03-02, dated February 2003 for the El Mirage Cooperative Management Area
- Formal Consultation on El Mirage Cooperative Management Area Plan (6840 2800 (CA-9321.1)) (1-6-90-F-36); U.S. Fish and Wildlife Service, dated June 25, 1990.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

The proposed actions and alternatives were reviewed and discussed with Barstow BLM Field Office personnel and the Friends of El Mirage. The BLM arrived at the following Proposed Action because this alternative best fits the long term goals of the recreation area and incorporates sustainable facility design concepts. There would be no changes to the existing plans in the no action alternative. The preferred alternative takes into consideration and addresses various site-specific issues.

There are two basic alternatives for the Twin Hills Road, build it or do not build it. Because the decision to build it was made in the El Mirage Management Plan, and we have begun the development process, therefore, the decisions to make now are where and how to build it. Therefore, the formulation of alternatives are concerned with where and how to build it.

In looking at the consequences of choosing where to build it, there would likely be similar types of impacts in the alternatives. The difference would likely be the amount of impacts, and cost associated with mitigating them. Therefore, the staff worked several days in the field using the BLM road planning and design tools to identify the optimum alignment for the roads purpose. The optimum alignment selected is the centerline of the proposed road shown in Map 1. A ½ mile wide planning corridor was created centered on this line. The draft layout was drawn on a

map identifying the start and end points, and then choke points where it had to pass thru to avoid issues (boundaries, mountains, drainages, private land). This alignment was identified on the ground with flagging and documented with a GPS recorder. The staff test drove and modified the alignment several times to minimize grade changes, avoid or reduce resource impacts, and to provide an enjoyable visitor experience (views, ease of use).

The final road layout and design will be developed by an engineering firm under contract. The planning corridor is ½ mile wide. The corridor is to provide the engineering effort, and subsequent construction work, a wide enough area to work out the most efficient sustainable alignment requiring minimal construction cost and disturbance.

2.2 Proposed Action, Develop Twin Hills Road, Alternative A:

Project Specifications:

- Design new sustainable Twin Hills Road to provide access for the east portion of the recreation area. New alignment start on existing Twin Hills Rd. and runs north about .5 mile before turning near the boundary and running east about 2.5 miles through N1/2 of the S1/2 of Sections 20, 21 and into 22. The road will then turn south and run 1 ½ miles along the west side of the Twin Hills before turning west and following an existing un-improved dirt road back to Twin Hills Road.
- Classify Twin Hills Road a local road and apply appropriate design standards.
- Construct road along the new alignment using the following standards:
- Design for 24/7 use by primary vehicles in all weather, include drainage, culverts & low water crossings, crown center; preferred width 24'; apply aggregate.
- Provide two way traffic, motorhomes & mid-size trucks; may be single lane for short distances to reduce ground disturbances and construction cost in terrain with difficult features; sandy, rocky, steep.
- Provide passing lanes, turnouts and overlooks where necessary or scenic.
- Include design features to make road windy and therefore slow traffic speeds.
- Include treatment to reduce erosion and dust; phased or experimental approach ok.
- Completed road will receive routine maintenance at a medium level in the new road guidance, which is equal to level 4 as described in BLM Manual H-9113-2.
- Install new vault toilets near the visitor center, and along Twin Hills road.
- See Section 5 for definition of road terms, classification & maintenance levels.

Twin Hills Road is included in the El Mirage Management Plan as a key component for providing universal access and dispersing primary vehicles within the OHV Recreation Area. Currently there are no improved or maintained roads into the eastern half of the recreation area. Most primary vehicles such as motorhomes, campers and trucks towing trailers are currently unable to access this area, known as the Twin Hills. This purpose requires well designed slopes and drainage crossings for sustained all weather use.

Construction would follow standard construction, wildlife and cultural stipulations. Sites would be surveyed for desert tortoise and cultural resources prior to work. Waste material and litter would be contained and properly disposed. Work would stop if a cultural artifact is found or a tortoise walks onto a work site. Work would stop during excessive wind. Excavations and work

sites would be marked and barricaded as needed for public safety.

This alternative is intended to provide a sustainable long-term facility for moving people in and out of the eastern half of the recreation area. Therefore, the planning for this road included consideration for the overall cost of development and related maintenance. As a result the primary factors of concern are the road layout and design. Once the road alignment and design are determined it would likely be built in phases over several years.

2.3 No Action, Alternative B

In the No Action Alternative the proposed facilities and upgrades would not occur. The actions in the approved management plan would be implemented as they are. Visitors could still access, stage, camp and ride throughout the recreation area. Development of the Twin Hills Rd. along the existing plan alignment would remain as an action item and could still be modified in subsequent site specific planning. Installation of the vault toilets, along with other potential amenities would still remain as viable options also.

3.0 AFFECTED ENVIRONMENT

Soils/Minerals

The proposed project area is represented by one association (Table 1), the Cajon Association.

Soil Association	Percent Occurrence	Depth (Inches)	Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard
Cajon	05	60+	Excessively	Rapid	Very Slow	Moderate to High Wind

Table 1

1. Cajon Association: This association consists of excessively drained, rapidly permeable, very deep, fine sands developed in stratified sandy alluvium. These soils are nearly level to moderately sloping on slopes of 0 to 9 percent on alluvial plains and alluvial fans in the eastern portion of the recreation area. Supported vegetation typically consists of desert shrubs, forbs, and grasses. Elevations range from 1,200 to about 3,200 feet. This association comprises about 4 percent of the desert area.

Cajon soils have light brownish gray, single grain, loose, moderately alkaline, calcareous, fine sand surface soils and light brownish gray, single grain, loose, moderately alkaline, calcareous sand subsoil and substrata. Appropriate use for these soils include recreation, cropland, and wildlife.

Soil Erosion Potential: The original Twin Hills Rd. alignment followed an existing road laid out long ago along a section line, which runs down an east-west drainage for a couple of

miles. The road simply went straight, there was no consideration in the elevation contours or the flow of water across the landscape. To construct a road in those conditions would be expensive and would likely require expensive long-term upkeep. Soils in the proposed road project area cover a wide range because of the linear distance involved. They range from nearly impermeable well developed desert pavement to very permeable deep sandy wash bottoms.

The soils in the vault toilet project area are a combination of well drained alluvial deposits, consisting primarily of decomposed granite from the Shadow Mtns to the east. The soils here include a variety of lighter wind-blown soils deposited here. Overall, runoff in the affected areas is moderate and follows original contours. Wind erosion potential is moderate.

Hydrology

The El Mirage Cooperative Management Area is part of the Mojave River drainage which extends from the Antelope valley 30 miles to the west, to Soda Dry Lake 100 miles to the northeast. The affected environment of the project area is in this drainage. The main surface and sub-surface water flow pattern affecting the recreation area is the flow down the Sheep Creek drainage from the San Gabriel Mountains to the west end of the lakebed. There are several underground aquifers running through the area. They have different depths and water quality.

Precipitation: Precipitation in the El Mirage Management Area occurs in two distinct periods and averages between two and six inches a year. During November through April rains are usually a result of cold Pacific marine air intrusions. Three or four snow storms are common each winter. During July through October moisture is received from warm tropical continental air masses. The air masses often produce thunderstorms and may result in intense flash floods.

Surface Drainage: Within the recreation area, winter and spring rainfall typically spreads out naturally across the landscape in sheet flows. During short intense cloud bursts, water that runs off from the Little Shadow Mtns is channeled into man-made washes located to the north and east. Sheep Creek wash is a major drainage north from Sheep Canyon near Wrightwood down, to the lakebed. This is the source of clay making up the playa.

Ground Water: There are several aquifers running through the El Mirage area. These are located at different depths from the surface and contain water in varying degrees of quality. A large alluvial fan composed of thousands of years of sand and gravel deposits covers the landscape between the dry lakebed and the San Gabriel Mountains to the south. This geologic arrangement has provided the ideal condition for storing large volumes of water resulting from rain and snow melt. The amount drawn from the aquifer exceeded the natural replenishment years ago and is now re-charged with water from the California Aqueduct.

Floodplains: There are no floodplains in the affected project area. However, because of the way in which precipitation over the El Mirage area is drained the lake bed serves as an inland floodplain with a regular flooding pattern. Similar to how a plain next to a river floods when the river rises; the lakebed is the bottom of the basin and when the water rises around the edges it floods adjacent land.

