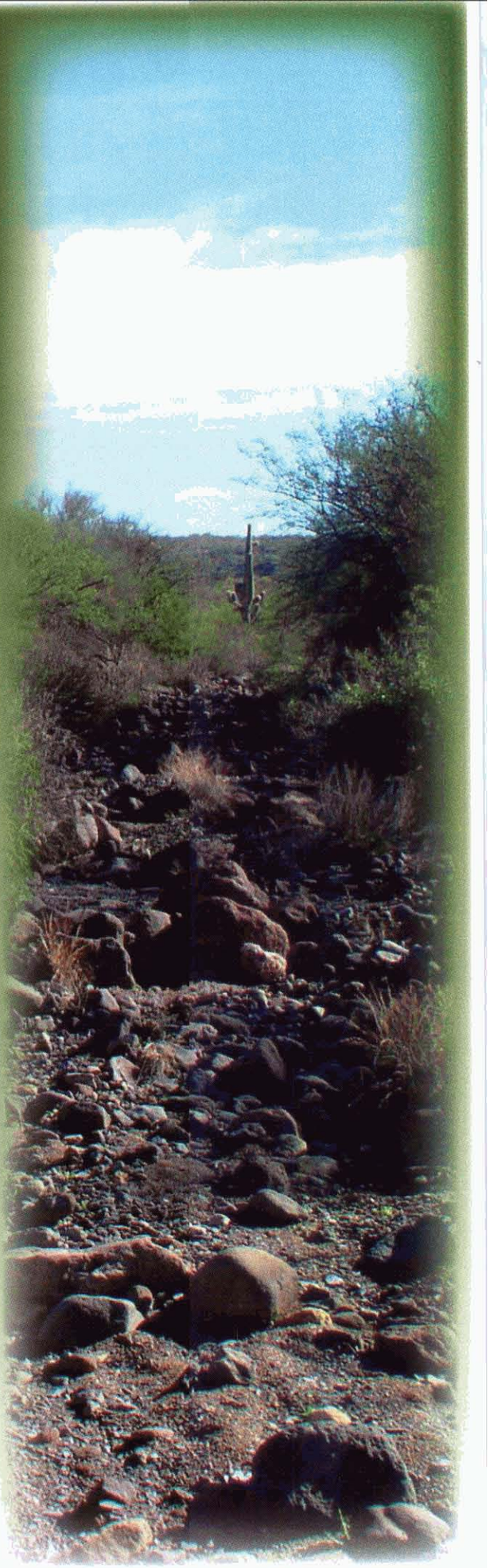
ADOBE DAM/DESERT HILLS

AREA DRAINAGE MASTER PLAN



Part 6

Environmental Overview Report

Landscape Character Analysis Report

Multiple-Use Opportunities Assessment

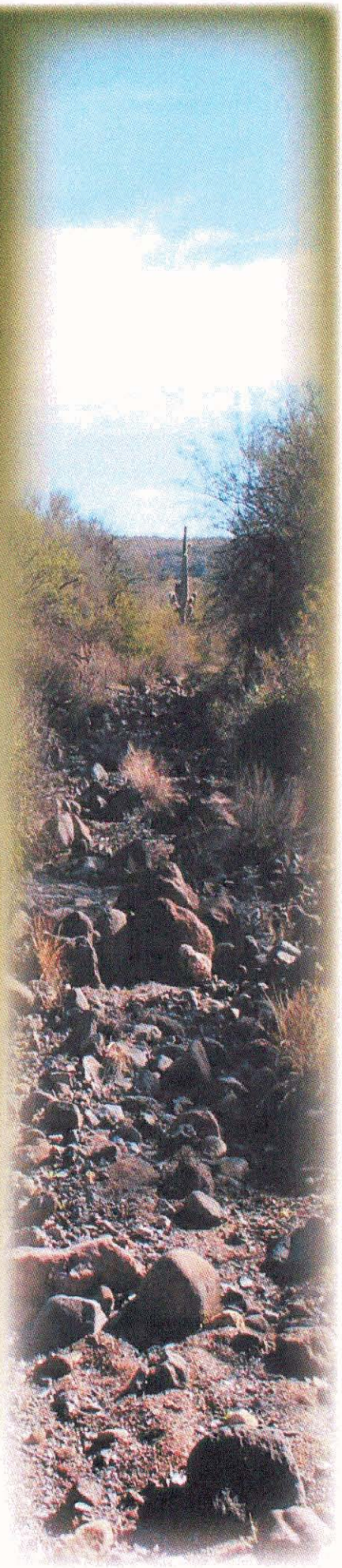
Volume 1

Flood Control District of Maricopa County

May 2004

ADOBE DAM/DESERT HILLS

AREA DRAINAGE MASTER PLAN



Part 6

Environmental Overview Report

Flood Control District of Maricopa County

December 2004

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1.0 Introduction

In project planning and development, the planning team must be aware of the potential environmental issues within the project area. Ultimately, this knowledge can help avoid delays, reduce unforeseen costs, and ensure compliance with regulations in the project planning and implementation phases. Potential environmental issues that can affect project planning and implementation include ecological resources, hazardous materials concerns, and cultural resources. This environmental overview documents existing conditions pertaining to these environmental areas for the Adobe Dam/Desert Hills Area Drainage Master Plan (ADMP) study area. The intent of the Adobe Dam/Desert Hills ADMP is to create a plan to maintain the physical characteristics and manage the flow of Skunk Creek and related tributaries. The study will analyze current watershed conditions and identify drainage and flooding issues. The study area is approximately 100 square miles, including 7 square miles within the town of Cave Creek and 47 square miles within the city of Phoenix (Figure 1.1). The remaining area is unincorporated Maricopa County.

The Adobe Dam/Desert Hills ADMP study area has been divided into four geographic subareas as described below going from south to north:

- Phoenix South of the Central Arizona Project (CAP) Canal (PSC) – Buchanan Wash from the Skunk Creek confluence to the CAP Canal and Skunk Creek from Adobe Dam to the CAP Canal
- Phoenix North of the CAP Canal (PNC)– Sonoran Wash, upper Buchanan Wash, and Skunk Creek from the CAP Canal to the Cloud Road crossing
- Desert Hills (DH) – Desert Hills Wash and tributaries, upper Apache Wash, upper Paradise Wash, Skunk Tank Wash, and Skunk Creek from the Cloud Road crossing to the Rodger Creek confluence
- New River/Skunk Creek (NR) – Cline Creek and tributaries, Rodger Creek, and upper Skunk Creek from the Rodger Creek confluence to the Tonto National Forest boundary

Within each subarea, the Flood Control District of Maricopa County (FCD), its consultant, other agencies, and local residents have identified 16 specific problem sites. These sites have been numbered sequentially from south to north. The four subareas and 16 sites are shown in Figure 1.2.

2.0 Ecological Resources

2.1 Purpose

Ecological issues are important to consider in the planning process for several reasons. Documenting the habitat types and vegetative communities can indicate the potential for protected species (e.g., federally listed threatened and endangered species) to occupy the study area. Often, obtaining certain types of environmental permits are required for ground-disturbing projects, so that trying to avoid or minimize impacts to unique and sensitive habitats becomes essential. In addition, one of the project's objectives may include habitat enhancement, restoration, or creation. This section focuses on an assessment of natural vegetation and wildlife, as well as specific protected and sensitive plant and animal species, at the 16 separate structural measure sites identified in the ADMP.

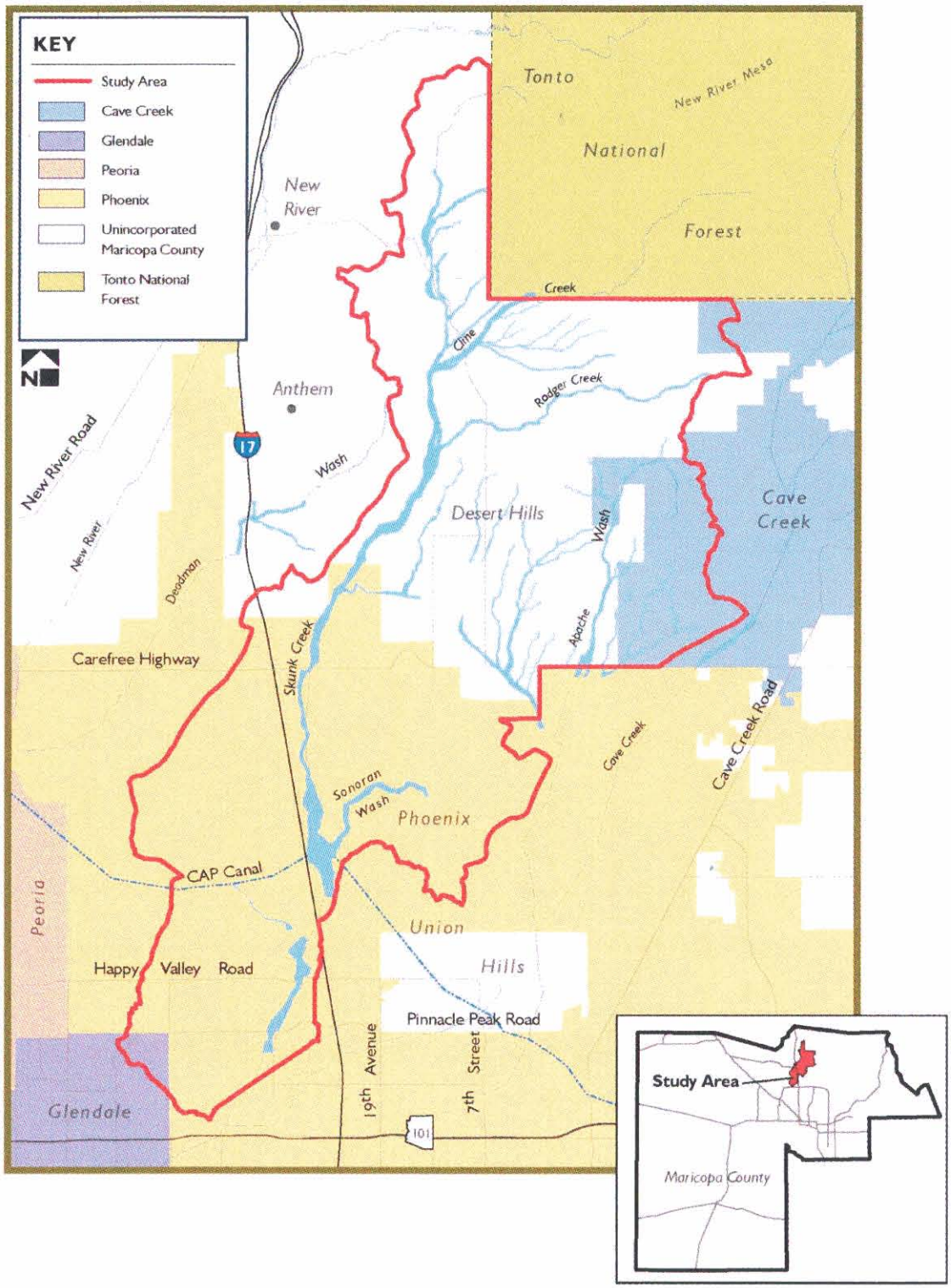


Figure 1.1 Location Map

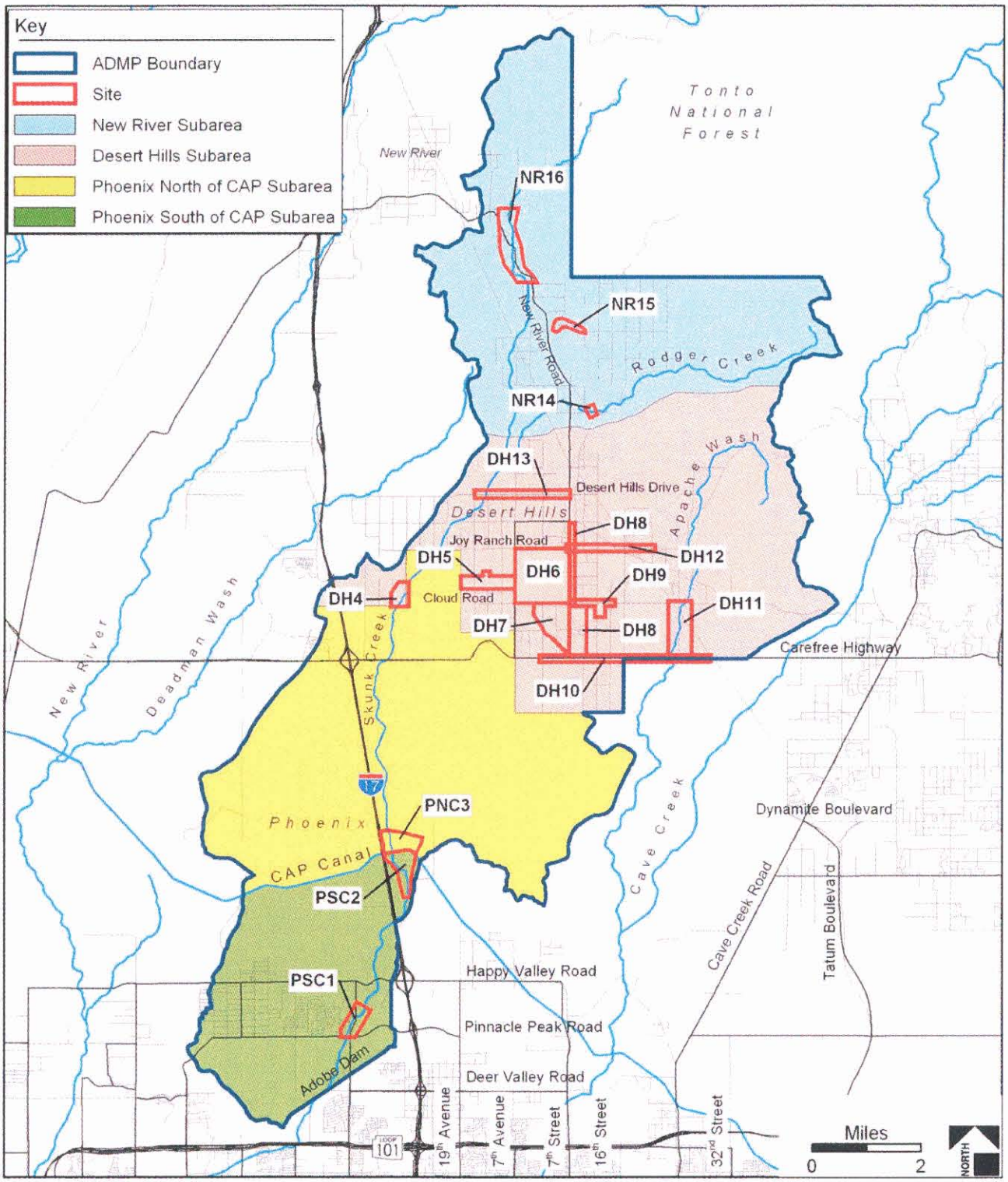


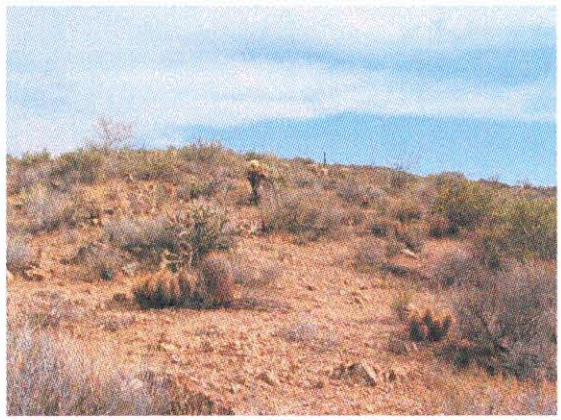
Figure 1.2 Subarea and Site Map

2.2 Methods

Natural vegetation, observed wildlife, and the presence of habitat for sensitive species were identified by conducting a reconnaissance survey of the study area in July 2003. The area was surveyed primarily by vehicle, making stops for pedestrian inspections as necessary to examine some sites in more detail. A photo record of the survey was obtained while visiting the sites. Large-scale aerial photographs were also used to identify natural vegetative communities, study-area watercourses, and general land use on a regional scale. A comprehensive plant and wildlife survey was not completed because it was beyond the scope for this study. However, lists of potentially occurring plants, mammals, birds, and herpetofauna were collated from the existing literature using distribution maps and habitat requirements of various Arizona flora and fauna (Appendices A, B, C, and D).

2.3 Definition of Vegetative Communities and Habitat Quality

The study area is located at the transition zone of two vegetative communities as defined by Turner and Brown (1994): the Lower Colorado River Valley (LCRV) (creosotebush-bursage series) and Arizona Upland (AU) (paloverde-cacti-mixed scrub series) subdivisions of the Sonoran Desertscrub Biotic Community. The LCRV Subdivision in the ADMP study area includes the areas of low relief, where the vegetative structure is open and simple. The dominant plant species is creosotebush, with the occasional mesquite, paloverde, ironwood, saguaro, or clump of desert broom visible in the upland landscape. The Phoenix South of CAP (Central Arizona Project), the Phoenix North of CAP, and the Desert Hills subareas of the study area generally support vegetation of the LCRV Subdivision. The AU Subdivision predominates in the New River subarea and is marked by a slightly higher elevation, rolling terrain, and subsequently more lush vegetation. Numbers of mesquite, paloverde, and saguaro are higher and numerous species of cholla, prickly pear, and other cacti are present among the dense undergrowth of desert shrubs in the AU Subdivision.



Photos 1 and 2. Examples of LCRV (left) and AU (right) vegetative communities

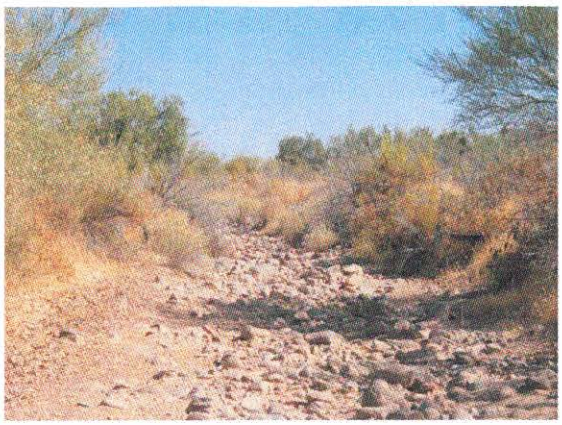
No watercourses that have perennial flows or standing water from upwelling zones or springs are present in the study area. As a result, true riparian zones are absent. However, noticeable xeroriparian vegetation lines even small washes in both vegetative communities. These communities include thick stands of mesquite and paloverde together with cat-claw acacia, desert hackberry, wolfberry, and numerous other plants in the understory. Xeroriparian vegetation is an important component to desert ecosystems because they tend to be more dense and diverse with respect to the types and structure of vegetation compared to

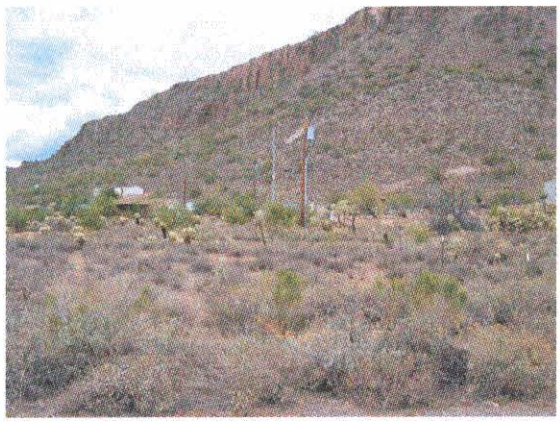
surrounding upland areas. As a result, xeroriparian habitat usually supports a more diverse wildlife community and, together with the wash bed itself, provides an important movement corridor for migrating birds and other wildlife with large home ranges. Human disturbance (including the construction of homes and roads and the grazing of livestock) throughout the area has altered or completely removed the native vegetation of these three community types in many areas.

Photos 3 and 4. Examples of xeroriparian habitat (left) and an area cleared of native vegetation (right)

An evaluation was made at each of the 16 structural measure sites as to whether the vegetative community(ies) present there are "disturbed" or "undisturbed" by human activities. Areas highly disturbed by human activity were classified as "previously cleared". Disturbed areas are areas that have key elements of the vegetative community present, but there are signs of grazing, human recreation, dumping, and/or minor clearing. Undisturbed is defined as areas of a vegetative community that have a full set of component plants, where there is little to no clearing of vegetation for built structures, and there is little to no evidence of grazing by livestock. Previously cleared areas have little to no natural vegetation and are usually areas of current human development, including residential areas and roads; some introduced landscaping may be present. Special ecological features, including cliff habitats, stock tanks, and other fresh water sources were noted for each of the 16 sites.

Using the disturbed/undisturbed evaluation of the vegetation at each site and taking into account other ecological factors such as habitat connectivity, food and water availability, and proximity of human activity, a qualitative ecological evaluation was made for each of the sites. A determination of "high" habitat quality was given to undisturbed areas of vegetation, especially xeroriparian vegetation along washes. The presence of dense vegetation suggests plentiful food and water sources. Large washes that allow the movement of wildlife across long distances across the landscape receive a high rating. "Medium" areas can be either disturbed or undisturbed and provide only moderate cover, food, and water. Such areas' values are enhanced by the presence of adjacent high-value habitat. Smaller washes and degraded larger washes merit a medium rating since they are still an attractant to wildlife looking to avoid human contact as they move across the landscape. Disturbed areas that have scant cover, food, and water availability are rated "low". Areas that have been previously cleared or contain built structures, natural areas with moderate to severe degradation (especially those next to cleared areas), or areas of natural vegetation greatly isolated from other areas of natural vegetation are all rated low in habitat quality.





Photos 5 and 6. Examples of high (left) and medium (right) habitat values

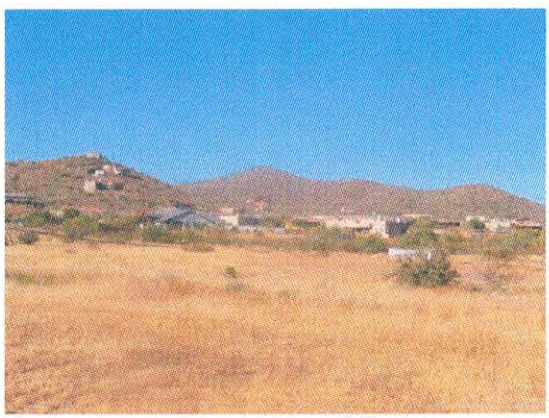


Photo 7. Example of low habitat value

2.4 Wildlife

The number of wildlife species present in a particular area is generally dependent on the extent of removal of native vegetation and the intensity of human disturbance. Rural residential areas with significant amounts of native vegetation will support many of the species normally present in the undisturbed vegetative communities. High-density residential areas and commercial and industrial properties will support very few species.

Mammals likely to be seen in the study area include desert cottontail, coyote, javelina, and mule deer. (Only the desert cottontail was seen during the field survey.) Several species of bats could forage for nectar and/or insects throughout the study area. Most of the wildlife observed during the reconnaissance survey were birds, which is expected since most birds are active and visible during daylight hours and are the most likely group of vertebrates to be encountered during a brief windshield survey. Several bird species are common around human habitation, especially on properties where livestock is present due to the presence of fresh food and water. Such properties are very common throughout the Desert Hills and New River subareas of the study area. House sparrow, house finch, rock dove, mourning dove, European starling, and great-tailed grackle were most commonly seen in human-disturbed areas. Species such as curve-billed thrasher, cactus wren, Gambel's quail, Gila woodpecker, verdin, and northern mockingbird were more readily observed in xeroriparian vegetation in the study area. One roadrunner and one great-horned owl were also spotted in xeroriparian vegetation. Amphibians, reptiles, or fish were not observed

during the reconnaissance survey; however, a detailed search was not conducted in suitable habitats. Observations of specific wildlife seen on the reconnaissance survey are mentioned in the specific site descriptions that follow. Other wildlife species that have the potential to be found in the overall study area are listed in Appendices A through D.

2.5 Threatened, Endangered, and Sensitive Species

A list of threatened, endangered, proposed, or candidate species for Maricopa County was obtained from the US Fish and Wildlife Service (USFWS) (Table 2.1). Also, a query was requested from the Arizona Game and Fish Department's (AGFD's) Heritage Data Management System, which includes sensitive species that have the potential to occur within 3 miles of the overall ADMP study boundary (Appendix F). AGFD lists species whose occurrence in Arizona is or may become in jeopardy. Of the threatened and endangered species, only the cactus ferruginous pygmy-owl (CFPO) has suitable habitat in the study area. While mature riparian forests are absent, dense xeroriparian habitat is present along many of the washes, and upland saguaros with suitable nesting cavities are often found nearby. With the exception of PSC1, the other structural measure sites are outside the Phoenix Urban Exclusion Area and are all in Survey Zone 3 for the pygmy-owl, defined by the USFWS as "areas within the historic range of the pygmy-owl with a low potential of occupancy". While the nearest known populations of CFPO are in the greater Tucson area, presence/absence surveys may be required in areas of suitable habitat to ensure no individuals are present at sites of future ground-disturbing activities. Food plants for the lesser long-nosed bat, namely the saguaro, are present at some of the sites, especially in the New River subarea. However, individuals of this species are very rare this far north in its range, and they would utilize food plants in the study area only during the spring bloom. It is unlikely that removal of saguaro during individual projects in the study area would impact this species, and no mitigation for the bat would be necessary during design/construction. Of the special status species, suitable habitat for the Sonoran desert tortoise is present (riverbanks, washes, dunes, and rocky slopes), and it is likely to occur at some of the structural measure sites, especially those near undisturbed upland areas and in washes with small cliffs present on eroded banks. Site-specific issues concerning threatened, endangered, and sensitive species and related suitable habitat are mentioned in the site evaluations that follow. A comprehensive list of special status species that are present in all of Maricopa County is in Appendix E.

Table 2.1 Federally Listed Threatened, Endangered, Proposed, and Candidate Species for Maricopa County

Species	Legal Status[a]	Habitat and Elevational Range	Suitable Habitat Present in Study Area?
Arizona Agave (*Agave arizonica*)	E	Transition zone between oak-juniper woodland and mountain mahogany-oak scrub. 3,000-6,000 ft	No
Arizona Cliffrose (*Purshia subintegra*)	E	Characteristic white soils of tertiary limestone lakebed deposits. <4,000 ft	No
Desert Pupfish (*Cyprinodon macularius*)	E	Shallow springs, small streams, and marshes. Tolerates saline and warm water. <5,000 ft	No
Gila Chub (*Gila intermedia*)	P	Pools, springs, cienegas, and streams. 2,000-3,500 ft	No
Gila Topminnow (*Poeciliopsis occidentalis occidentalis*)	E	Small streams, springs, cienegas, and vegetated shallows. <4,500 ft	No

Species	Legal Status[a]	Habitat and Elevational Range	Suitable Habitat Present in Study Area?
Razorback Sucker (*Xyrauchen texanus*)	E	Riverine and lacustrine areas, generally not in fast-moving water, may use backwaters. <6,000 ft	No
Bald Eagle (*Haliaeetus leucocephalus*)	T	Large trees or cliffs near water. Elevation varies.	No
California Brown Pelican (*Pelecanus occidentalis californicus*)	E	Transient to lower Colorado River and large, open bodies of water statewide at various elevations.	No
Cactus Ferruginous Pygmy-owl (*Glaucidium brasilianum cactorum*)	E	Mature cottonwood/willow, mesquite bosques, and Sonoran desertscrub. <4,000 ft	Yes
Mexican Spotted Owl (*Strix occidentalis lucida*)	T	Mixed-conifer, spruce-fir, or pine-oak forests. 4,100-9,000 ft	No
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	E	Dense riparian vegetation near a permanent or semi-permanent source of water or saturated soil. <8,500 ft	No
Yellow-billed Cuckoo (*Coccyzus americanus*)	C	Large blocks of riparian habitat with open deciduous woodlands (cottonwood/willow) and thick undergrowth. <6,500 ft	No
Yuma Clapper Rail (*Rallus longirostris yumanensis*)	E	Fresh water and brackish marshes, associated with dense emergent riparian vegetation. <4,500 ft	No
Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuenae*)	E	Desertscrub habitat with agave and columnar cacti present as food plants. <6,000 ft	Yes
Sonoran Pronghorn (*Antilocapra americana sonoriensis*)	E	Broad, intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations. <4,000 ft	No

[a] *Status Definitions*: E=Endangered, T=Threatened, P=Proposed Endangered, C=Candidate (USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the Endangered Species Act; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activities.)

2.6 Site Evaluations

2.6.1 PSC1 (Figures 2.1 and 2.2)

Urban development, including construction of a residential neighborhood, industrial park, a municipal landfill, and roads has highly impacted this site. Skunk Creek is channelized with cement banks from Happy Valley Road south past the landfill; the creek supports only sparse vegetation with few trees in this section. Where the cement banks end, the creek opens up into a braided section before heading to a cement drop structure, which directs flows down a gradient and under Pinnacle Peak Road. Skunk Creek flows to the Adobe Dam Recreation Area about 1 mile to the south. The central area of PSC1 is disturbed by crisscrossing dirt roads, and evidence of human dumping and recreation abound. Some large, xeroriparian trees are present between the channelized section and drop structure. Development of the surrounding area is not so great as to preclude the disturbed upland areas (LCRV vegetation) from having some connectivity to more natural areas nearby. The central area of medium habitat quality could be salvaged and enhanced with future drainage improvements, or the entire site could be cleaned up and revegetated to increase the use of Skunk Creek as a wildlife movement corridor in an otherwise wildlife-unfriendly area.

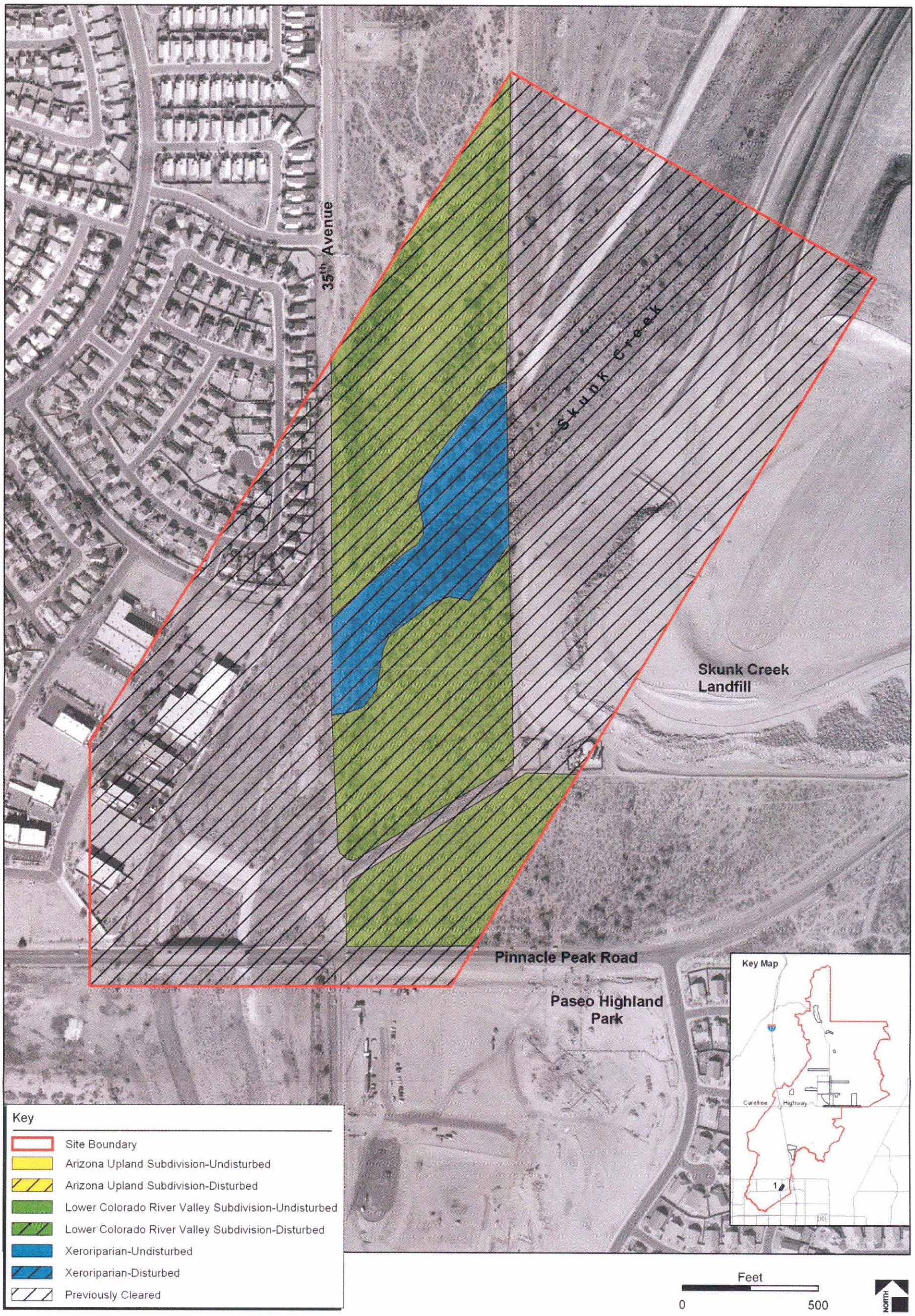


Figure 2.1 Site PSC1 – Vegetation Communities

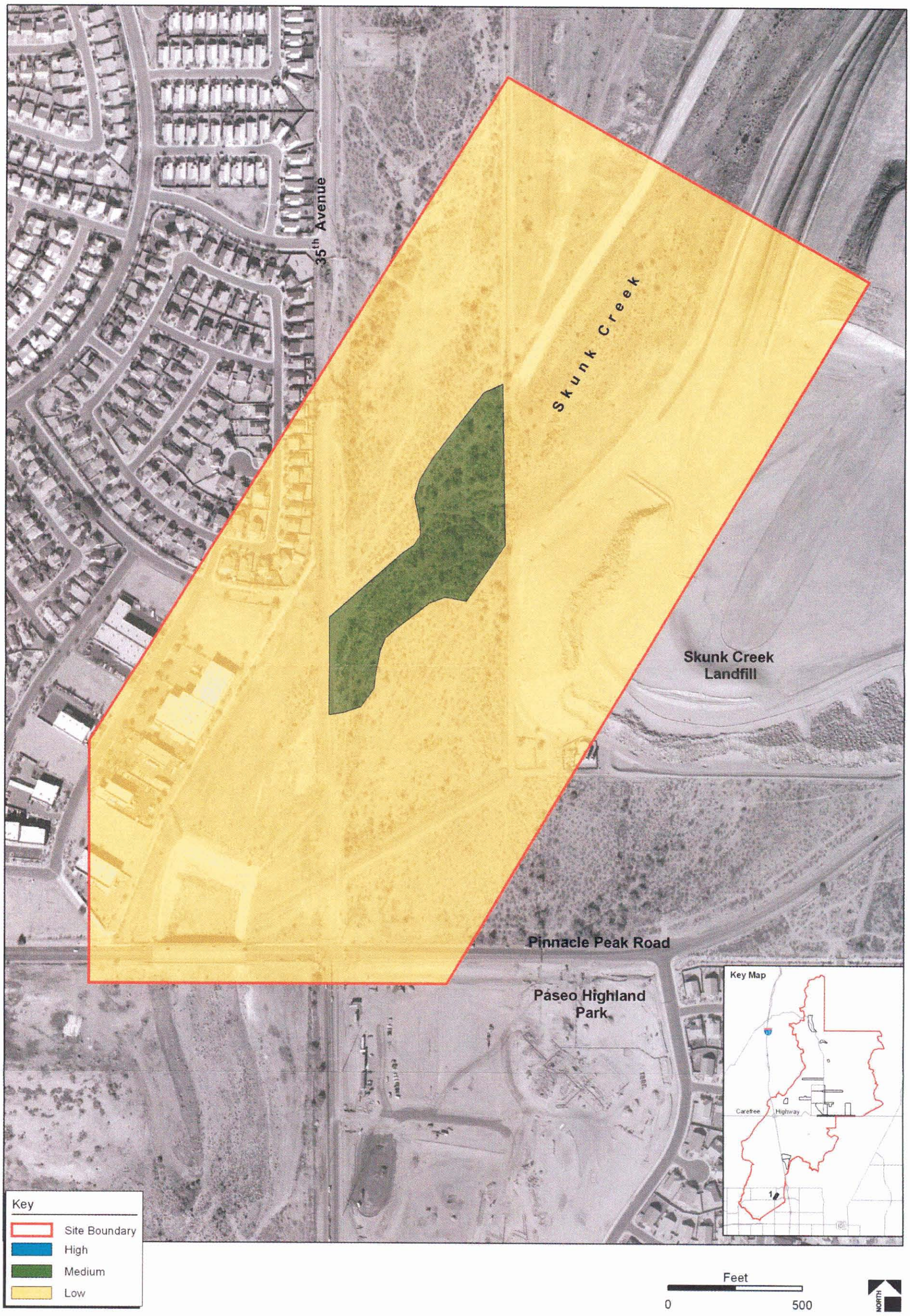


Figure 2.2 Site PSC1 – Habitat Quality

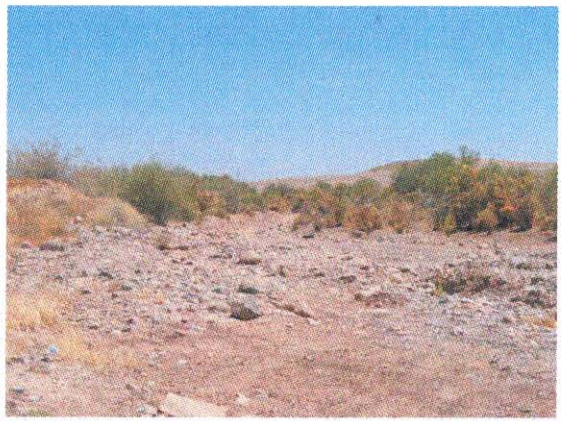


Photo 8. PSC1

2.6.2 PCS2 (Figures 2.3 and 2.4)

South of the CAP Canal, this site features the confluence of Skunk Creek and Sonoran Wash. Similar to site PNC3 to the north (see below), Sonoran Wash is lusher with undisturbed xeroriparian vegetation than Skunk Creek, though the lack of pooling floodwater (like upstream of the CAP Canal at PNC3) has prevented the development of thick clumps of vegetation near the canal at either drainage. Erosion of rocky banks along Sonoran Wash has produced small cliff habitats along one of the major bends in the watercourse of the sort frequented by Sonoran desert tortoise. However, the isolation of this habitat by surrounding development might inhibit their presence at this site. The upland area with LCRV vegetation between the drainages is open and crisscrossed with roads and dirt-bike tracks. A thick stand of mature paloverde trees exits at the southern edge of the site. Birds are much less numerous here than PNC3 due to the lack of vegetation near the CAP Canal. The wildlife-corridor attributes of Skunk Creek are lessened here since at this site the creek is pinched in by flood-control levees as it is guided underneath Interstate 17 and through developed areas in Phoenix to the southwest.