Biological Resources

Vegetation: A rare plant baseline survey was conducted by the West Mojave Desert Monitoring Team throughout the El Mirage Cooperative Area as part of the 2004 State of California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division regulations governing the contents of the Habitat Management Plan (HMP). This was part of the environmental documentation required at the time for grant applications to the Division and the OHMVR Commission (CCR Title 14, Division 3, Chapter 15, Article 3, 4970.14). No known state or federally-listed threatened or endangered plant species are known to exist, and no candidate species are known to be present in the recreation area.

The proposed project would require moving of soil to build a new Twin Hills Road. Vegetation that would be disturbed by this action consists mainly of Creosote, Mojave Saltbush-Allscale Scrub, and annual forbs such as Mustards and Amsinkia. No Joshua trees would be disturbed.

Wildlife: Wildlife species diversity is low within the proposed project area. In addition, water is scarce within the proposed project area further limiting animal species and distribution. Other factors affecting wildlife habitat quality within the proposed project area are introduction of several invasive plant species, large areas of no vegetation, and off-highway vehicle use.

Threatened and Endangered Species: This is covered extensively under the Biological Opinion 1-6-90-F-36, Formal Consultation on the Management Plan for the El Mirage Cooperative Management Area, which addresses the Mohave ground squirrel (*Spermophilus mohavensis*) and desert tortoise (*Gopherus agassizii*).

In conformance with the opinion, the entire proposed road alignment was surveyed in March of this year for the presence of tortoise. A USFWS authorized biologist led teams of biologist to survey a mile wide corridor, extending ½ mile out from the centerline on both sides.

Two Mohave ground squirrel studies (May 2002 and May 2004) have been conducted by Philip Leitner throughout the El Mirage Cooperative Management Area as part of the State of California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division regulations governing the contents of the Habitat Management Plan (HMP) as part of the environmental documentation for grant applications to the Division and the OHMVR Commission (CCR Title 14, Division 3, Chapter 15, Article 3, 4970.14). As a result of the most recent studies, it has been determined no populations of Mohave ground squirrels are present.

Species of Special Concern: There are no other species of special concern known to be located within the proposed project areas.

Cultural Resources

The El Mirage Cooperative Management Plan identified eight cultural resource locations within the Shadow Mountains and along the southern shore of the lake bed. These included prehistoric trails, cairns, trail shrines, historic mining remains, historical homesteads, flake scatters and several areas of campsites. All sites located were the result of surveys conducted for mining and desert land entry investigations and no cultural inventory was conducted. Only one archaeological site has been recorded within the Management Area. That site is located in the

northern Shadow Mountains ridge line and contains both prehistoric and historic components. The site was recorded in 1984 by J. Chase, BLM, Barstow. The record has not been updated since then, and the current integrity of the site is not known.

A research design to provide specific goals for the archaeological survey was conducted in August 2000 at the request of the County of San Bernardino and the Bureau of Land Management. The primary goal of the survey was to record all historic resources within the selected sample for the purpose of identifying potential impacts.

Air Quality

California was divided into air basins based on similar meteorological and geographic conditions with considerations for political boundary lines given, whenever practical. The El Mirage Cooperative Management Area falls within the Mojave Desert Air Basin (MDAB). In this desert region the summer days are extremely hot and dry. Maximum temperatures are about 100 F almost daily in midsummer and frequently occur from May to September. Because of rapid radiant cooling in dry air, temperatures fall rapidly during night, in summer and winter. Winter cold air often comes from the north and frosts are common, along with occasional snow fall. Rapid warming by day keeps daily mean temperatures above 50 F throughout the year.

Annual precipitation is two to six inches. Most of the precipitation in the MDAB is during winter. Summer rain is from sporadic thunderstorms. The potential for dispersion and dilution of pollutants during spring and summer is very good. Afternoon mixing heights range from 6,000 to 8,000 feet above the surface and wind speeds can range from 8 to 25 miles per hour. During the nighttime and early morning hours, the dispersion potential is reduced because of lower mixing heights (about 1,000 feet above the surface) and winds of 6 to 8 mph. Autumn and winter, the dispersion potential is reduced because mixing heights are low (ranging from 200 to 2,000 feet above the surface) and wind speeds are reduced to about 4 to 8 mph.

The prevailing wind direction in the El Mirage Management Area is from west to east. The phone fall wind pattern begins to shift in late September to a gentle prevailing eastern breeze. Summer monsoon season varies in intensity and duration, centered around July with gusty southeastern winds. Occasional strong northern winter winds blow in intense cold storms and are often associated with regional snow events.

The pollutant emissions from sources and atmospheric interactions determine the quality of air. Air quality in a given location is described by the concentration of various pollutants in the atmosphere. An area is designated by the EPA as being in non-attainment for a pollutant if ambient concentrations of that pollutant are below the National Ambient Air Quality Standards.

Non-attainment areas are designated if repeated violations of the NAAQS occur, and the relative seriousness of the problem is determined at the time that a basin is determined to be in non-attainment of national standards. The classification may be deemed to be Very Serious, Serious or Moderate non-attainment. The California Clean Air Act of 1988 also requires that areas of California be designated attainment, non-attainment, and unclassified for state ambient air quality standards. The El Mirage Cooperative Management Area is included in an area classified by EPA and the California Air Resources Board as a Moderate nonattainment area for

particulate matter (PM10) and serious non-attainment for ozone.

Sources for ozone missions include exhaust from primary transportation vehicles (particularly diesel trucks) industrial sources, including secondary sources, and climatic sources. Sources for particulate matter under 10 microns, PM10, include wind erosion on unpaved surfaces - including disturbed areas, construction activities, mining-related activities, use of unpaved routes, and dirt storage piles. During most days of the year, visibility exceeds 25 miles. Exceptions occur during strong westerly winds when dust is blowing and when smog filters up from the Los Angeles Basin. In general, there are no major sources of pollutant emissions in the area and the pollutants are uniformly dispersed over the area.

Scenic/Visual Resources

A visual resource inventory was conducted during 2010 on public lands in the Barstow Field Office. The El Mirage Recreation Area was included in the inventory as part of the Victorville scenic quality rating unit. This unit was evaluated with an overall scenic quality rating of C (A - C scale). The primary visual factors in this unit are heavily impacted by urban, commercial and agricultural developments, along with scattered sprawl.

This scenic rating unit is a common landform with few outstanding landscape characteristics. The 1990 El Mirage Management Plan general description of the visual resources, summarized as: "The El Mirage Valley is basically intact as a natural and scenic setting. The few visible developments north of the lakebed blend into the natural landscape."

The current Twin Hills Rd. runs due east west on a section line and is a moderately visible feature from several miles away. When viewed from Highway 395 there are no other similarly visible roads in the east half of the project area. There are several more outside, including along boundaries. A few hillclimbs are visible on the Twin Hills. Currently, there are no visible developments in the eastern portion of the recreation area when viewed from Highway 395, Adelanto, Victorville, Apple Valley or Hesperia. From the perspective of these nearby communities the landscape looks natural with few roads or trails. From the south west portion of Adelanto the numerous smaller roads and trails are visible. The eastern portion of the recreation is typically dark with no permanent light sources. There are no scenic plan actions.

Public Health

Every year tens of thousands of visitors ride OHVs at El Mirage knowing it is a relatively remote and harsh desert environment, and they have done this for decades. Riding off road is an inherently high risk activity that could result in bodily harm or damage to property. Other popular recreation activities here that are also dangerous include: flying personal aircraft (gyrocopter, ultralight) model rocketry, landsailing, and all kinds of things with a parachute or sail attached. The overall amount and type of annual incidents of injury is relatively minor, and every few years there is an occasional fatal accident.

The project area has been surveyed for potential public health risk and none have been identified that create an un-natural or un-reasonable potential public health risk. Previous management actions taken to reduce risk included removing obstacles and mounds on the lakebed, tearing out old fences, picking up abandoned property and trash, plus an on-going active mine hazard

abatement program.

4.0 ENVIRONMENTAL IMPACTS

Critical elements of the environment, as set out in the BLM handbook for compliance with the National Environmental Policy Act regulations, and are evaluated in the following table as to whether they are present and may be potentially affected by the proposed action. Those critical elements or other resource values or uses that are not present or that are present but are not potentially affected are not discussed further in the analysis of effects in this chapter.

Resource Value/Use (Critical Elements**)	Potentially Affected	
	Yes	No
Geology		x
Soils	x	
Water Quality (Surface/Ground)**	x	
Vegetation	x	
Wildlife	x	
T&E Species**	x	
Wetlands/Riparian Zones**		x
Cultural Resources**	x	
Nat. Amer. Religious Concerns**		x
Air Quality**	x	
Scenic/Visual Resources	x	
Land Use		x
Public Health		x
Prime/Unique Farmlands**		x
Wild and Scenic Rivers**		x
Wilderness**		x
Wastes, Hazardous/Solid**		x
ACECs**		x
Floodplains**		x
Invasive, Non-Native Species**	x	
Environmental Justice**		x

4.1 Impacts of the Proposed Action

Soils/Mineral Impacts

The proposed action would likely result in a minor reduction, or at least no short term gain, in the existing negative impacts on soils around the lakebed and at existing staging and camping areas. The potential reduction would be realized from distributing visitors into the eastern portion of the recreation area with the new Twin Hills Rd., and therefore fewer disturbing activities around the lakebed. There would be no foreseeable impacts from the vault toilets.

The level of benefit is dependent on the amount of use dispersed away from the lakebed. The soils on which the road will be developed, and where the vault toilets go, are not subject to subsidence or expansion and are mainly alluvium resources; decomposed granite. There would

be minor short term negative impacts from erosion, changes in topography, or unstable soil conditions from excavation, grading or fill. There would also likely be a minor amount of soil erosion caused by materials blowing from the site, or carried away by runoff. Materials that blow away would tend to be fine-size materials. This would increase the dust concentration in the project vicinity resulting in air quality deterioration on a short-term basis. The proper aggregate could significantly reduce long-term erosion.

Residual Soils Impacts: A minor loss of soil would occur during the construction phase. Long-term wind erosion would stabilize on the disturbed surfaces and this project would not likely result in an increased amount of dust from more dirt road surface supporting vehicle travel. The actual amount of long-term airborne dust added to the ambient local air quality will be determined by what level of priority this issue is given during the construction phase. If given a high priority, the subsequent road design would include a high quality, low dust, granular crushed fine for the road surface. Two additional indeterminate variables are the amount of visitation and weather patterns.

Hydrology Impacts

Groundwater: There are no foreseeable impacts to local groundwater supplies from the proposed action. Impacts to other public or adjacent landowner water supply would be negligible. Construction activities would not affect the aquifer.

Surface Waters: The proposed action would re-aligned the existing road out of an east west running drainage and prevent the long-term erosion that would have occurred otherwise. No perennial bodies or flows exist or would be affected in the project area. All surface ephemeral flows (i.e., after storms) in the project area drain to the east toward Highway 395, down Fremont Wash and into the Mojave River at Silver Lakes. Natural storm runoff could result in temporary increases in sedimentation and the modification of natural ephemeral drainage flows in areas disturbed during construction activities. Drainage flows would return to static flows and drainage patterns within a couple of years. The vault toilets should provide a minor positive benefit by reducing the amount of human waste disposed in open environment.

Floodplains: El Mirage dry lake bed is a natural playa at the bottom of an inland basin, and would not be impacted by the proposed action. It goes through regular flooding and drying periods when cracks fill in that begin to appear around the edges during dry periods or from recreational use, and that maintain the smooth flat surface that recreationists find so attractive for their pursuits. The surface rain runoff for the project area follows natural sheet erosion patterns and is not channeled into, or does not drain onto, a plain next to a river that is subject to flooding.

Residual Impacts: Residual drainage flow change impacts associated with the proposed action are negligible, and would not likely affect land outside the recreation area.

Biological Resources Impacts

Vegetation: There would be indirect minor positive impacts to vegetation from the proposed new road alignment and subsequent construction because it is a lot easier to get people to go where you want them to go by putting in a good road there. Given an un-limited amount of ways to get there, most people will take the easiest way most of the time. Therefore, because the

new road is designed with sustainable concepts, and was built to minimize impacts, the subsequent use of this road should preclude the use of other less desirable paths and therefore result in a net reduction of less desirable impacts.

There would likely be minor direct negative impacts resulting from disturbances during construction of the road, and installation of the vault toilets. Road clearing and construction activities would result in the loss of plants from the most common desert types, Creosote Bush (*Larrea tridentata*) and invasive species, Russian thistle (*Salsola spp.*), Fiddleneck (*Amsinkia tessellate*), and filaree (*Erodium cicutariu m*). Few plants would be impacted by the vault toilets because they can be located in previously disturbed areas. The proposed action is estimated to disturb less than 5 acres of desert vegetation.

Threatened and Endangered Plants: No rare, threatened, or endangered plant species, as designated by the state or federal government, were found at the proposed project area, and no impacts are expected to occur.

Invasive, Non-Native Species. Russian thistle (*Salsola spp.*), Fiddleneck (*Amsinkia tessellate*), and filaree (*Erodium cicutarium*), annual weedy species, may be promoted by the disturbance of soils associated with construction activities. Nearby areas are infested with these species already, and existing OHV open area activities can promote them when conditions of moisture, disturbance, and seed dissemination are favorable. Control is difficult in areas which receive ongoing disturbance (suitable for pioneering annuals).

Wildlife. There would be minor negative direct impacts during construction & use of the road to non-sensitive wildlife (small mammals, lizards, insects, foraging birds) inhabiting or otherwise utilizing biological resources in the proposed action. There would likely be fewer negative impacts from larger primary vehicles after development because they are more likely to use the new road instead of cross country travel. There would be the loss of a small amount of relatively un-disturbed areas in the linear corridor where the road is developed. This includes subsequent crushing and removal of plants and the habitat they provide for small animals, birds and rodents. There would be minor negative long term impacts to snakes, lizards, insects and small rodents that cross or rest in the road and get run over by vehicles.

The other part of the proposed action, installation of the vault toilets, are likely to have moderate negative impacts to most wildlife within a ¼ mile from frequent, and potentially loud, visitor staging nearby. There would likely be few direct impacts during construction because they would likely be located in previously disturbed areas.

Threatened and Endangered Wildlife: The desert tortoise was formally listed as a federally threatened species on April 2, 1990. The desert tortoise is also listed as a threatened species at the state level. The proposed facilities would be located in an area designated by the BLM as Category III habitat, with an estimated density of zero to 250 tortoises per square mile based upon density estimates contained in Berry (1984; Plate 2-2; A Tortoise Densities in the California Desert Conservation Area).

There is a very low probability of direct impacts to desert tortoises as a result of the

proposed action because the area was surveyed first. The road design will avoid areas where tortoise and burrowing owls were detected. Direct impacts include potential equipment or vehicle-related tortoise injury and/or mortality due to construction activities and subsequent long-term vehicle use.

There would likely be subsequent surface disturbances from staging and camping along the new road that would result in loss of vegetation. Indirect impacts, although less likely, includes disruption of tortoise dispersal and enhancement of raven habitat through the provisioning of roosting sites and food sources. Impacts are likely within acceptable parameters of existing biological opinion. There would be no impacts to tortoise from the vault toilets.

Residual Impacts: There is a small possibility the loss of individual tortoises could occur by on-going visitor use of the new facilities. However, this is basically the same impact as in the no-action alternative because the land is already open to staging, camping, and off road vehicle travel. Weed proliferation would continue to occur in the area over the long-term, given the levels and types of disturbances. Again, this impact would basically be the same as the no-action alternative. Ultimately, the proposed action is likely to reduce, or at least minimize, negative natural resource impacts.

Cultural Resources Impacts

No historic or prehistoric sites were recorded on the surface of the proposed areas of potential effect. Therefore, there are no known or foreseeable impacts to cultural resources in the project area from the proposed action. There is a possibility of cores and flakes of jasper being located in the new road alignment, and it is possible a cultural resource could be unearthed during installation of the vault toilets. These could be in situ or located where they are found as a result of sheet wash from higher locations to the east, and therefore would most likely reflect little or no site integrity.

Native American Resources: No sensitive Native American sites have been identified in the proposed project area, therefore there would be no known affect.