Photos 9 and 10. PSC2

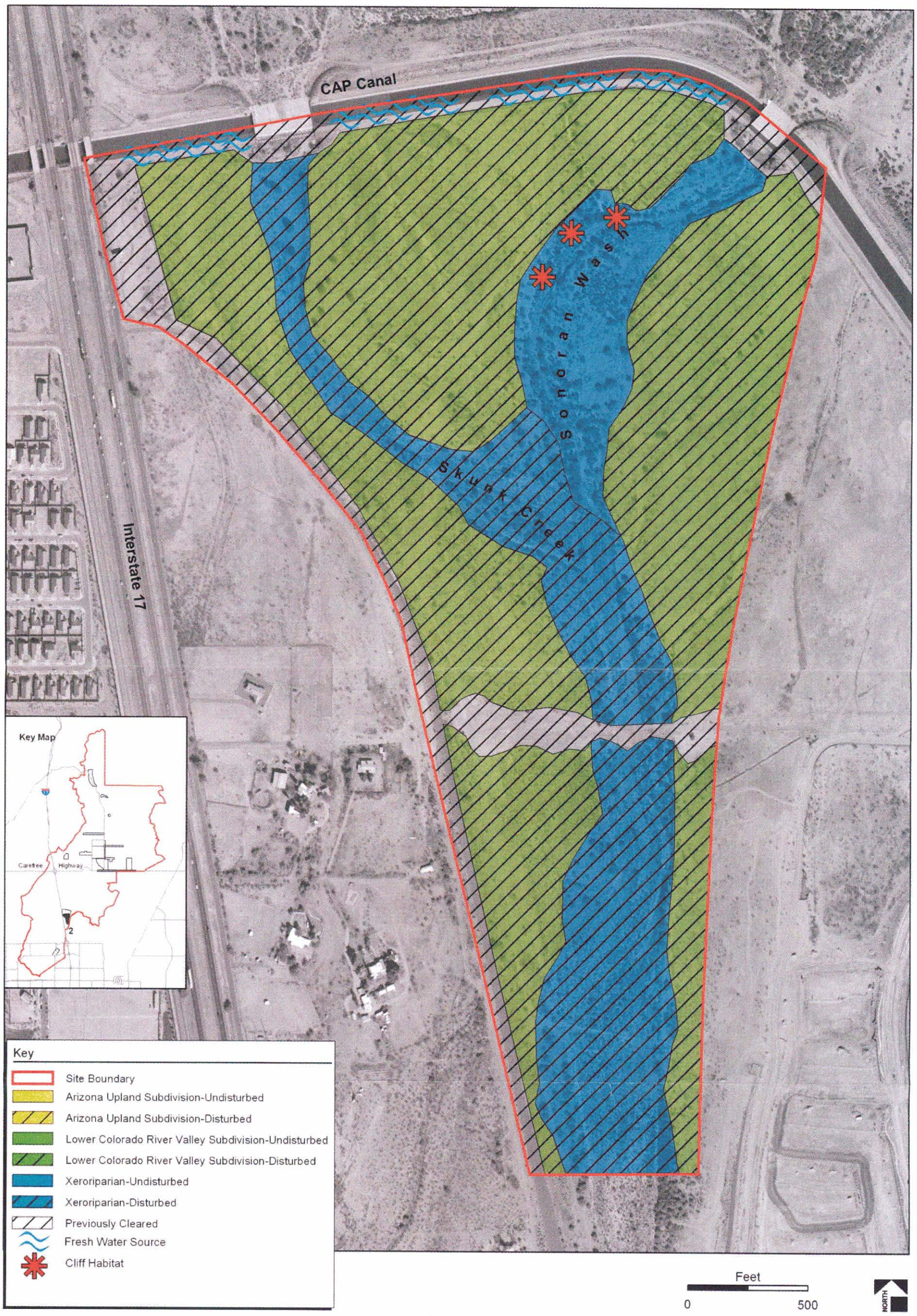


Figure 2.3 Site PSC2 – Vegetation Communities

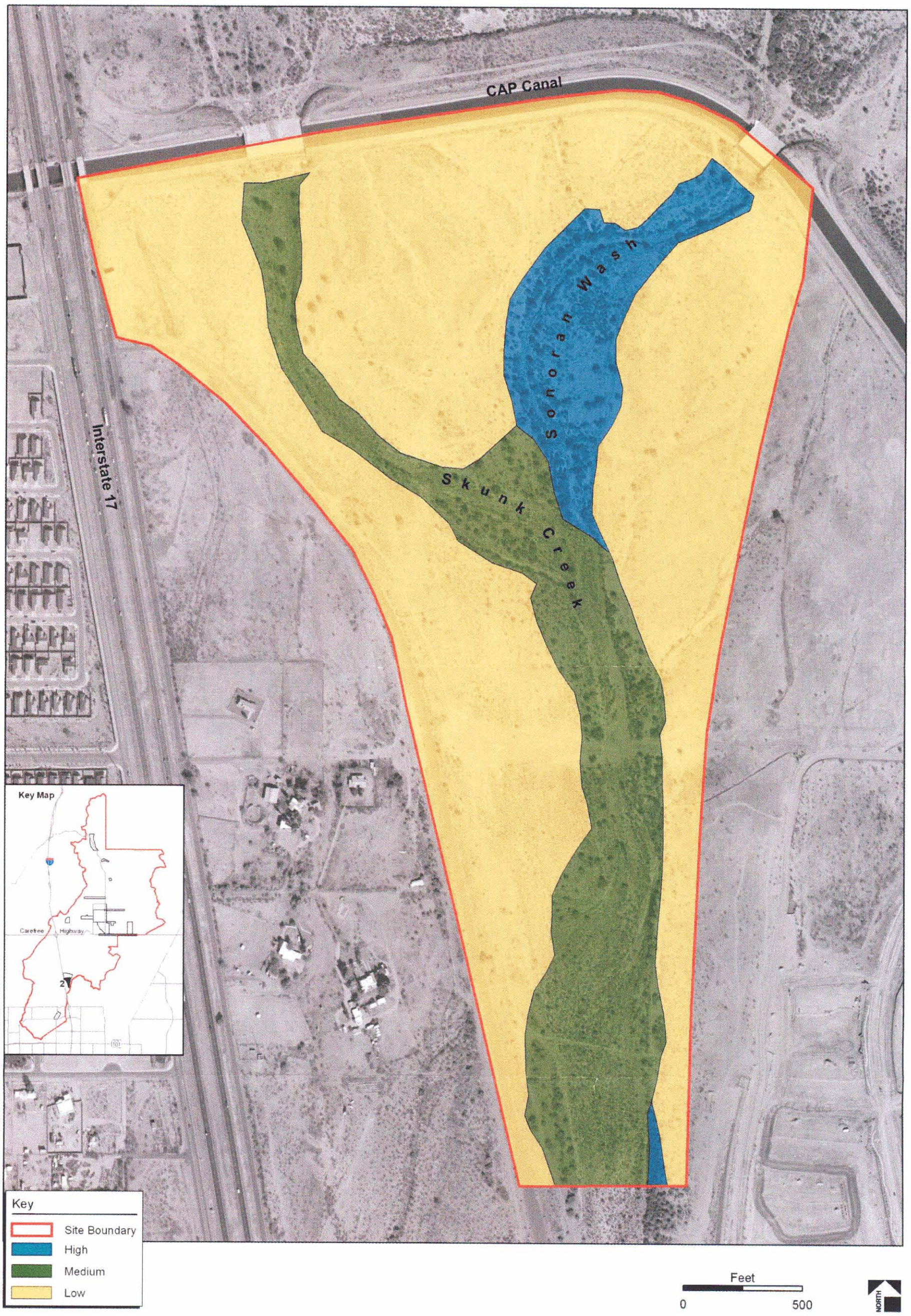


Figure 2.4 Site PSC2 – Habitat Quality

2.6.3 PNC3 (Figures 2.5 and 2.6)

Sonoran Wash is very lush with undisturbed xeroriparian vegetation along its length at PNC3, especially at the CAP Canal due to the pooling and infiltration of stormwater at the overchutes of the canal. Skunk Creek is less lush, though the field reconnaissance showed that much vegetation had grown since the time the aerial photographs were taken. There is also fairly dense vegetation associated with small drainages between the two larger washes. Numerous birds (hundreds of doves were observed during the field survey) are present due to the year-round source of fresh water at the canal, the availability of perch sites on the numerous fences next to the canal, and the lack of adjacent cover at the canal for predators. The outer barbed-wire fence protecting the canal has kept grazing cattle at bay, and grasses are dense throughout the fenced area. Xeroriparian undergrowth (especially at Sonoran Wash) is dense as well. Seed production from all vegetation appears high and probably contributes to this site's large bird populations; it also increases the importance of this area for wildlife moving along Skunk Creek and Sonoran Wash. Nearby saguaros and large xeroriparian trees forming a closed canopy over the washes in some places constitute potential CFPO habitat.

Photo 11. PNC3

2.6.4 DH4 (Figures 2.7 and 2.8)

Skunk Creek is a fairly intact desert wash (with disturbed xeroriparian habitat) even though 27th Avenue encroaches upon it at a major road curve at this site. Some flows do pass under the roadway, and minor wash vegetation exists separated from Skunk Creek west of 27th Avenue. Skunk Creek at DH4 is most likely an important wildlife corridor as it provides a somewhat hidden path through the new residential/commercial development nearby and under the busy Carefree Highway. Removal of the roadway would allow the xeroriparian vegetation to reconnect once again. Upland areas contain disturbed AU vegetation and are the sites of active residential development. A roadrunner was spotted under the Carefree Highway Skunk Creek Bridge during the field review.

Figure 2.5 Site PNC3 – Vegetation Communities

Figure 2.6 Site PNC3 – Habitat Quality

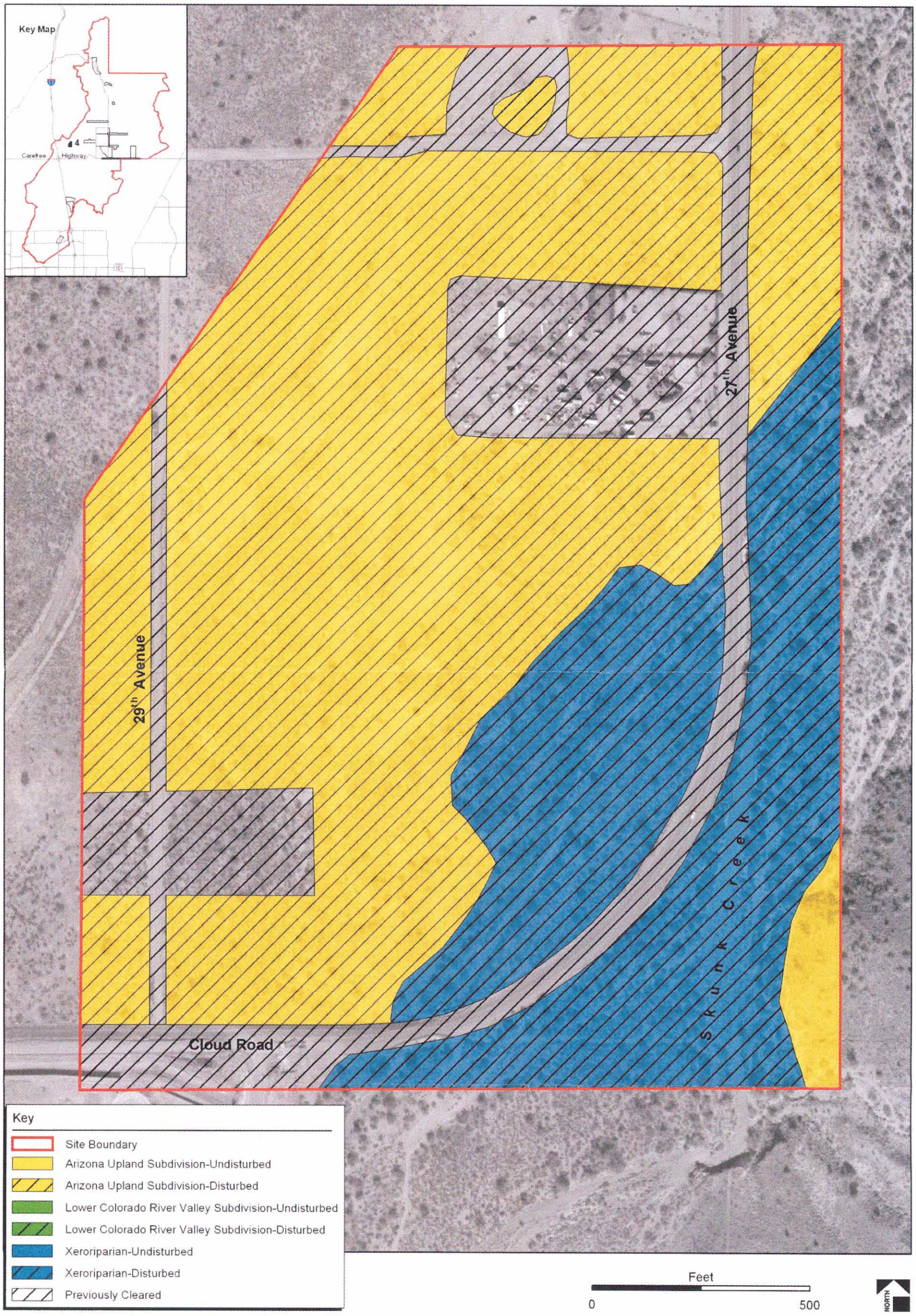


Figure 2.7 Site DH4 – Vegetation Communities

Figure 2.8 Site DH4 – Habitat Quality

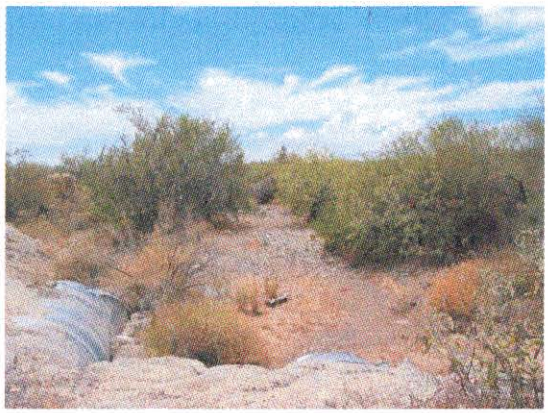


Photo 12. DH4

2.6.5 DH5 (Figures 2.9 and 2.10)

Less than half of DH5 is still natural upland/wash habitat, and the site contains elements of both LCRV and AU vegetation. Wash channels with associated xeroriparian vegetation are present very close to many homes due to their construction in or near the floodway. As a result, drainages (and potential wildlife corridors) are highly fragmented throughout DH5; only one continuous wash channel is present at its western end. The potential exists at DH5 for the improved connectivity and revegetation of small washes with future drainage improvements. Some thick upland vegetation is present on the remaining undisturbed parcels; this vegetation may be taking advantage of pooling water from the altered drainage of the site.

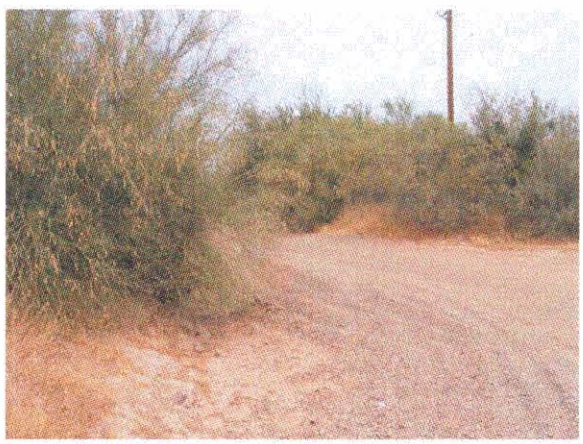


Photo 13. DH5

2.6.6 DH6 (Figures 2.11 and 2.12)

This site is an entire section (1 square mile) of land managed by the Arizona State Land Department and is isolated and protected from surrounding rural development. It appears grazing is/was allowed on the parcel, though signs at access points warn against vehicular entry due to a soil-stabilization program underway. There are no built structures at DH6 save for some livestock corrals at the far northeast corner.