Paleontological Resources: No fossils are known to exist within the proposed project area, therefore there would be no affect.

Residual Impacts: There are no foreseeable residual impacts on cultural resources. Impacts to buried sites/artifacts not identified during construction activities could occur.

Air Quality Impacts

Fugitive dust includes PM10 (particulate matter smaller than 10 microns), a criteria pollutant covered by the Clean Air Act. The El Mirage airshed is part of the Greater San Bernardino non-attainment area for PM10. There would be minor negative impacts on air quality as a result of the proposed actions, include generation of fugitive dust emissions, from short-term construction activities (excavation) and wind erosion (disturbed areas). The new road alignment should provide minor positive benefits by reducing daily dust emissions because it will not follow a long east – west linear alignment and would therefore have less surface exposure to scouring prevailing winds.

The new road should also provide minor positive benefits by locating visitor activities away from sensitive soils around the lakebed to more durable soils resistant to wind erosion. Air quality impacts may contribute to short-term exceeding of the 24-hour standard for PM10 during excavation activities depending upon wind conditions and other measures taken and therefore require reasonably available control measures (RACM). The limited scope and length of all construction activities results in annual emissions below the de minimus levels. As a result no further conformity analysis or determination is necessary.

Residual Impacts: There would be no foreseeable residual impacts to air quality.

Scenic/Visual Impacts

The existing Twin Hills Rd. is a single lane road that runs for miles across the valley and was apparently graded along the section line to provide access for land developers. This and many similar roads are some of the dominant landscape features. The vault toilets are painted a color that blends well with the surrounding landscape, therefore they have a negligible visual effect.

The new proposed alignment should provide mild positive visual benefits because it keeps the road relatively higher on the natural bajada formed between the low point in the valley along the Mojave River, and the Shadow Mountains. Furthermore, the new alignment fits the landscape in a more natural pattern and should be less visible because it wraps in and out of the high and low points. There will be minor negative long-term impacts to residents that currently have a clear night view of the area because the new road will bring campers and visitor vehicle traffic into an area that is currently nearly devoid of all night lights.

Public Health Impacts

There are no foreseeable impacts to public health because of the proposed action to design and build a new Twin Hills Road. The installation of additional vault toilets should have a mild positive impact because they will provide a receptacle for human waste that may have otherwise been deposited in the open environment.

4.2 Cumulative Impacts of Proposed Action, Alternative A

Past, present, and reasonably foreseeable cumulative impacts for activities proposed within the geographic area in question, The El Mirage OHV Open Area, were adequately evaluated in the El Mirage Cooperative Management Plan. In that document, the Environmental Assessment found the management actions would not result in negative cumulative effects to the natural and human environments. However, since that document was prepared most private land has been acquired within the recreation area, and the perimeter fencing is complete.

Visitor use is now pretty much contained and concentrated within the recreation area. As a result new visitor patterns emerged, some of which have negative impacts that may be corrected. These include preventable accidents, harm to the environment from improper riding etiquette, and the destruction of Joshua trees from intensive camping pressure. Because the proposed action addresses these issues there would be a net positive cumulative impact to the natural and built environment. The proposed action will likely accomplish this with positive changes from increased visitor distribution and travel patterns along a new sustainable road;

combined with the sanitary provisions provided by the new vault toilets.

4.3 Impacts of No Action, Alternative B

In the no action alternative, the existing developed and proposed road system would remain as called for in the original management plan. The no action alternative is simply no different action other than the approved management plan. This course of action does not preclude any other potential future actions, and therefore an un-limited number of future road alternatives could be examined and or adopted and developed. The most direct impact would be an over-utilization of the resources around the lakebed, and an under-utilization of the natural resources in the eastern portion of the recreation area.

Soils/Mineral Impacts

The area would continue to be affected by wind and water erosion during high wind and rain fall with no foreseeable change to existing impacts. This includes a minor on-going negative impact associated with wind scouring the existing east west road alignment.

Hydrology Impacts

There would be no impacts from the no action alternative. Surface water would continue to follow natural patterns and drainages.

Biological Resources Impacts

Vegetation.

There would be a slight indirect negative impact to vegetative resources if no action is taken now because visitors will continue to use the existing Twin Hills Rd. as rough as it is. However, because the road is in poor condition visitors often leave it to make their own tracks on what they perceive to be smoother terrain. This usually results in the inadvertent running over of vegetation, and encourages other riders to make their own trails.

Wildlife. Impacts to wildlife would be similar to the impacts to vegetation.

Cultural Resources Impacts

There would be negligible impacts to cultural resources within the recreation area or the project area as a result of the no action alternative.

Air Quality Impacts

Impacts on air quality as a result of the no action alternative would be a continuation of existing impacts. In regards to wind loss soil erosion this impact is mentioned above in soils. There would be continued dust blowing from the existing roads long east west alignment, which is parallel to the prevailing wind.

Public Health Impacts

There are no reasonably foreseeable positive or negative public health impacts likely to occur as a result of the no action alternative. There could be a minor negative on-going impact from a small percentage of visitors using the bushes for a bathroom, instead of traveling to use the existing facilities. However, any number or configuration of vault toilets could be installed in future management actions.

4.4 Cumulative Impacts of No Action Alternative, Alternative B

The most likely cumulative impact from the no action alternative would be a continuation of the present situation with most visitors staging and camping along the existing primary roads. This visitor pattern tends to result in an over-using of the natural resources, such as the plants and small animals, in the popular areas because they do not get enough rest time between uses. There is also a build-up in deposits of human waste from visitor use along existing roads. However, to approve the no action alternative still allows all possible other alternative road alignments or configurations. This includes additional management actions to protect existing natural resources should the current visitor patterns develop into a harmful situation.

There is no foreseeable irretrievable commitment of resources or permanent impacts likely to result from the no action. The no action alternative does not preclude going forward with the current plan action, or implementation or other plan actions, or the creation and implementation of new plan actions.

5.0 PERSONS CONSULTED

BLM

Brad Mastin, Outdoor Recreation Planner
Art Basulto, Park Ranger
John Kavanaugh, Park Ranger
Tim Hough, Park Ranger
Vicki Salazar, Heavy Equipment Operator
Sai Syhaphom, District Engineer
Ken Decino, Volunteer, (Equip Operator)
Shelly Jackson, GIS Specialist
Edy Seehafer, Environmental Coordinator
Chris Otahal, Natural Resource Specialist
Jim Shear, Archeologist
Anthony Chavez, Air, Water & Soil Specialist

Prepared by: _____
Bradley Mastin
Outdoor Recreation Planne

5.1

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5.2 BLM ROAD TERMS (BLM Manual 9113, Roads)

.16 Functional Classification. The method and terminology recommended by the National Highway Functional Classification Study of 1968 provides guidelines for classifying Bureau roads. The Bureau has added resource roads as a category in addition to those identified in the 1968 study as recommended by an interagency task group study on low-volume road standards, 1976-77. As Bureau roads are predominately low volume and are generally extensions of, or connectors to State or county systems, an "arterial" category does not apply to Bureau roads. Classify Bureau roads as follows:

A. Collector Roads. These Bureau roads normally provide primary access to large blocks of land, and connect with or are extensions of a public road system. Collector roads accommodate mixed traffic and serve many uses. They generally receive the highest volume of traffic of all the roads in the Bureau road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the Bureau. As a result, they have the potential for creating substantial environmental impacts and often require complex mitigation procedures.

B. Local Roads. These Bureau roads normally serve a smaller area than collectors, and connect to collectors or public road systems. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer uses. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by effort of terrain, may be single lane roads with turnouts. Environmental impacts are reduced as steeper grades, sharper curves, and lower design speeds than would be permissible on collector roads are allowable.

C. Resource Roads. These Bureau roads normally are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing Bureau costs, with minimal consideration for user cost, comfort, or travel time.

BLM Manual 9112-2:

III. MAINTENANCE LEVELS. Maintenance is the up-keeping of the Bureau's road system, including surface, shoulders, parking and side areas, structures, and such traffic control devices as are necessary for the safe and efficient utilization of the road system. Follow guidance in Manual Section 9104 for the establishment of a maintenance program.

A. Data Source. Use data collected as part of the road inventory for completing maintenance planning.

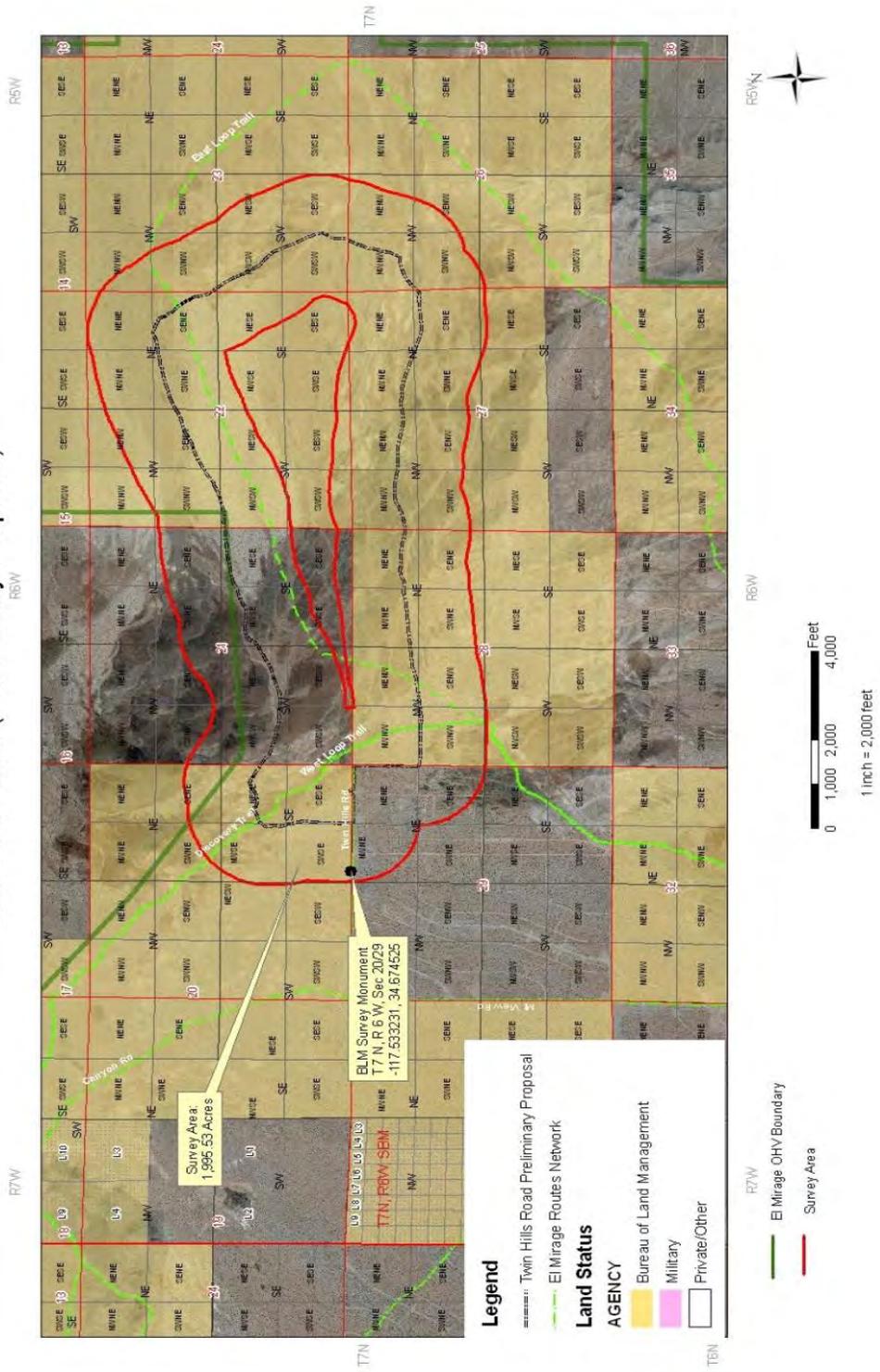
B. Maintenance Levels. Based upon functional classification; see Manual Section 9113.16 and resource management needs, each road will be assigned a maintenance level. Maintenance levels may vary from year to year as identified resource management needs change.

1. Level I. This level is basic custodial care as required to protect the road investment and/or adjacent lands and resource values. Normally, these roads are blocked and not open for traffic or are open only to restricted traffic. Include primitive roads way here.

- a. Roads typical of this level. Roads that have served or were constructed as fire trails, access to discontinued-use administrative areas, logging spurs on completed sales, occasionally discontinued access to energy/mineral exploration and development areas, and primitive roads way receiving no maintenance.
 - b. Maintenance standard. Maintain culverts, waterbars, and other drainage facilities. Slides, fallen trees, and brush would be left unless they affected roadbed drainage. Closure and traffic restrictive devices would be maintained. Primitive roads way would receive no maintenance.
2. Level 2. This level is used on roads where management requires a road be opened seasonally for limited passage of traffic. Traffic is generally administrative with some minor specialized use, or moderate seasonal use.
- a. Roads typical of this level. Roads serving firewood permits, environmental study areas, hunter access, and ORV areas.
 - b. Maintenance standard. Minimum maintenance, including brush and obstruction removal, maintenance of drainage, facilities, and minimum maintenance of road prism.
3. Level 3. This level is for roads which are seasonal in nature or occasionally open year around. Traffic volumes approach an Average Daily Traffic ADT of 15 vehicles. These roads may require a seasonally adjusted level of maintenance. See Manual Section 9113.17.
- a. Roads typical of this level. Low standard, low volume, single lane, natural earth surface dirt roads, typical of a resource road, serving low-use recreation areas, minor timber-sale areas, or other resource uses.
 - b. Maintenance standard. Maintain as needed. Keep drainage functional and maintain roadway prism. Maintain sight distance and provide concern for driver safety and convenience.
4. Level 4. This level is used on roads which are generally kept open year around or a high-use seasonal road, and have a high concern for driver safety and convenience.
- a. Roads typical of this level. Medium volume, double-lane roads consisting of a high standard natural-earth surface dirt road, aggregate surface road, or occasionally a bituminous surface road. 'Typical of this road would be a local road that serves as an artery to other road networks; serves medium to high-use recreation areas and resource development areas, such as energy and timber production.
 - b. Maintenance standard. The roadway is maintained on a scheduled basis. May have a preventive maintenance program established. -A greater concern for driver safety and convenience. Problems are repaired as soon as discovered.
5. Level 5. This level of maintenance is for those collector aggregate or bituminous surface roads with an ADT range between 15-100 per day and design speeds of 55 mph. Safety and comfort are important considerations.
- a. Roads typical of this level. Collector roads serving as arteries and access to major recreation complexes, where the safety and comfort of the using public is a prime consideration. These roads would also include those resource production roads where heavy traffic is the norm.
 - b. Maintenance standard. In addition to a scheduled maintenance program, these roads have a preventive maintenance program established to maintain the integrity of the system.

5.2 Map

Twin Hills Road (Preliminary Proposal)



DECISION: It is my decision to approve herein the proposed actions of the design of a new alignment and subsequent construction of the Twin Hills Road along with new vault toilets as evaluated in the attached environmental assessment. (If approved: Mitigation measures identified for the proposed actions in the attached environmental assessment have been formulated into stipulations. The attached stipulations are incorporated as terms of approval).

FINDING OF NO SIGNIFICANT IMPACT: Environmental impacts associated with the proposed actions have been assessed. I conclude that the proposed actions will not have a significant impact on the environment and is not a major federal action. Preparation of an Environmental Impact Statement pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 is not required.

RATIONALE FOR DECISION: The proposed actions do not result in any unnecessary or undue environmental degradation and is in conformance with the California Desert Conservation Area Plan (1980), as amended, the Management Plan for El Mirage Cooperative Management Area (August 1990), and with other applicable law, regulation and policy. My decision is based on these findings, as documented in the attached environmental assessment and the FONSI determination above.

COMPLIANCE AND MONITORING: (If appropriate). The terms and conditions for the projects, as approved, will be monitored through the presence of an onsite Project Monitor during construction and visits by the project lead.