Figure 2.9 Site DH5 – Vegetation Communities

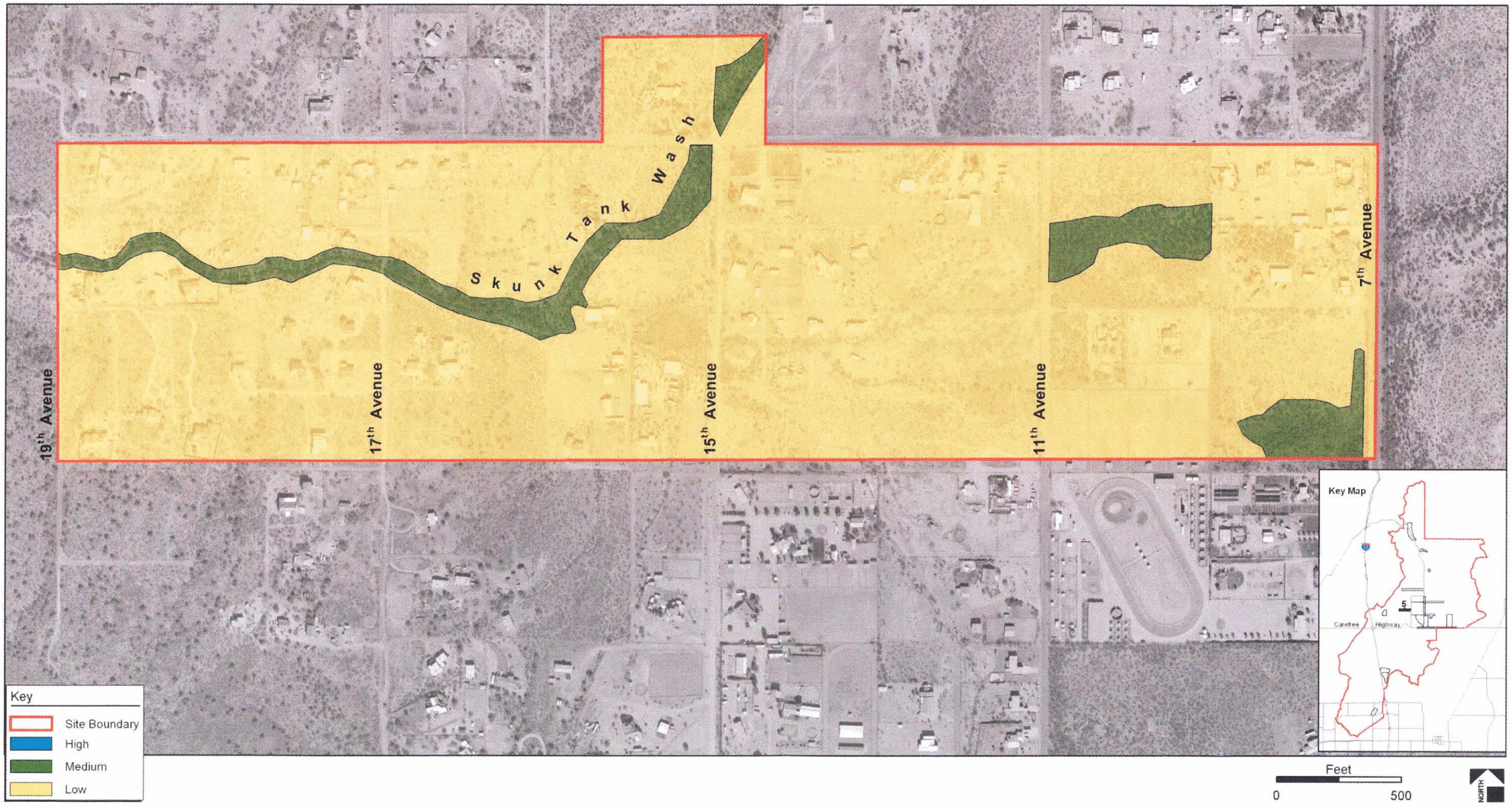


Figure 2.10 Site DH5 – Habitat Quality

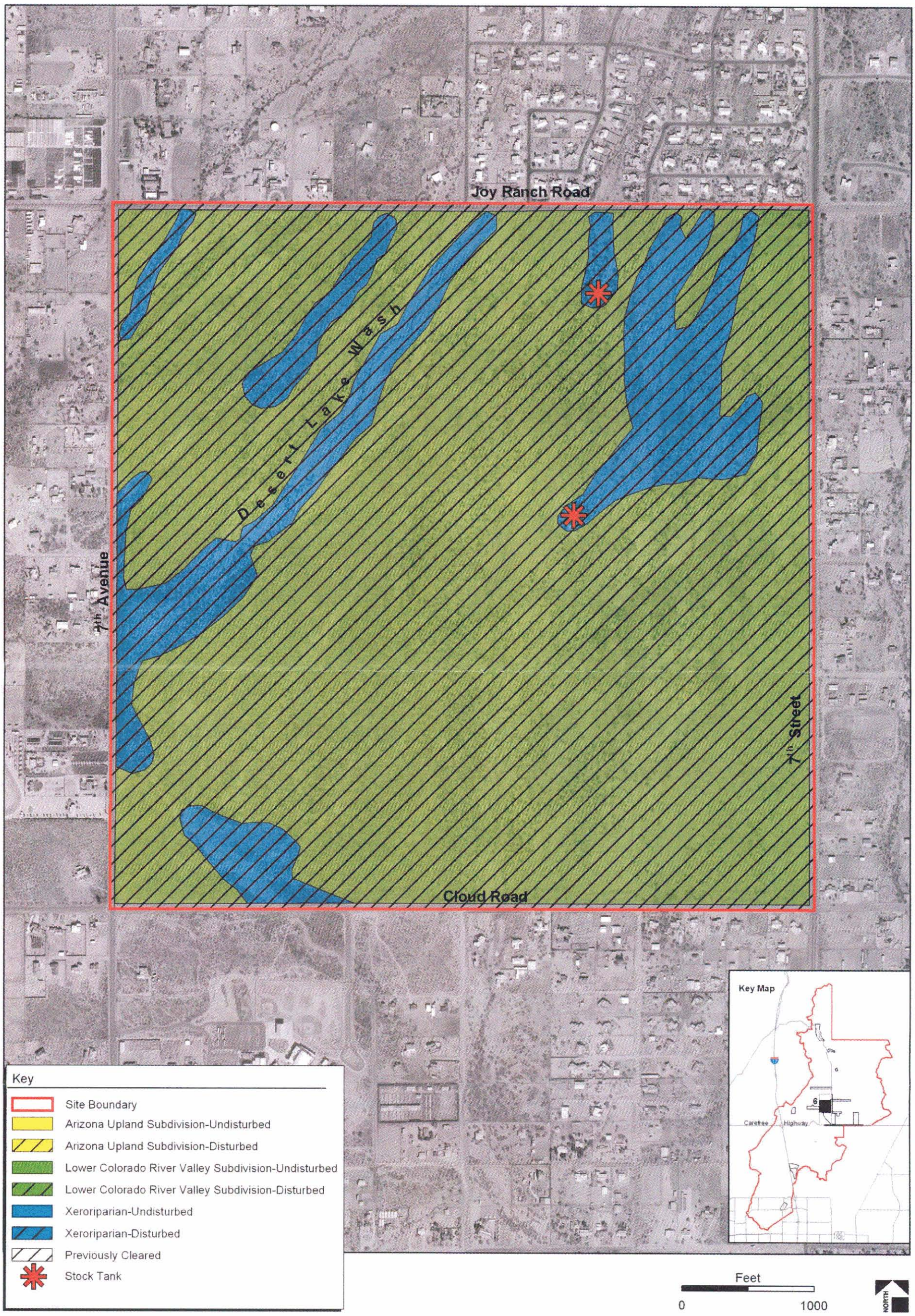


Figure 2.11 Site DH6 – Vegetation Communities

Figure 2.12 Site DH6 – Habitat Quality

Dirt tracks and two cattle tanks are visible from aerial photos. The section is bisected by numerous disturbed washes, though most are small and lined with sparse xeroriparian vegetation. Most is disturbed LCRV upland—flat with expanses of creosotebush. Where Desert Tank Wash flows and pools up at 7th Avenue grows a dense stand of mesquites, which upon further inspection from within the fences of DH6 might reveal possible CFPO habitat, especially for 0.25 mile along 7th Avenue near Maddock Road. A similar, though less dense, mesquite clump exists at a wash flowing across Cloud Road. Due to the large size and continuous nature of DH6, there is an excellent chance to preserve open space containing large tracts of fairly intact desert ecosystem.

Photo 14. DH6

2.6.7 DH7 (Figures 2.13 and 2.14)

DH7 is almost entirely developed with large-lot rural housing. Disturbed LCRV upland vegetation and wash features are highly fragmented. However, remnants of a wash can still be ascertained at the site, and one stretch of continuous xeroriparian habitat is present in the south of the site as it flows toward 7th Street (and site DH8). Reconnection of this wash feature across DH7 by way of future drainage improvements might increase the value of habitat through the center of an otherwise human-disturbed landscape.

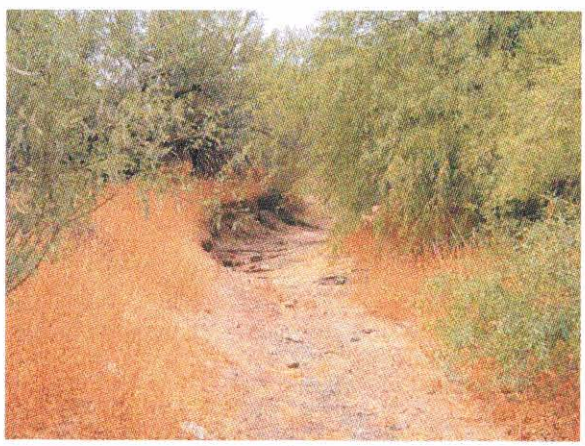


Photo 15. DH7

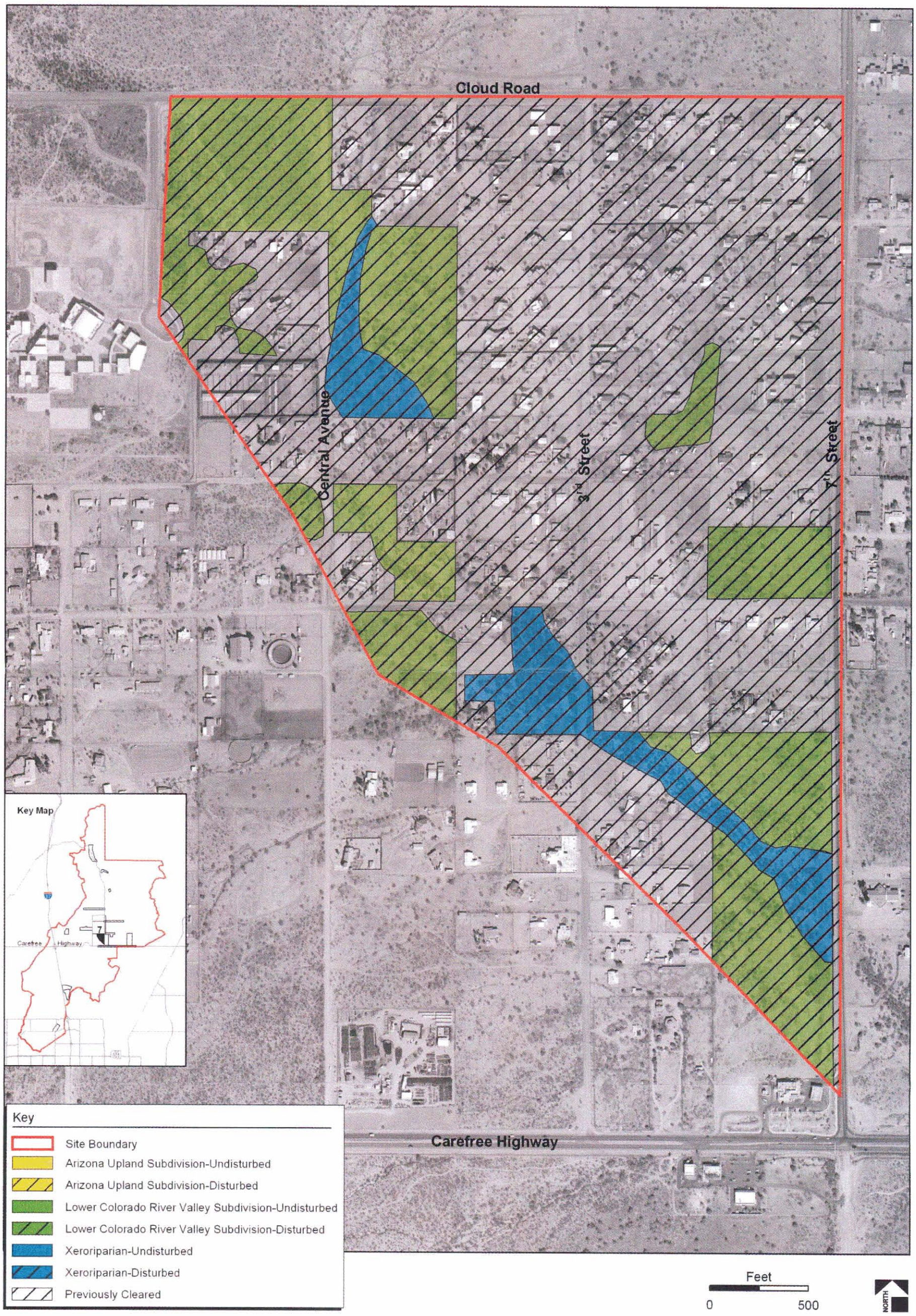


Figure 2.13 Site DH7 – Vegetation Communities

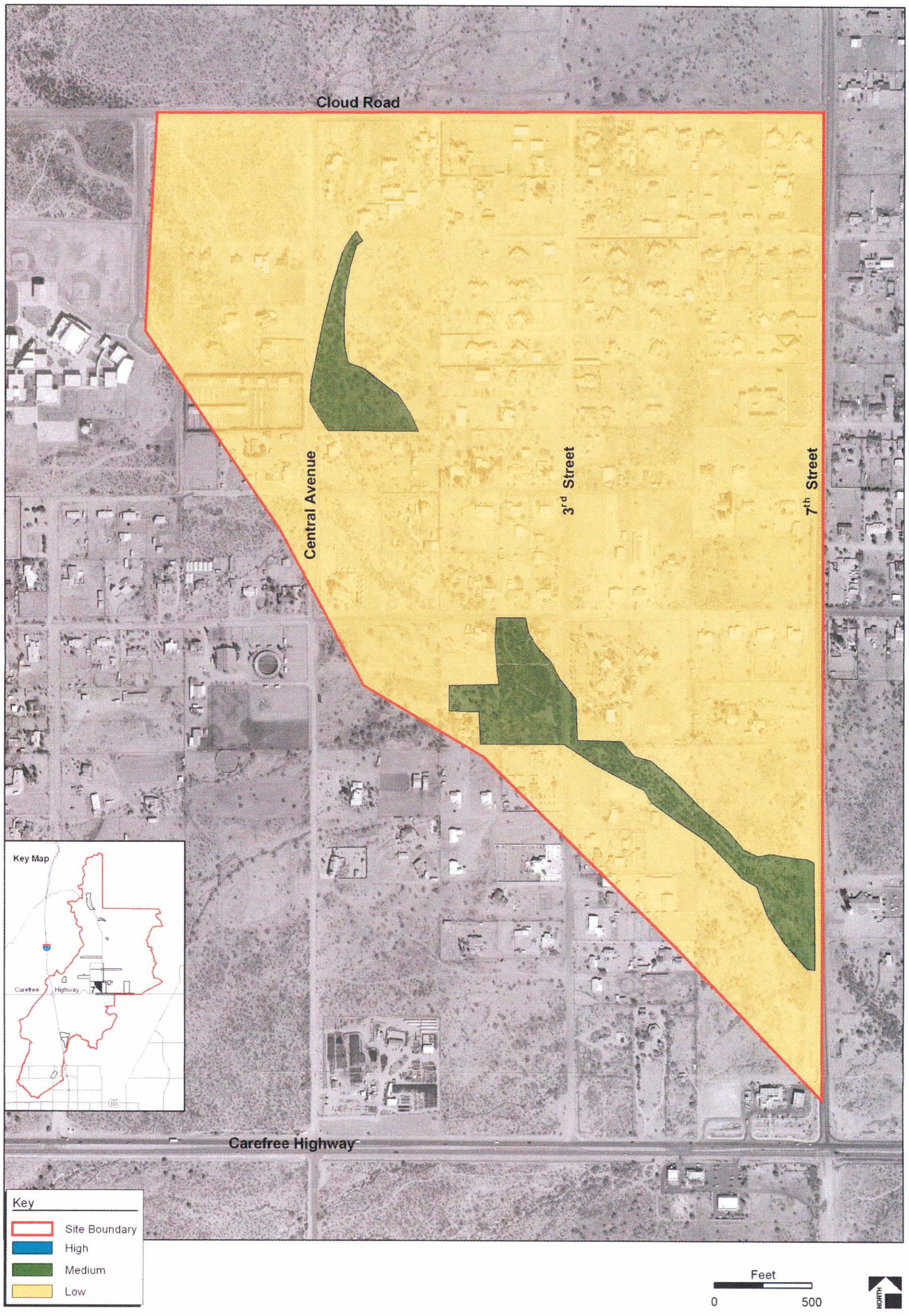


Figure 2.14 Site DH7 – Habitat Quality

2.6.8 DH8 (Figures 2.15 and 2.16)

What little intactness is left of a wash at the northern end of DH8 quickly degrades into unvegetated roadside drainage for the rest of the site downstream to the south. The east side of 7th Street at DH8 is generally continuous rural housing with highly fragmented LCRV uplands and xeroriparian corridors; many homes are constructed immediately adjacent to washes. A wash crosses DH8 from DH7 via a large culvert at the site's southern end near Carefree Highway; this area is wide and low with lots of mesquites but is reported to be the site of a future municipal water treatment plant. Reconnection of small washes might be possible with future drainage improvements, which could assist wildlife in moving through this highly impacted site.

Photo 16. DH8

2.6.9 DH9 (Figures 2.17 and 2.18)

DH9 is almost completely rural residential development; two washes lined with xeroriparian vegetation cross the site, but they are fragmented. Vegetation along the wash in southwest quadrant has been completely removed, so that wash is highly disturbed.

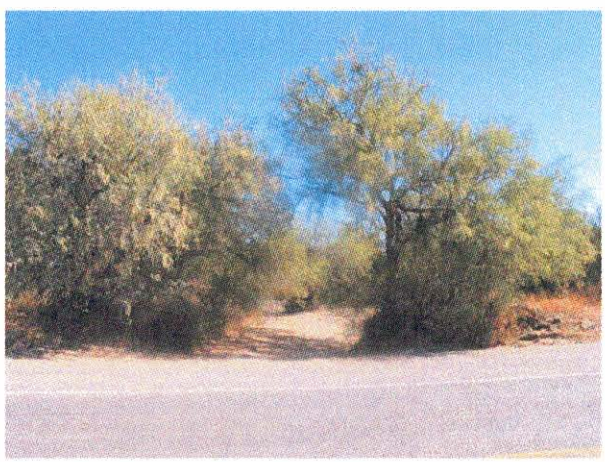


Photo 17. DH9

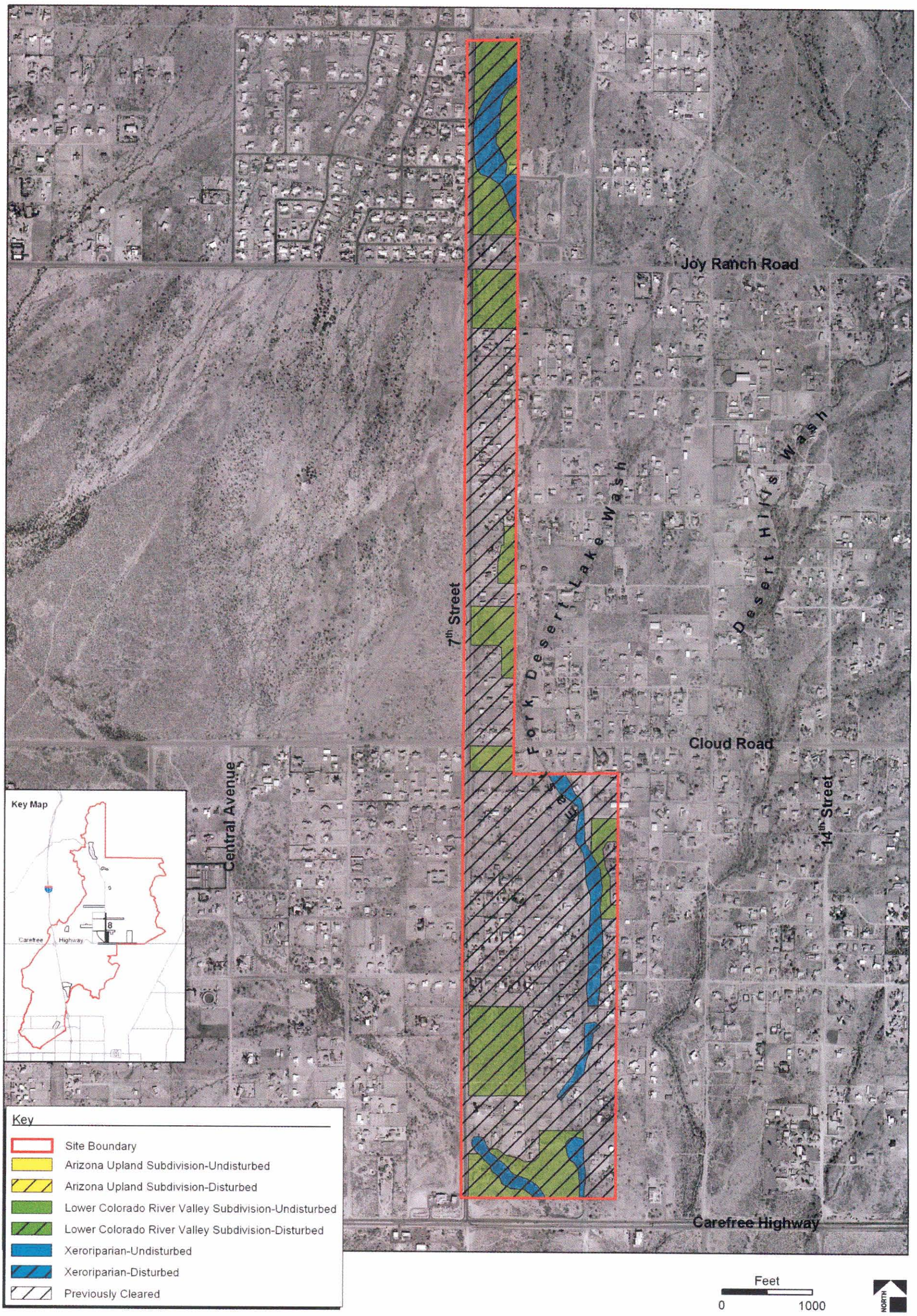


Figure 2.15 Site DH8 – Vegetation Communities

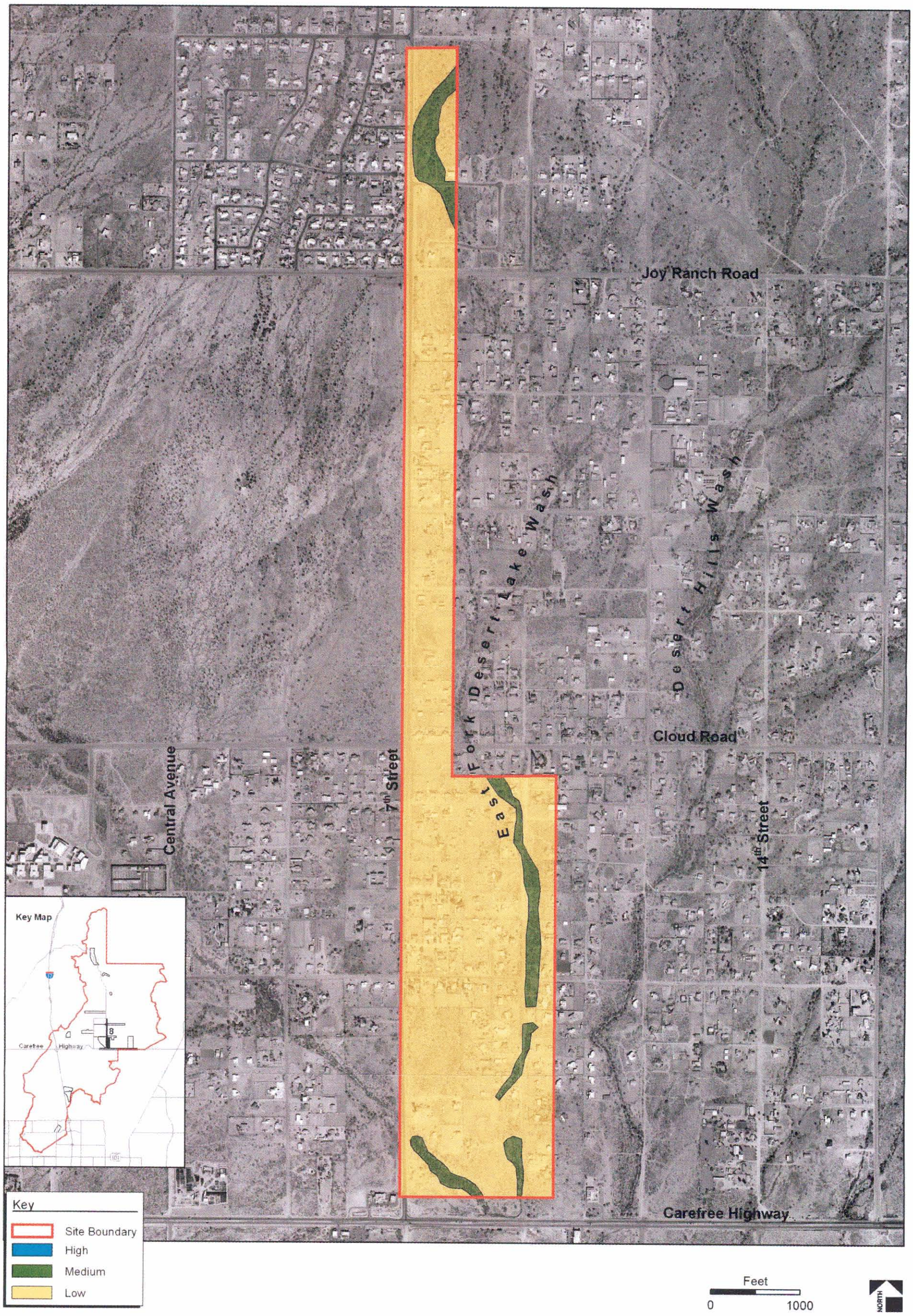


Figure 2.16 Site DH8 – Habitat Quality

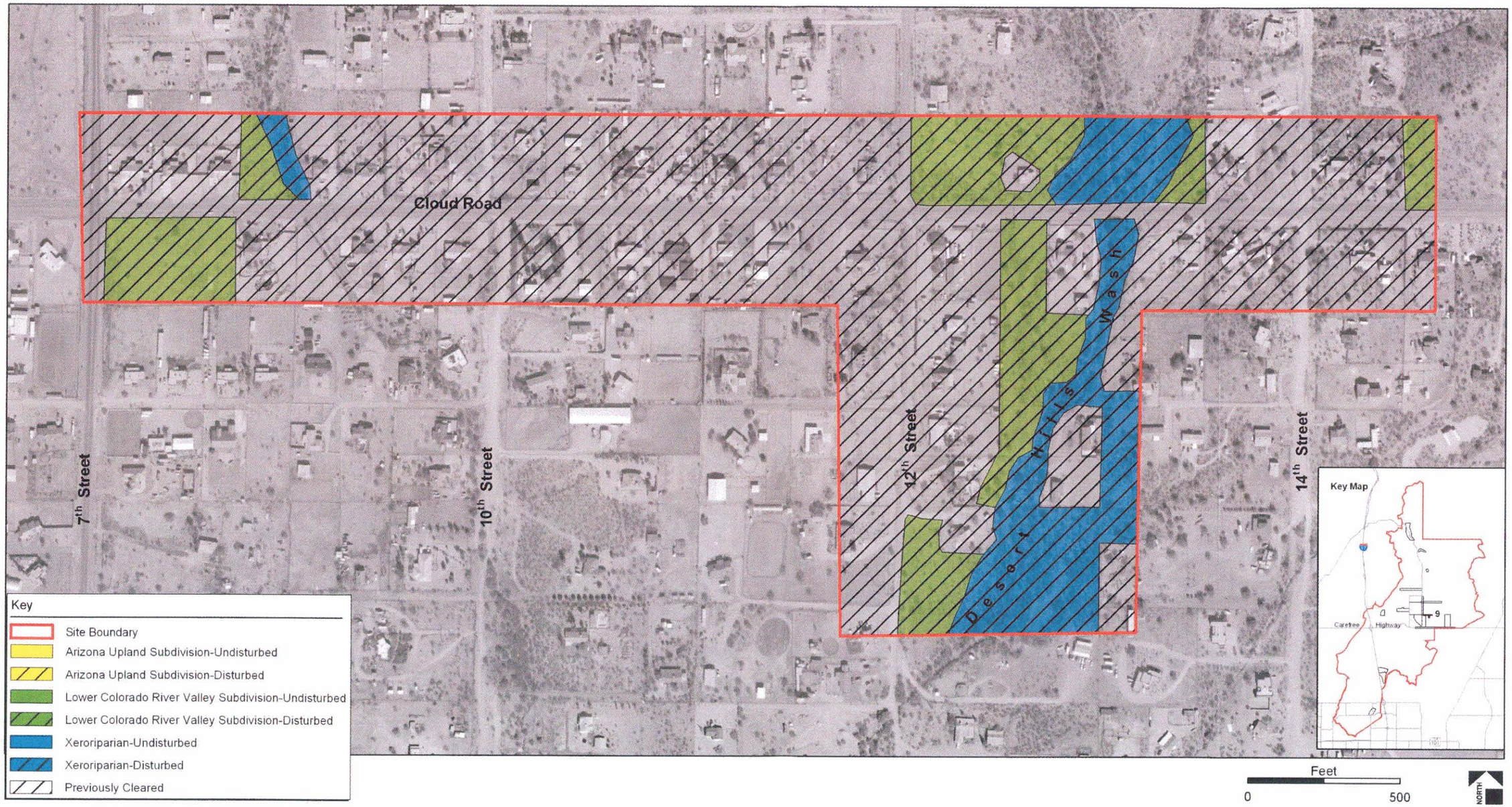


Figure 2.17 Site DH9 – Vegetation Communities

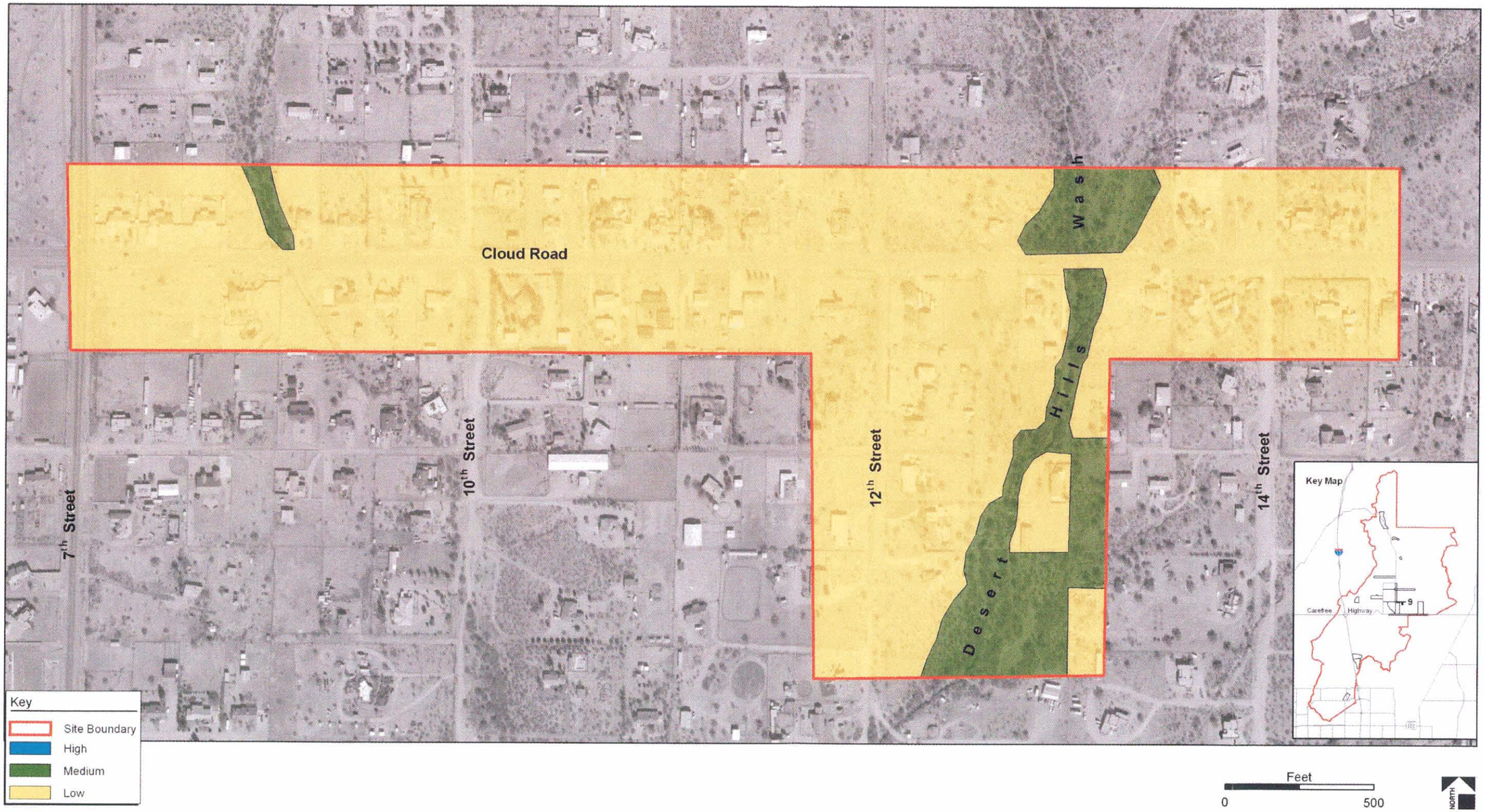


Figure 2.18 Site DH9 – Habitat Quality

2.6.10 DH10 (Figures 2.19 and 2.20)

DH10 is largely a road corridor along Carefree Highway. While there is some development on its western end between 7th Avenue and 7th Street, there are many undeveloped areas adjacent to the highway with intact upland vegetation. Numerous smaller washes cross the highway via culverts; they are fairly continuous and lined with xeroriparian vegetation for quite a distance from the roadway. Apache and Paradise Washes are large with intact vegetation and also cross Carefree Highway in DH10 and are important wildlife movement corridors due to their size and length. A great-horned owl was flushed from the highway's shoulder from a large paloverde tree along one of the smaller washes during the reconnaissance survey, and a desert cottontail was visible from the roadway.

Photo 18. DH10

2.6.11 DH11 (Figures 2.21 and 2.22)

Apache Wash and 24th Street are on a similar north-south alignment at DH11, resulting in numerous dip crossings on 24th Street where flows cross the roadway. Aside from disturbed roadway areas, the Apache Wash has intact xeroriparian vegetation. The western and southeastern upland areas of DH11 are flat, open, and dominated by creosotebush; the northeast upland area has a dense stand of paloverde trees and numerous individuals of several species of *Opuntia* are present. Five stock tanks are present at DH11 in the uplands on each side of the wash (three west, two east). The tanks are normally dry during the summer months, though at least one had begun to fill with standing water after one brief monsoon shower, as observed during the field survey. These remote stock tanks are special ecological features at this site since they provide shade in the summer (mature mesquites ring each tank) and standing fresh water during wetter periods. Local wildlife probably rely on the tanks for water; and some migrating birds may use the tanks as temporary layovers.