Reviewed by: _____ Date: _____
Environmental Coordinator
Barstow Field Office

Recommended by: _____ Date: _____
Chief, Resources Branch
Barstow Field Office

Chief, Recreation Branch
Barstow Field Office Date: _____

Approved by: _____ Date: _____
Field Manager
Barstow Field Office



Biological and Botanical Services

**Desert Tortoise Survey
of the El Mirage Off-Highway Vehicle Area
Twin Hills Trail and Northern Boundary Sites**

Prepared for:

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April 26, 2012

**Provided by: SNEI, 6295 McLeod Dr., Ste 1, Las Vegas, Nevada 89120 877-FOR-SNEI
Thank you for your business. We look forward to working with you again!**

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REPORT NUMBER:

NV-

PROJECT NAME:

Desert Tortoise Presence/Absence Surveys for the El Mirage Off-Highway Vehicle (OHV) Area Twin Hills Trail and Northern Boundary.

INTRODUCTION:

The Bureau of Land Management (BLM), Barstow Field Office contracted Southern Nevada Environmental, Inc. (SNEI) to perform baseline presence/absence surveys for the federally threatened Mojave desert tortoise (*Gopherus agassizii*) on the El Mirage OHV Area Twin Hills Trail and Northern Boundary project (hereafter Project) located in San Bernadino County, California, west of the town of Adelanto. SNEI's objectives were to determine if the desert tortoise inhabited the Project site and, if so, the abundance and distribution of desert tortoises within the proposed Project site (as per the *Pre-Project Field Survey Protocol for Potential Desert Tortoise Habitats* for the 2010 field season) (USFWS 2010a).

DESERT TORTOISE BACKGROUND:

The desert tortoise occupies a wide variety of desert habitats across its range. The Mojave Desert tortoise occurs in creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), Joshua tree (*Yucca brevifolia*), and shadscale (*Atriplex confertifolia*) vegetation types. The tortoise prefers sandy and gravelly soils of desert valleys and alluvial fans, and typically ranges in elevation from the desert valley to 3,500 feet in mountain washes and steep-sided canyons (USFWS 2010b). The Mojave Desert tortoise is most active during the spring months. Tortoises begin to emerge from hibernation on warm days in early March to late April. Tortoise activity remains high through mid-May and then drops off rapidly by early June. Aestivation (semi-hibernation) may occur during the heat of summer; however, tortoises generally are active in early morning and late afternoon during this period. Occurrence of monsoonal rains in late summer may result in increased tortoise activity. There may be some low-level tortoise activity during fall with hibernation commencing in mid- to late November.

Breeding in tortoises occurs during April and May. During breeding, the male mounts the female and stands on his hind legs. The female slowly turns as breeding proceeds. This activity results in a doughnut-shaped pattern in the sand, which is referred to as the courtship ring. One to two clutches of eggs are laid during late spring and early summer. Eggs are white, porcelain in texture, and spherical. The female constructs an inverted funnel-shaped nest, usually in the mouth of a burrow or pallet, and lays four to seven eggs in the depression. The nest is then filled with dirt. Eggs hatch from mid-August to mid-October, and the hatchlings are about 40 mm long (USFWS 2010b).

Tortoises are herbivores and prefer to feed on succulent forbs (weedy, broad-leaved plants) and grasses. In the Mojave Desert, forbs are most plentiful during March and April. Flowers are often selected over other portions of the plant for eating. As the forbs dry and complete the life cycle, tortoises make increasing use of grasses and, to some extent, shrubs and cacti. During drought years with no annual vegetation growth, tortoises will feed on dried forbs and grasses left over from the previous year. Tortoises do drink water when available and construct shallow depressions in the desert pavement to gather water during brief but intense showers.

Tortoises are semi-fossorial, spending over 95 percent of their lives underground. Tortoises construct their own burrows and pallets. Burrows are long tunnels often over 6 feet long. They are half-moon shaped and generally are a snug fit. Pallets are shorter, usually less than 2 feet long (USFWS 2010b). Burrows and pallets have a low entrance angle and are frequently placed at the base of a creosote bush or on a hillside or the bank of a wash. Caliche caves are often used as shelter by tortoises and have been reported as communal hibernation sites. Burrows and pallets provide a cool, humid, shaded environment for tortoises during hot weather and a relatively warm environment for hibernation during winter. During spring, while foraging, tortoises will seek temporary shade under bushes and rocks in order to regulate their body temperature.

SITE DESCRIPTION:

Physical Description:

The El Mirage OHV Area is located in the Mojave Desert on a bajada, or alluvial fan with the El Mirage dry lake along the South/Southwestern border. Topographic dimensions of the survey area vary greatly with a dry lakebed, flats, washes, valleys, and mountains/hills. Soil largely consists of sandy, stony loam with abundant rock/boulder deposition.

Biological Description:

Vegetation communities observed within the survey area were categorized into two main groups: creosote scrub and Joshua tree scrub.

The most abundant vegetative community in the survey area is creosote scrub. Observed flora included: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), Mojave yucca (*Yucca schidigera*), Joshua tree (*Yucca brevifolia*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), globe mallow (*Sphaeralcea ambigua*), common plantain (*Plantago ovata*), cheat grass (*Bromus tectorum*), and red brome (*Bromus rubens*).

Observed fauna included: Mojave desert tortoise (*Gopherus agassizii*), kit fox (*Vulpes macrotis*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), western burrowing owl (*Athene cunicularia hypugaea*), common raven (*Corvus corax*), black-

tailed jackrabbit (*Lepus californicus*), side-blotched lizard (*Uta stansburiana*), night lizard (*Xantusia vigilis*), and gopher snake (*Pituophis catenifer*).

METHODOLOGY:

SNEI conducted the biological surveys from March 8, 2012 to March 23, 2012.

Three teams led by SNEI USFWS authorized biologists, which consisted of 4-5 biologists each, conducted searches along the Twin Hills Trail and Northern Boundary, spaced 10-meters apart. Biologists walked transects, visually covering 5 meters per biologist to either side of the transect, looking for tortoise and tortoise sign (e.g., scat, carcasses, burrows, courtship rings, bones, or eggshell fragments) using the *USFWS 100 Percent Coverage Method Protocol* (2010). SNEI biologists simultaneously conducted surveys for the Western burrowing owl. Biologists used Garmin GPS units while walking the transect to insure accuracy of coverage. Digital cameras were also used in order to document all observations of tortoise and tortoise sign. When a tortoise was encountered, the survey team marked their stop point and processed the tortoise. The tortoises were visually inspected for signs of injury, illness and abnormalities. Every tortoise is sexed, has its mid line carapace measurement taken and has its location taken down as a waypoint. When a tortoise sign is observed it is placed into one of five categories. Tortoise scat is broken into Class 1: Wet (not from rain or dew) or freshly dried; obvious odor. Class 2: Dried with glaze; some color; dark brown. Class 3: Dried; no glaze or odor; bleaching (light brown); tightly packed. Class 4: Dried; light brown to pale yellow, loose material. Class 5: Bleached or consisting of only plant fiber. Tortoise carcasses are broken into Class 1: Fresh or putrid. Class 2: Normal color; scutes adhere to bone. Class 3: Scutes peeling off bone. Class 4: Shell bone is falling apart; growth rings on scutes peeling. Class 5: Disarticulated and scattered. And finally, Burrows are broken into Class 1: Currently active with tortoise or recent tortoise sign. Class 2: Good condition; definitely tortoise; no recent sign. Class 3: Deteriorated condition; definitely tortoise. Class 4: Good condition; possibly tortoise. Class 5: Deteriorated condition; possibly tortoise. Incidental data on Western burrowing owl was also collected. All data were recorded and organized into maps (see Appendix A: Map 1: Survey Area, Map 2: Tortoise Sign, Map 3: Burrowing Owl Sign and Appendix B: Photographs).

SURVEY RESULTS:

A total of four (4) tortoises were found within the Twin Hills Trail and Northern Boundary area. All four tortoises exhibited no signs of disease and were reported to be in good condition. Other observed and documented desert tortoise sign included 30 pieces of scat, 38 carcasses, 64 tortoise burrows and three pieces of miscellaneous sign (one egg shell fragment and two bone fragments). Of the 38 carcasses found, four were “Class 4” and 34 were “Class 5”. Two of the carcasses were suspected of being hit by a vehicle due to their proximity to a road/trail or vehicle tracks. All of the carcasses were deteriorated to the point that it was difficult to determine the cause of death.