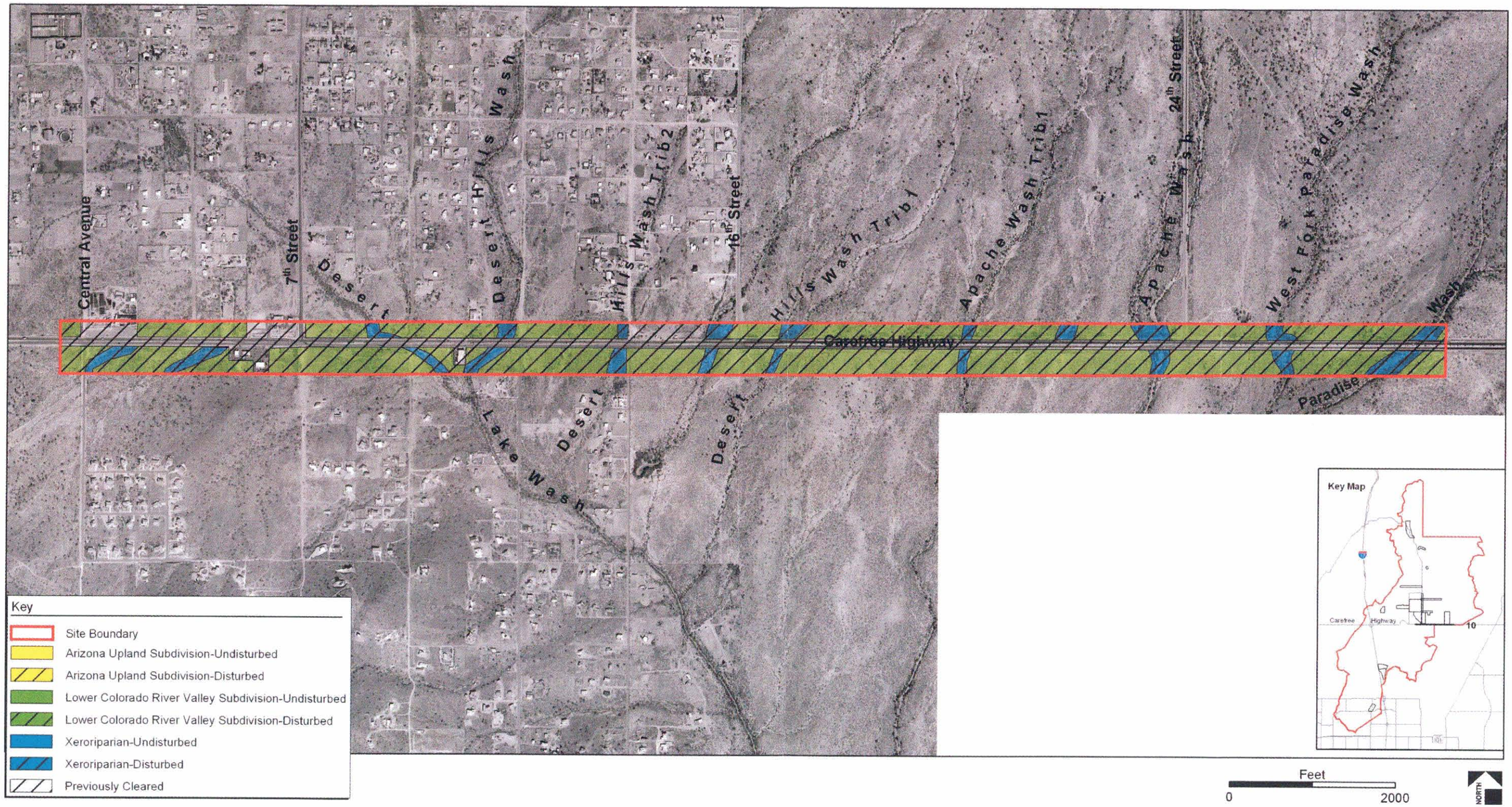


Figure 2.19 Site DH10 – Vegetation Communities

Figure 2.20 Site DH10 – Habitat Quality

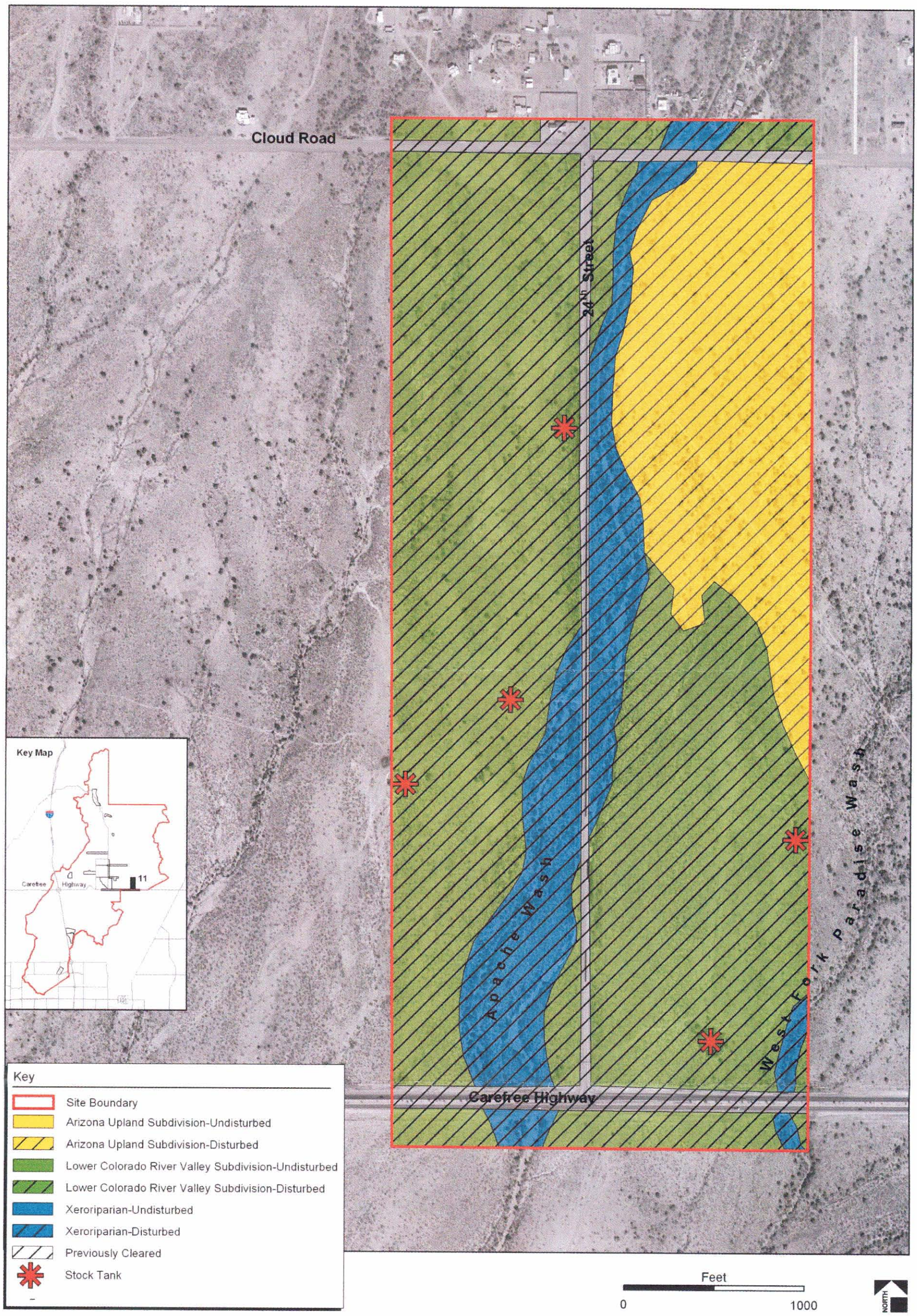


Figure 2.21 Site DH11 – Vegetation Communities

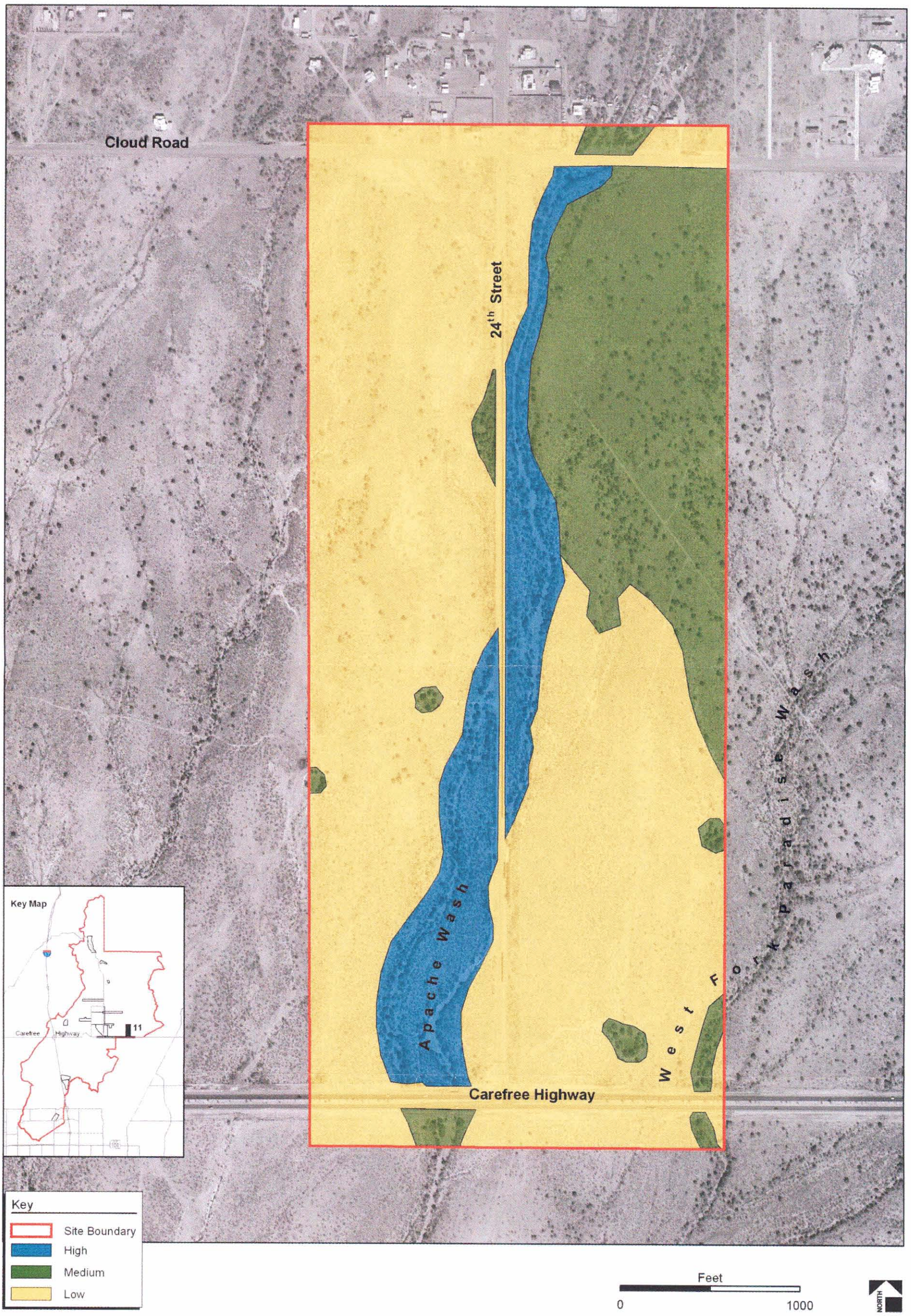


Figure 2.22 Site DH11 – Habitat Quality

Photo 19. DH11

2.6.12 DH12 (Figures 2.23 and 2.24)

Continuing rural housing development is rapidly fragmenting the upland habitat. DH12 is very similar to DH9 to the south, except there is less overall development and more frequent drainage crossings of the roadway. Four small washes flow south across DH12. A thin ribbon of xeroriparian vegetation is mostly intact near the washes, but there are homes immediately adjacent to the washes in almost all areas, which contributes significantly to their fragmentation. However, they are probably still decent wildlife corridors due to the largely undeveloped areas along the washes upstream to the north.

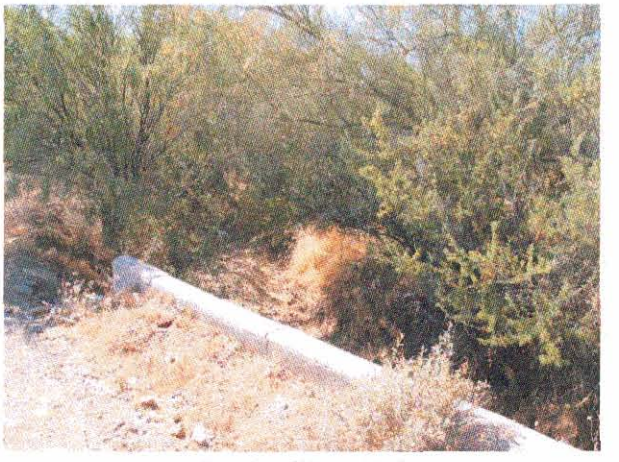


Photo 20. DH12

2.6.13 DH13 (Figures 2.25 and 2.26)

Like DH9 and DH12, rural housing development is continuing along the road corridor, though large tracts of upland desert are still intact. Some of these areas have thick vegetation. Skunk Creek is a major drainage crossing at the western end of DH13, and like other segments of Skunk Creek in the study area it most likely functions as a major wildlife corridor. Two smaller washes in the center and in the east of DH13 are

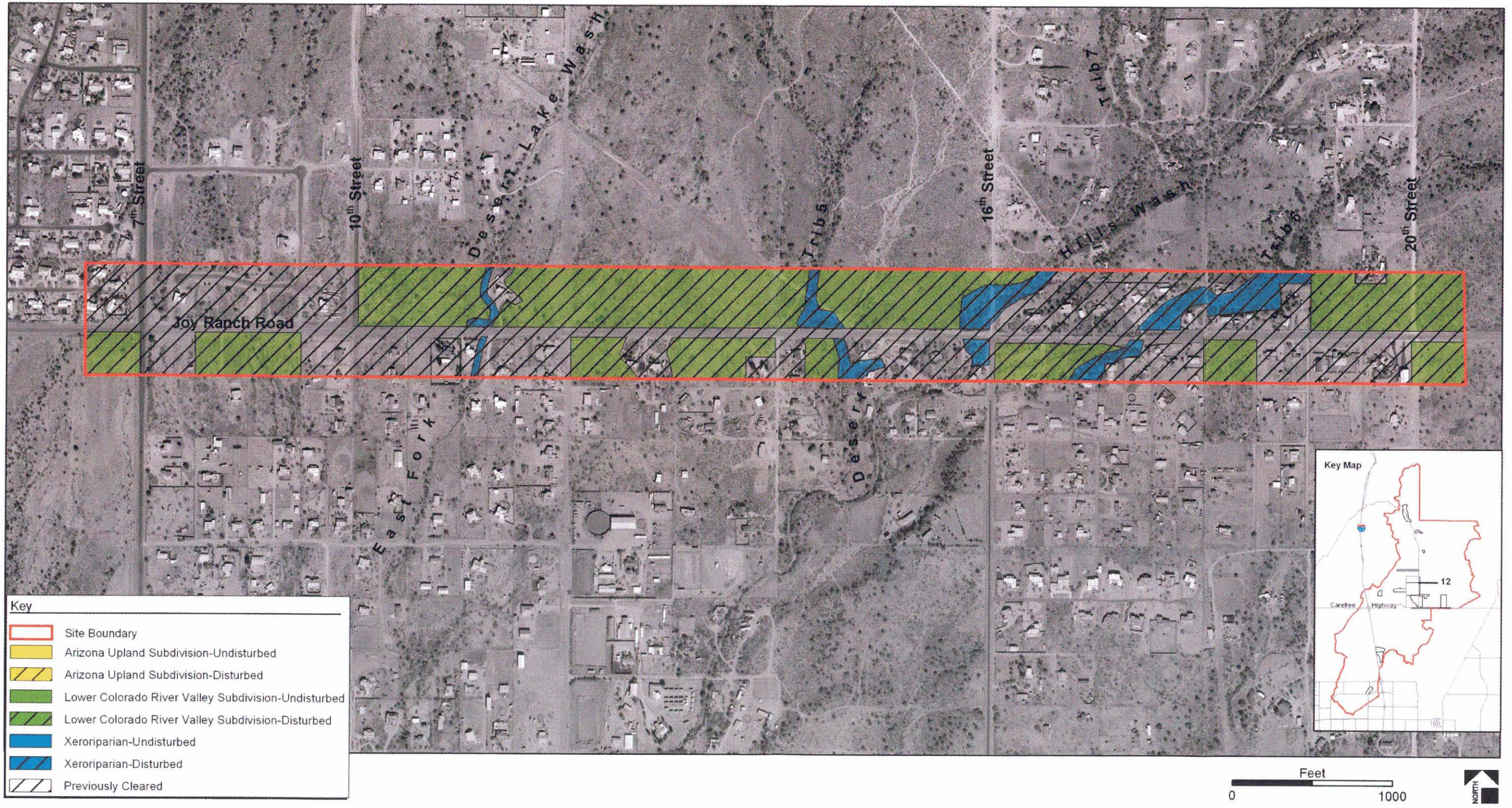


Figure 2.23 Site DH12 – Vegetation Communities

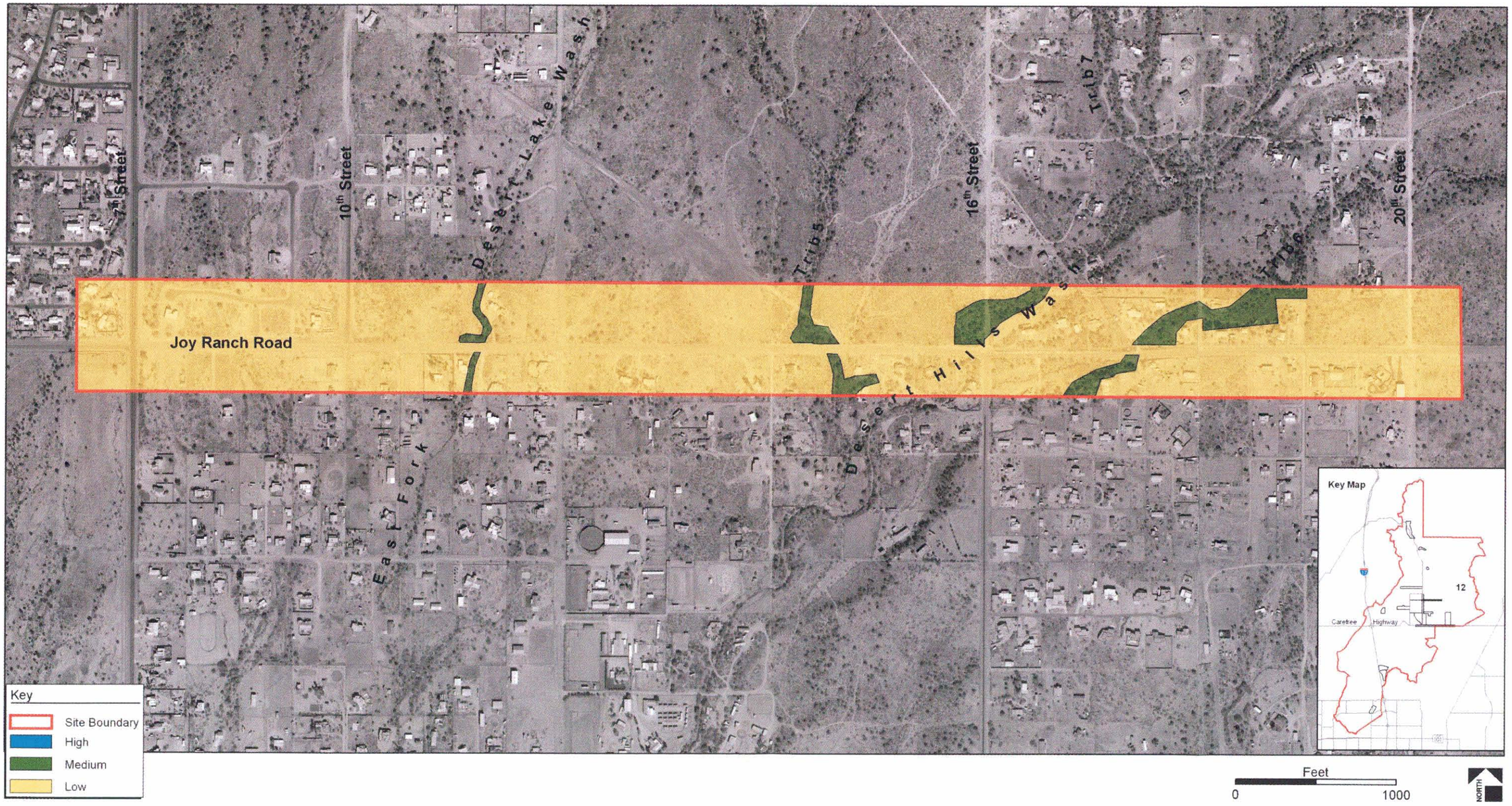


Figure 2.24 Site DH12 – Habitat Quality

Figure 2.25 Site DH13 – Vegetation Communities

Figure 2.26 Site DH13 – Habitat Quality

still fairly undisturbed. It appears individual parcels are being developed one at a time; however, large-scale disturbance (complete desert clearing) of Anthem is encroaching on DH13 at its western end.

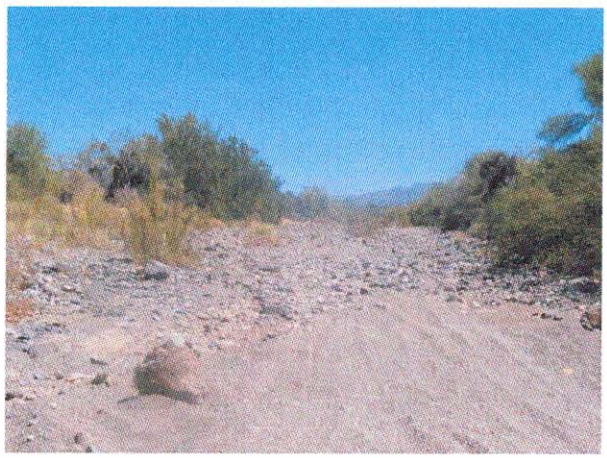


Photo 21. DH13

2.6.14 NR14 (Figures 2.27 and 2.28)

At NR14, Rodger Creek flows through an undersized culvert. Upstream, the wash is wide and drains a largely undisturbed area. However, downstream of the culvert, Rodger Creek begins to braid as it flows near adjacent residential development. The culvert at Rodger Creek is the only major wash crossing of New River Road in the area and is probably an important wildlife corridor. Undisturbed steep uplands are present to to the southeast, southwest, and northeast. Elsewhere, past and ongoing residential development has cleared the landscape. A large undisturbed ridge and sloping bajada are north/northeast of NR14, inhabited by numerous saguaros, smaller cacti, and upland wildlife.

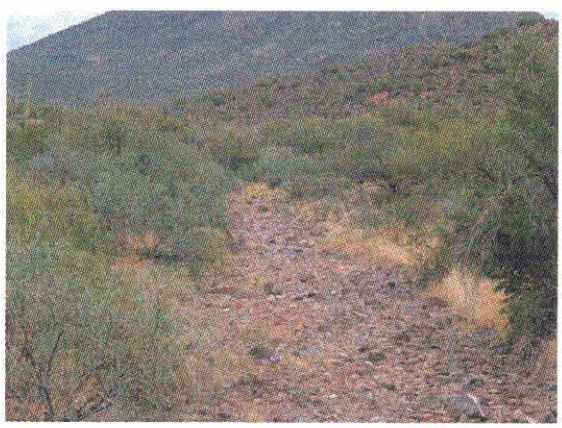


Photo 22. NR14

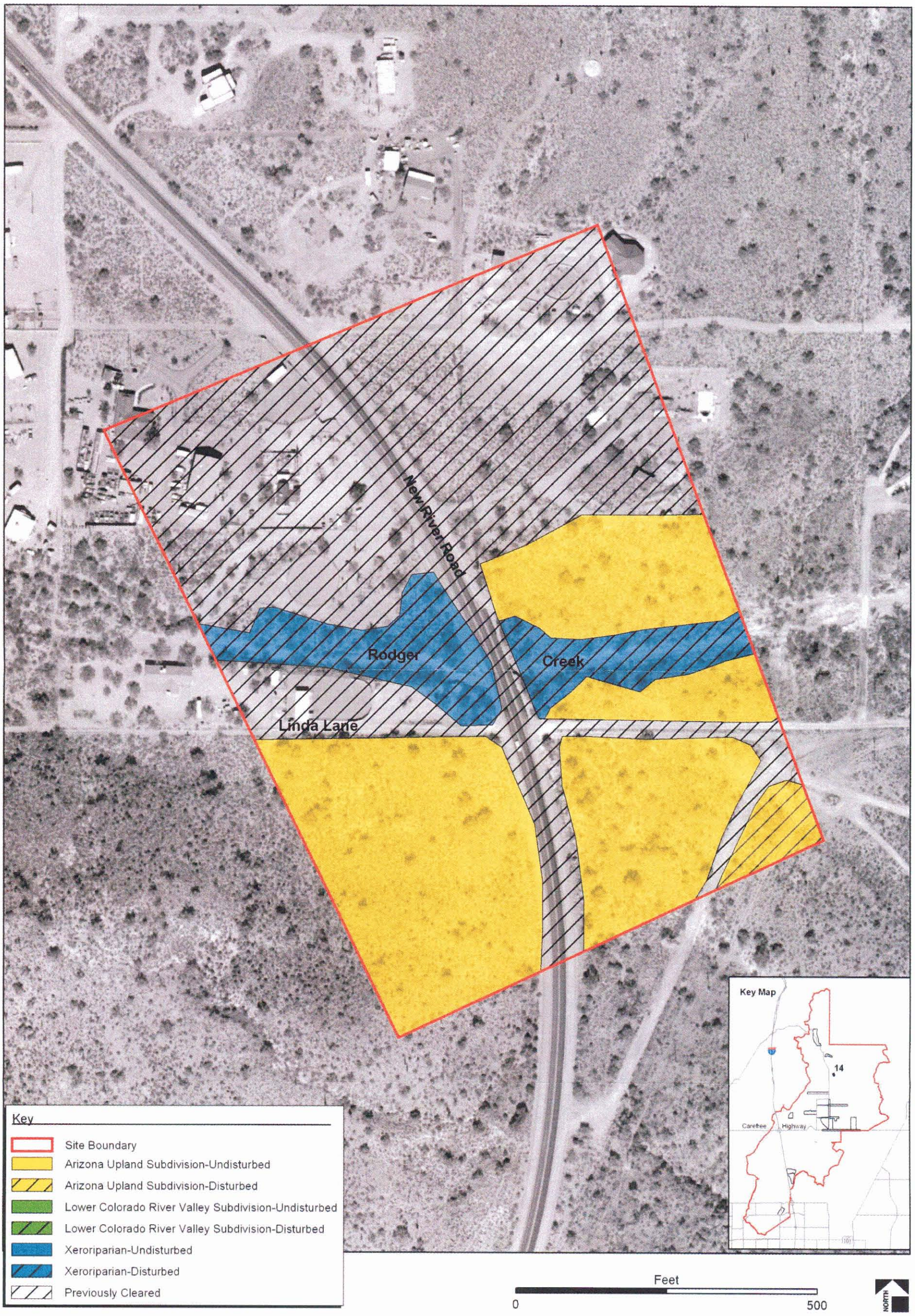


Figure 2.27 Site NR14 – Vegetation Communities

Figure 2.28 Site NR14 – Habitat Quality

2.6.15 NR15 (Figures 2.29 and 2.30)

The convergence of several washes occurs in NR15. Xeroriparian vegetation along the washes is not lush nor has a closed canopy; instead the washes are wide and open. Circle Mountain Road and several homes encroach on the washes in several places. Because these washes drain rural watersheds to the north and east, they are most likely used by wildlife as movement corridors. The large bridge at New River Road downstream ensures easy crossing under roadway. Apache Peak is just south of NR15 and slopes down toward Circle Mountain Road covered with undisturbed upland vegetation. Due to the proximity of the peak to the washes below, a large cliff (road cut) was formed on Apache Peak by the construction of the roadway through NR15. While unvegetated and too steep for easy mobility of wildlife, it may provide roosting and/or vantage sites for birds of prey or scavengers.

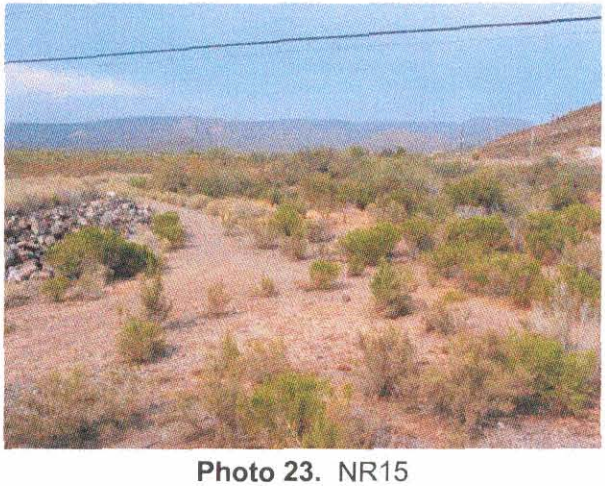


Photo 23. NR15

2.6.16 NR16 (Figures 2.31 and 2.32)

NR16 is generally hilly with lush upland vegetation and a moderate number of cleared parcels for rural housing developments. Skunk Creek bisects NR16 for its entire length and is largely undisturbed and unfragmented (only a few structures are built immediately next to the wash). Skunk Creek here is generally wide and rocky and is an excellent wildlife corridor through the steep and inaccessible uplands of the greater New River area and the Tonto National Forest to the east. Eroded banks along Skunk Creek have formed numerous cliff habitats; since a field survey of the entire stretch of Skunk Creek was not done at NR16, there are likely more than the two general areas of cliff habitat shown on Figure 2.31. Other smaller washes lined with decent xeroriparian vegetation also branch from Skunk Creek throughout NR16.

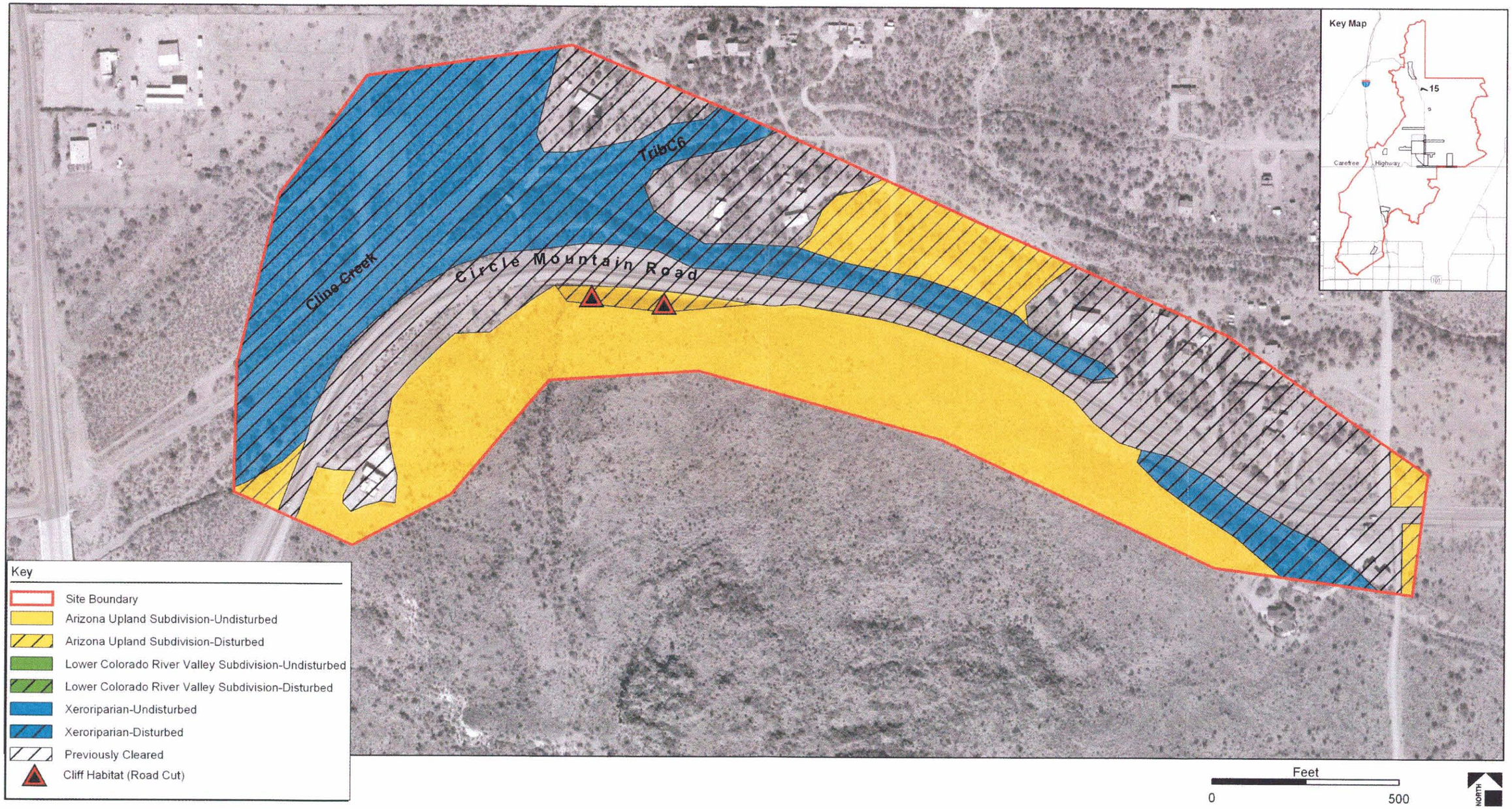


Figure 2.29 Site NR15 – Vegetation Communities

Figure 2.30 Site NR15 – Habitat Quality

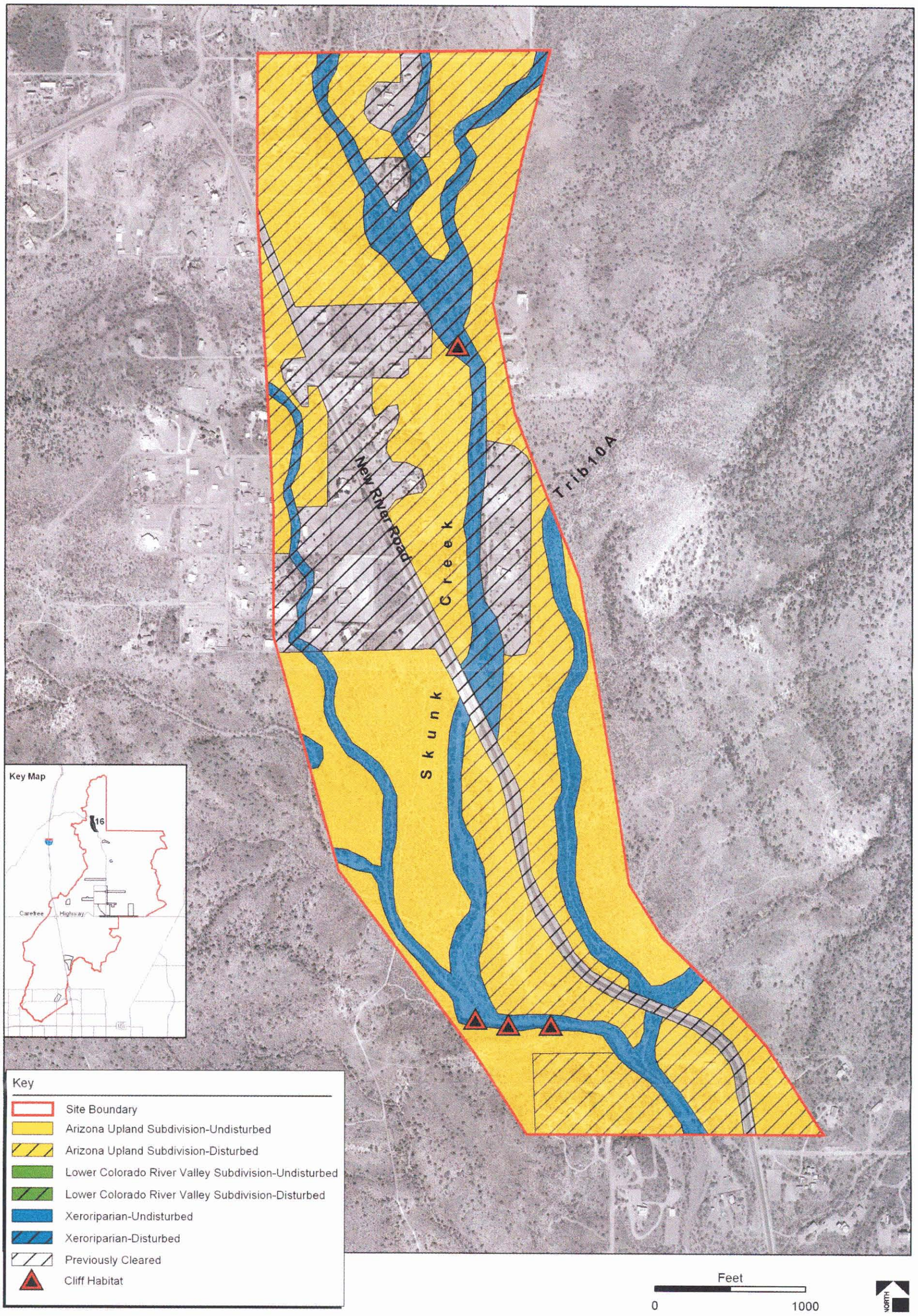


Figure 2.31 Site NR16 – Vegetation Communities

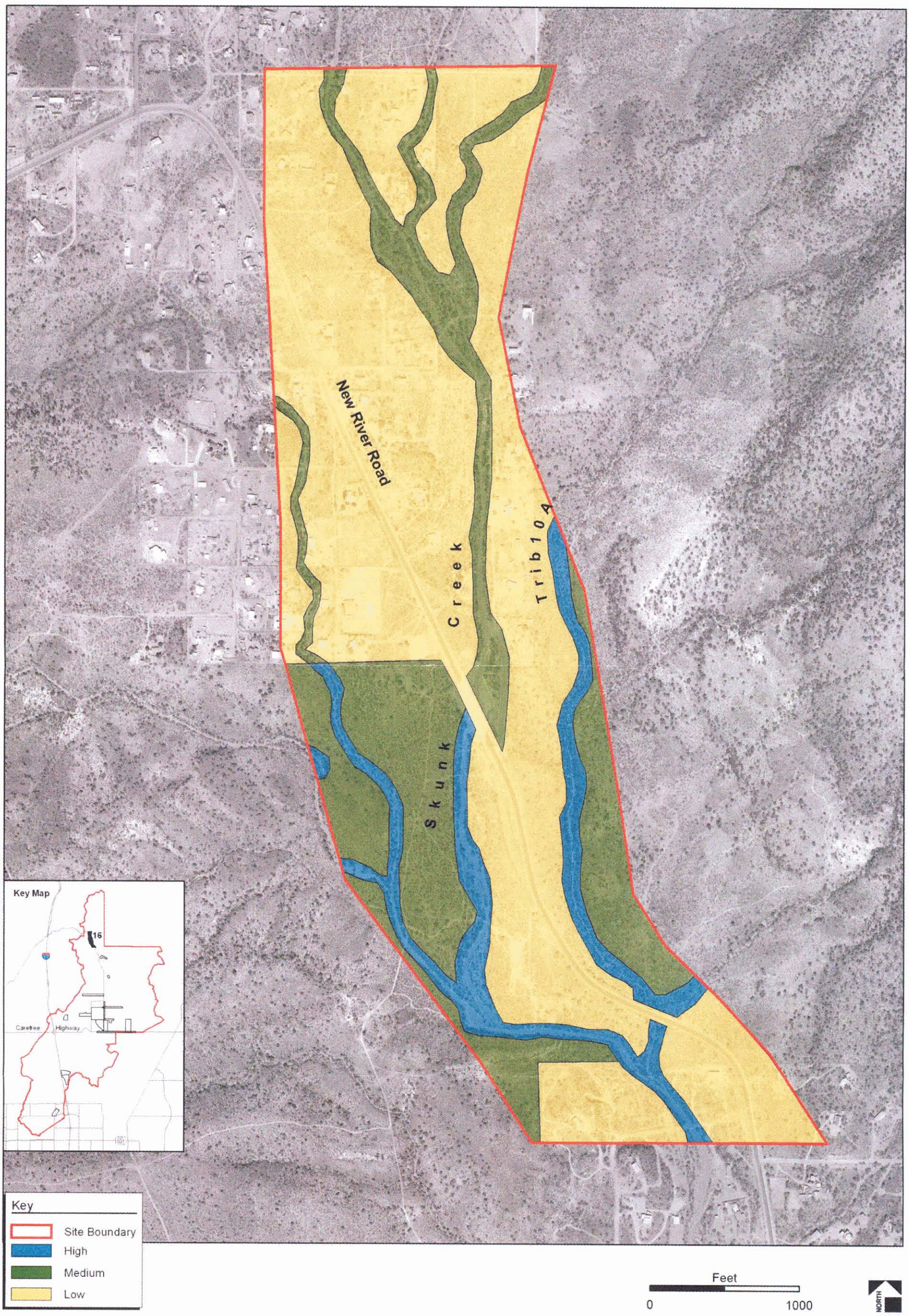


Figure 2.32 Site NR16 – Habitat Quality

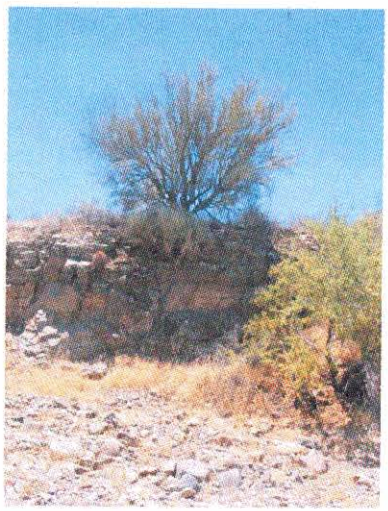


Photo 24. NR16

3.0 Hazardous Materials Concerns

3.1 Background and Purpose

The purpose of this section is to describe identified hazardous materials concerns at each of the structural measure sites (summarized by subarea) so that future planning effort might avoid impacting areas that may be potentially expensive to remediate or to ensure appropriate remediation efforts are undertaken before future ground-disturbing activities occur. This section will provide a brief background of hazardous material regulatory information, a description of the environmental records search, and a summary of the findings.

Hazardous materials are chemical substances, which if released or misused can pose a threat to human health or the environment. These chemicals are used in industry, agriculture, medicine, research, and consumer products. Hazardous materials can be explosive, flammable, and/or combustible substances; poisons; and radioactive materials. These chemicals are regulated by the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). RCRA and CERCLA are implemented and enforced by the US Environmental Protection Agency (EPA).

RCRA, enacted in 1976, addresses safe management and disposal of municipal and industrial waste. RCRA established a regulatory structure for managing hazardous waste from its generation to its ultimate disposal, established a solid waste (such as household waste) management system, and regulates underground storage tanks (USTs) that store petroleum or hazardous substances. RCRA intends to protect the public from the hazards of waste disposal; conserve energy and natural resources by recycling, recovery, and reduction or elimination of waste; and remediate hazardous waste that may have spilled, leaked, or been improperly disposed of.

Congress enacted CERCLA, commonly known as "Superfund", on December 11, 1980. CERCLA established requirements and prohibitions regarding closed and abandoned hazardous waste sites, provided for liability of responsible parties for releases of hazardous waste at these sites, and created a trust fund to finance clean up when no responsible party could be identified. CERCLA was amended in 1986 under the Superfund Amendments and Reauthorization Act (SARA).

SARA emphasized permanent remedies and innovative treatment technologies for clean up of hazardous waste sites, required Superfund actions to consider standards and requirements found in state and other federal environmental laws and regulations, and provided new enforcement authorities and settlement tools. Additionally, SARA increased state involvement in the Superfund program, increased the focus on human health problems posed by hazardous waste sites, encouraged greater public participation in decision making about the method of site clean up; and increased the size of the trust fund. SARA also required EPA to revise the Hazard Ranking System (HRS) to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the National Priorities List (NPL).