SURVEY RESULTS: (CONTINUED)

Western burrowing owls were observed on the site and six burrows were identified as containing sign (see map 4).

SUMMARY OF RESULTS:

The majority of tortoises and sign were observed in the lower elevation, creosote scrub flats (see Maps 2 & 3); these areas consist of substrate suitable for burrow construction and numerous washes, and they contain abundant preferred desert tortoise foods (e.g., globe mallow and common plantain). These characteristics provide higher quality habitat which is much more conducive to the desert tortoise; therefore the potential for encountering tortoises is much greater in these lower elevation flats. Even though the less vegetated areas contain less abundant food sources, which provides an area that is much less conducive to the desert tortoise, a significant amount of sign were observed and documented in these areas.

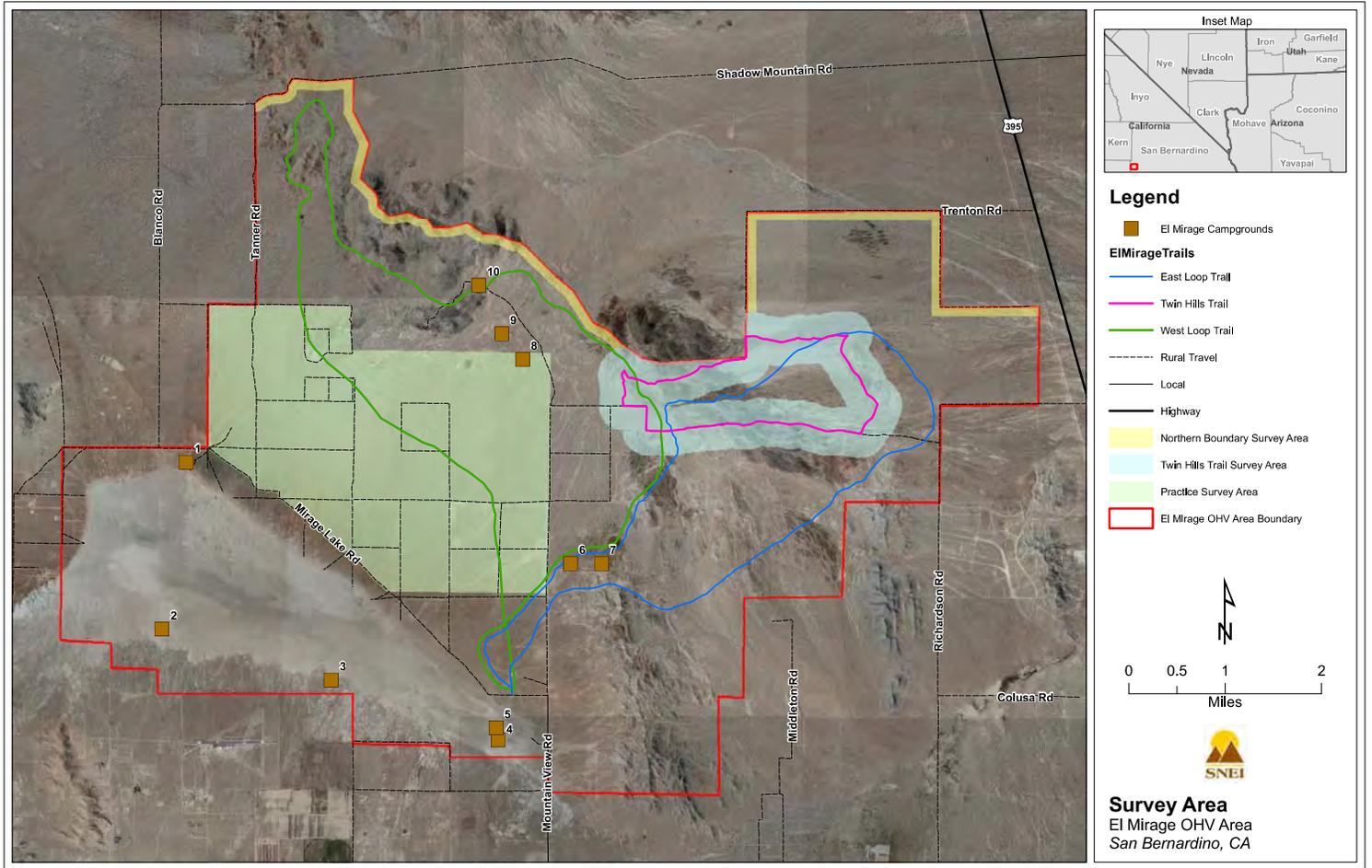
Western burrowing owls are area residents. Sign indicates that they are using burrows within the Twin Hills and East Loop Trail areas.

REFERENCES:

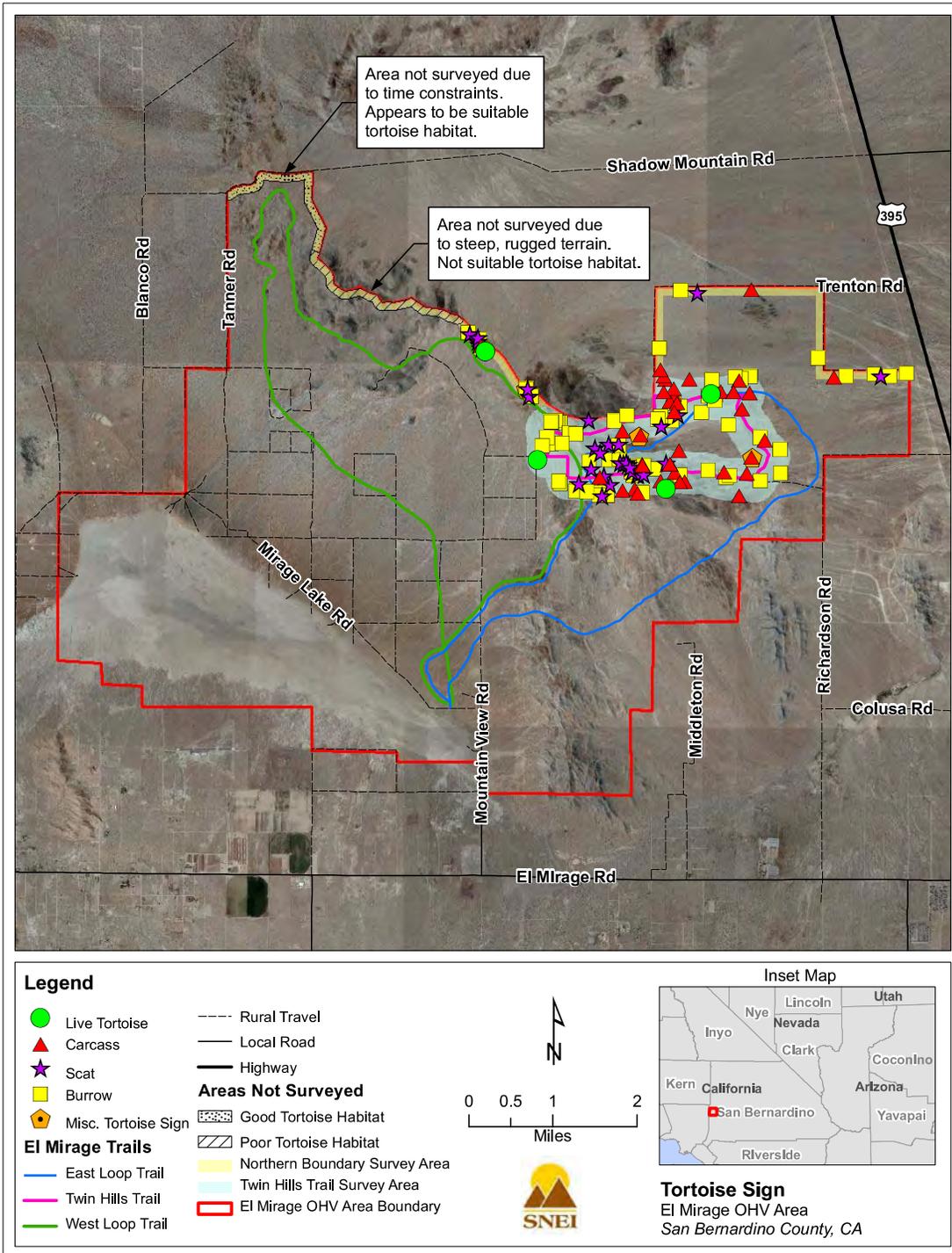
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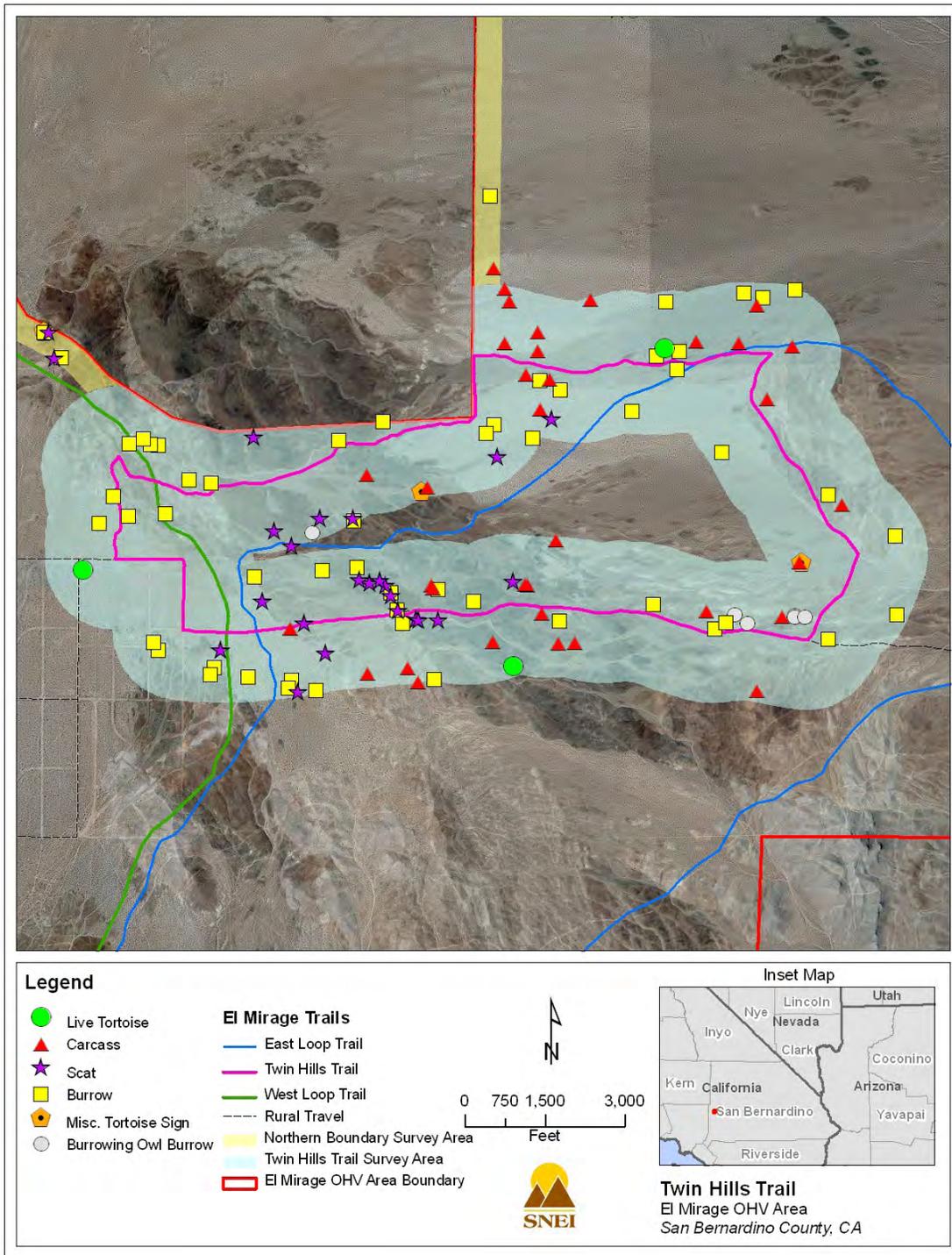
Appendix A: Maps



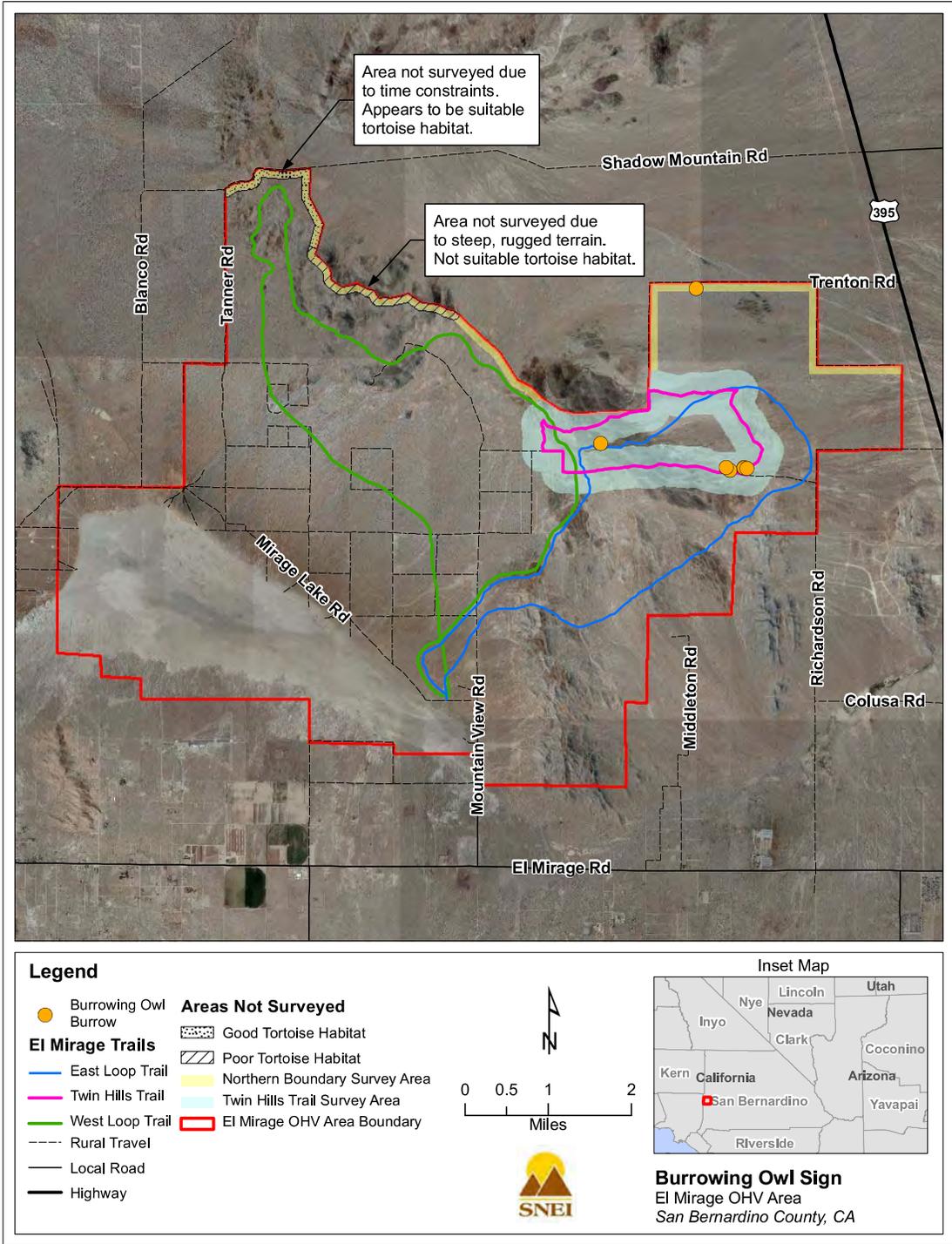
Map 1. Survey Area, March 2012



Map 2. Tortoise Sign, March 2012



Map 3. Twin Hills Trail Area Enlarged, March 2012



Map 4. Burrowing Owl Sign, March 2012

Appendix B: Photographs



Picture 1. Class 1 desert tortoise burrow



Picture 2. Class 4 desert tortoise carcass



Picture 3. 275mm mcl male desert tortoise found outside rock burrow