3.2 Methods

In order to identify potential hazardous materials concerns in the study area, a review of federal and state government records was completed and documented in an Area Study Report produced by Environmental Data Resources, Inc. (EDR) in July 2003. All 16 of the structural measure sites were lumped together to form a "target property;" the search for hazardous materials included this target property and a buffer zone around the entire area. A comprehensive list of all of the various databases queried for hazardous materials concerns along with the different search radii used for each query are listed in the study report. The database list and search radii meet the search requirements of the American Society for Testing and Materials Standard Practice for Environmental Site Assessments. The report is included in its entirety in Appendix G.

3.3 Subarea Evaluations

3.3.1 Phoenix South of CAP (Figure 3.1)

Numerous hazardous materials concerns were discovered from the records check at and near the Skunk Creek Landfill. The landfill itself is a registered municipal solid waste landfill. Three hazardous materials spills have been reported there (oil, perchloroethylene, and an oil fire) but have been remediated. Two inactive underground storage tanks were reported at the landfill, and the landfill is a known treatment, storage, or disposal facility (TSDF). Another privately owned TSDF is present in the light-industrial complex on the southwest corner of PSC1; it is classified as a "conditionally exempt small-quantity generator." Drywell shafts or holes, whose depths are greater than their widths and are designed and constructed specifically for the disposal of stormwater, are bored, drilled, or driven. Drywells rely on gravity to drain liquid wastes into the ground; their construction provides minimal to no protection against potential ground water contamination. A drywell is also present in one of the parking lots of that complex. If impacted by the project, Arizona Department of Environmental Quality's (ADEQ's) Water Permits Section, Industrial & Drywell Unit should be contacted to determine if further work would be required for these drywells.

The Circle K at 35th Avenue and Happy Valley Road has three active underground storage tanks, as does a convenience store (with eight) at 36th Avenue and Pinnacle Peak Road. Another inactive underground storage tank is reported for another location nearby. All of these tanks are outside the PSC1 boundaries. Finally, in areas of Skunk Creek (especially in the nonchannelized segment between the landfill to the east and the industrial/residential complex to the west), extensive wildcat dumping was discovered on a site visit to the area. Numerous old appliances, abandoned vehicles, and wooden pallets (along with other trash) were strewn about the various dirt roads bisecting the wash vegetation of the creek.

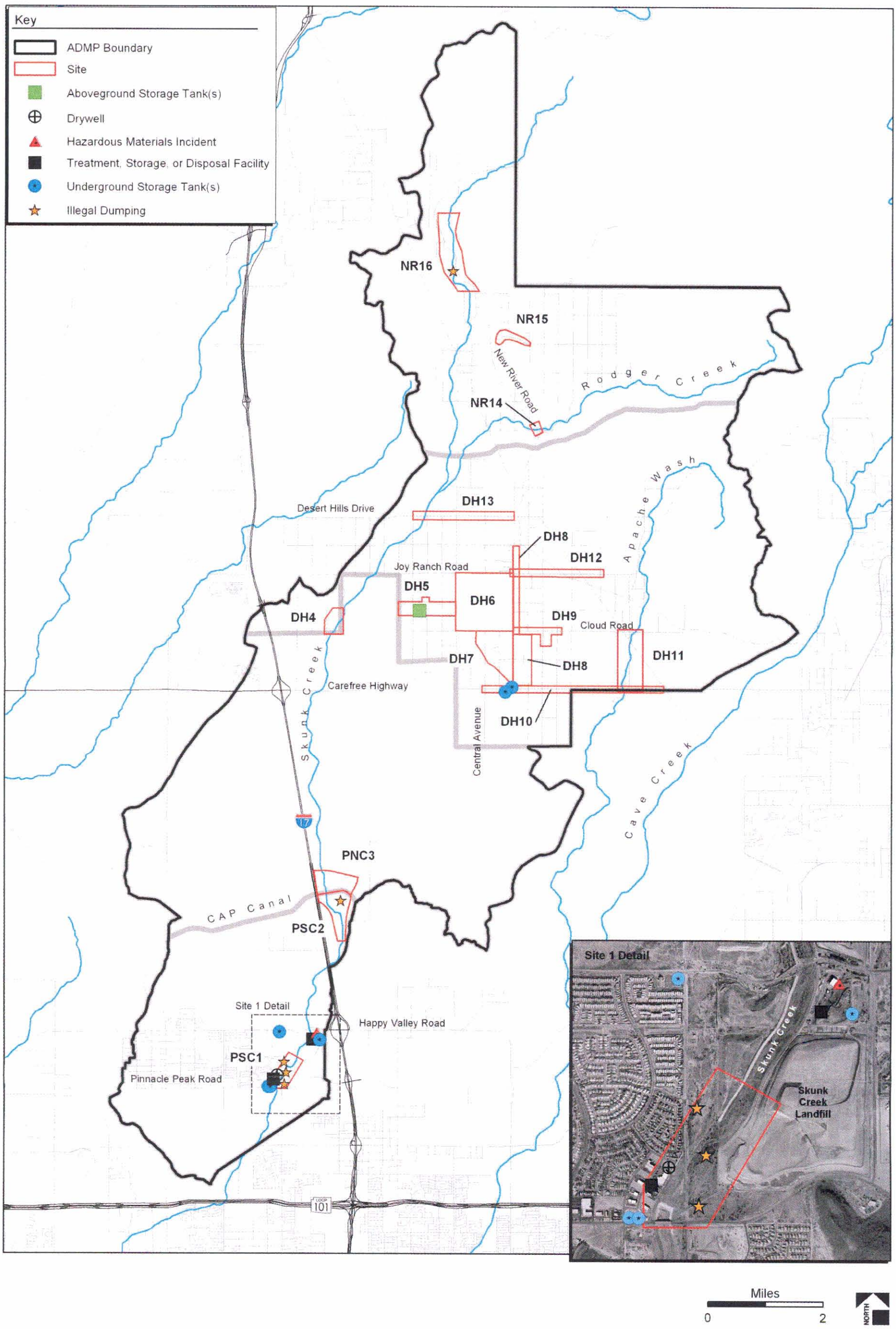
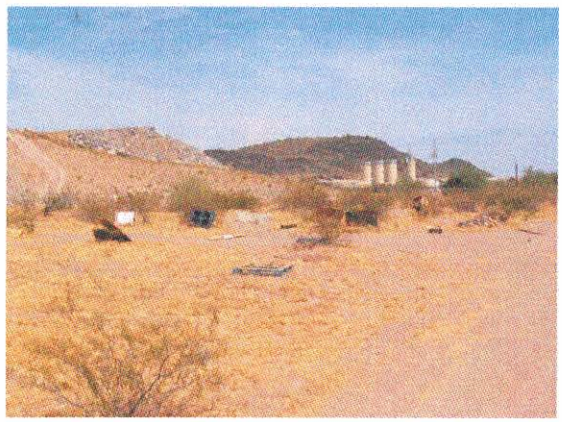


Figure 3.1 Hazardous Materials Concerns



Photos 25 and 26. Examples of illegal dumping at PSC1

3.3.2 Phoenix North of CAP (Figure 3.1)

No hazardous materials concerns were discovered from the records check. During a sight reconnaissance of the PNC3, no hazardous materials concerns were discovered in the rural housing developments, in the undeveloped desert areas, or along the washes. The BOR fencing at the CAP Canal precludes the dumping of trash at PNC3.

3.3.3 Desert Hills (Figure 3.1)

Skunk Creek at DH4 was clear of debris; one aboveground storage tank was reported at the K/B Ostrich Ranch at the western end of DH5. Two convenience stores have active underground storage tanks at DH10. 4 Sons Food Stores has four tanks just east of 3rd Street and south of the Carefree Highway; Unocal Desert Express has two tanks at the northwest corner of Carefree Highway and 7th Street. During a sight reconnaissance of the various sites, no hazardous materials concerns were discovered in the rural housing developments, in the undeveloped desert areas, or along the washes.

Photo 27. Commercial area with USTs at DH10

3.3.4 New River (Figure 3.1)

No hazardous materials concerns were discovered from the records check. During a sight reconnaissance of the three sites, small areas of wildcat dumping were discovered at NR16. Old appliances and other household debris were scattered around the dirt roads crisscrossing near Skunk Creek downstream of the bridge at New River Road.

4.0 Cultural Resources

4.1 Purpose

FCD contracted with Scientific Archeological Services to prepare an assessment of all archeological sites known to occur in or near the vicinity of the 16 structural measure sites previously described in this environmental overview. The study boundaries of the 16 sites used for the cultural investigation are roughly the same as those in this report. In December 2003, Scientific Archeological Services produced a report entitled *The Adobe Dam – Desert Hills ADMP Archeological Assessment Project of Northern Maricopa County, Arizona*. The report identifies the extent to which each of the sites has been previously surveyed for cultural resources and details all the previously recorded sites that have been recorded in their vicinities. The report's results are briefly summarized here. A copy of the actual report is on file at FCD and contains an abstract, maps and tables, a detailed description of the physical setting of the study area, research and laboratory analysis methodologies, archeological project results, and a summary project evaluation and recommendations.

4.2 Methods

Archival research was the exclusive means for obtaining cultural resource data, and it involved both literature searches and site record checks. Thirty-three separate cultural resource investigations have been completed among all the structural measure sites dating from 1893 to 2001, 25 of which consisted of professional archeological field surveys that covered approximately 28 percent of the study area. A list of these prior cultural resource surveys' names, numbers, types, authors, and firm/agency names are summarized in a table in the original report on file at FCD.

4.3 Subarea Results

Fifteen archeological sites have been previously recorded at or near the 16 structural measure sites (Table 4.1). Only five of them have been formally recorded by archeologists, however; the other ten are informal sites that were mapped by Government Land Office surveyors. Four of the 15 sites date to the prehistoric past and represent two activity patterns: habitation and natural resource exploitation. They are mainly Hohokam Indian sites, but one may date to the earlier Archaic period. The other 11 sites are historic and represent two cultural themes: vehicle transportation and residential living. All but one of them date to the Arizona Statehood phase of 1912–1953. The other dates to the Territorial times of 1863–1912.

Table 4.1 Summary of Previously Identified Cultural Resources in the Study Area

Site Type	Historic (H)/ Prehistoric (P) in Age	Associated Site(s)
Dirt road	H	PSC2, PNC3
Dirt road	H	DH4
Dirt road	H	DH6
Residence	H	DH6

Site Type	Historic (H)/ Prehistoric (P) in Age	Associated Site(s)
Residence	H	DH6
Dirt road	H	DH6, DH7
Dirt road	H	DH6, DH13
Lithic scatter	P	DH8
Dirt road	H	DH9, DH12
Farmstead	P	DH11
Dirt road	H	DH12
Dirt road	H	NR14
Camp	P	NR14
Artifact scatter	P	NR15
Dirt road	H	NR16

4.3.1 Phoenix South of CAP and Phoenix North of CAP

While a couple of surveys have been done in the vicinity of PSC1, PSC1 itself has not been surveyed for cultural resources. A large portion of PSC2 has been surveyed and all of PNC3 has been. The historic Prescott- Phoenix Road has been recorded in their vicinities (Table 4.1).

4.3.2 Desert Hills

All of DH4 has been surveyed for cultural resources. A historic road crosses the site somewhere between Cloud Road and Carefree Highway (Table 4.1). DH5 has been completely surveyed, but only a third of DH6 has been. However, two historic residences have been recorded at DH6 along with three dirt roads, two of which extend to DH7 and DH13 to the south and north, respectively. Only a small corridor along a segment of 7th Street has been surveyed at DH7 while most of the 7th Street corridor along DH8 has not. One prehistoric lithic scatter has been noted at DH8. None of DH9 has been surveyed, though a historic dirt road connects DH9 to the area around DH12 to the north. The corridor along Carefree Highway has been surveyed at DH10, though the site boundary for the cultural study is much smaller than the DH10 boundary used for the rest of the environmental investigations. Carefree Highway and the major utility line corridor cutting across DH11 are the only parts of that site that have been surveyed for cultural resources; the remains of a prehistoric farmstead are located there. The northwest and southeast corners of DH12 have been surveyed; another historic dirt road has been recorded bisecting the site. About a third of DH13 has survey coverage; no sites have been previously described there.

4.3.3 New River

None of Site NR14 has been surveyed for cultural resources, though a historic dirt road and a prehistoric camp have been recorded in the vicinity (Table 4.1). Most of NR15 has been surveyed, except for the area of Cline Creek north of Circle Mountain Road. A prehistoric artifact scatter is located nearby near New

River Road. Only a corridor around some of New River Road at Site NR16 has been surveyed. A historic dirt road cuts across the site in its northern half.

5.0 Conclusions and Recommendations

5.1 Overall Study Area

Natural habitat in the study area consists of LCRV (creosotebush-bursage series) and AU (paloverde-cacti-mixed scrub series) subdivisions of the Sonoran Desertscrub biotic community. While true riparian zones are absent, noticeable xeroriparian vegetation lines even small washes in both vegetative communities. Generally, this xeroriparian vegetation is categorized as high- and medium-quality habitat.

Two endangered species are of concern in the study area: the CFPO has suitable habitat, while food plants for the lesser long-nosed bat, namely the saguaro, are present at some of the sites, especially in the New River subarea. All sites except site PSC1 are outside the Phoenix Urban Exclusion Area for the CFPO but are still in Survey Zone 3 (an area within the historic range of the pygmy-owl with a low potential of occupancy). After consulting with the USFWS during the design stage of any proposed improvements, presence/absence surveys may be required for the CFPO, whereas plant salvaging and revegetation efforts may be sufficient to mitigate foraging habitat losses for the lesser long-nosed bat. Suitable habitat for the Sonoran desert tortoise, a special status species, is present (riverbanks, washes, dunes, and rocky slopes), and this species is likely to occur at some of the structural measure sites, especially those near undisturbed upland areas and in washes with small cliffs present on eroded banks. Proper handling and relocation of state-listed Sonoran desert tortoises will be necessary for any individuals discovered during ground-disturbing activities.

Construction of flood control structures in the study area will likely impact "waters of the U.S." and require federal Clean Water Act Section 404 permits, making the activity subject to Section 7 consultation under the Endangered Species Act. (The Section 10(a)(1)(B) permit process can be used to address activities that may involve "take" of a listed species where there are no federal lands, funds, or permits involved.) A site-specific biological evaluation should be completed prior to final design and would be required as part of any Section 404 permit application.

To mitigate impacts to wildlife in general during future construction at any site, washes and related xeroriparian vegetation should be avoided, when possible. This will aid in minimizing disturbance to habitat that is generally categorized as high and medium quality, and will help in maintaining habitat and corridor connectivity in areas where it is still intact. When impacts to washes and vegetation are necessary, revegetating with an appropriate density and diversity of native vegetation upon completion of project activities will help restore or enhance habitat quality.

Site PSC1 has several hazardous materials concerns in the vicinity, including a drywell, a previously remediated hazardous materials incident, two TSDFs, four locations of USTs, and scattered illegal dumping. Throughout all of the other structural measure sites, two locations of USTs, one aboveground storage tank, and several sites of illegal dumping are present. Known hazardous materials sites should be avoided by future construction. If they cannot be avoided or if new hazardous materials sites are discovered during

future projects, steps should be undertaken to remediate the concerns before continuing with ground-disturbing activities.

In December 2003, Scientific Archeological Services produced a report entitled *The Adobe Dam – Desert Hills ADMP Archeological Assessment Project of Northern Maricopa County, Arizona*. Fifteen archeological sites have been previously recorded at or near the 16 structural measure sites (five of them formally recorded by archeologists, the other 10 informal sites mapped by Government Land Office surveyors). Previously identified cultural resources should be avoided by future construction. If they cannot be avoided, testing and data recovery activities may be necessary at the sites. If new cultural resources, including human remains, are discovered during project activities, work should cease and the appropriate agencies should be contacted to determine the significance of the cultural resources.

5.2 Recommended Alternative: Skunk Creek at CAP Canal (Sites PSC2 and PNC3)

The recommended alternative at this site consists of a pair of levees both north and south of the CAP Canal that will assist in constraining flows and help funnel water across existing flood overchutes at the canal. The levees will tie into existing levees along Skunk Creek south of the CAP Canal. The following text is a brief description of ecological resources, hazardous materials concerns, and cultural resources at the site, along with a list of recommendations and mitigation measures to remind future planners, designers, and contractors of the possible permits, surveys, and other environmental clearances that may be required in an effort to minimize environmental harm of levee construction.

5.2.1 Ecological Resources

The habitat of the proposed project area can be described as high- and medium-quality xeroriparian vegetation along Skunk Creek and Sonoran Wash with occasional saguaros in disturbed upland areas. The CAP Canal in the area is a special ecological feature because of the availability of year-round fresh water and the accessibility of perch sites on perimeter fence lines with little adjacent cover for predators. Combined with the CAP Canal, the washes form an important movement corridor for local wildlife (especially small mammals and birds). The thick xeroriparian vegetation combined with upland saguaros represents habitat components for the CFPO. Eroded banks in Sonoran Wash and other nearby rocky areas could be home to Sonoran desert tortoises. Levees north of the CAP Canal are proposed far enough east and west to encompass both drainages while being located in upland areas of low quality where only an occasional saguaro might be removed. Levees south of the CAP Canal are proposed to form a much tighter corridor nearer the washes but will avoid the channels themselves as they also cross low-quality upland habitat while tying into existing levees to the south. Impacts to wildlife may not necessarily result from the location of the levees themselves but from any ground-disturbing activities done in the washes during construction and from construction-noise impacts to wildlife while the levees are being built.

- Construction of the levees should avoid the high-quality xeroriparian habitat present along Skunk Creek and Sonoran Wash. A dense patch of paloverdes growing along the existing levees of Skunk Creek at the southern end of the proposed project and ecologically sensitive cliff habitat in Sonoran Wash south of the CAP Canal should also be avoided.

- The permanent exclusion of grazing from the project area would aid in revegetation efforts, and native species could be replanted along the levee base, sides, and top to create a more lushly vegetated corridor.
- Revegetation efforts along the levee should include an appropriate diversity and density of native plants, including the appropriate xeroriparian plants, to help mitigate impacts to Skunk Creek and Sonoran Wash and maintain their usefulness as important wildlife movement corridors in the area.
- Presence/absence surveys for CFPOs may be necessary for up to 2 years at sites located within Survey Zone 3 and outside the Phoenix Urban Exclusion Area if the USFWS determines that ground-disturbing activities may affect the CFPO or its habitat.
- If Sonoran desert tortoises are encountered during construction, the contractor should follow the guidelines for handling and relocating tortoises as provided in the AGFD's *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects*, as provided in Appendix H.
- AGFD should be contacted to obtain updated and current information on special status species during the design and environmental clearance stages.
- If protected native plants are impacted by construction activities, a permit should be obtained from the Arizona Department of Agriculture prior to clearing and grubbing. The permit may include salvaging provisions.
- Surveys for invasive species may be necessary. All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction should be seeded using species native to the project vicinity.
- A Clean Water Act Section 404/401 permit will be required on projects which impact delineated "waters of the U.S.", as defined by the US Army Corps of Engineers.
- Because more than 1 acre of ground will be disturbed during project activities, an Arizona Pollutant Discharge Elimination System permit will be required from ADEQ.

5.2.2 Hazardous Materials Concerns

No known hazardous materials concerns were discovered during a records check of the site; however, evidence of many instances of illegal dumping was seen scattered about during a site visit.

- During levee construction, efforts should be made to remove trash from the area.
- A Phase I Environmental Site Assessment for hazardous materials should be conducted prior to any property acquisition during the design phase. If suspected hazardous materials are encountered during construction, work should cease at that location and the appropriate authority should be contacted to arrange for proper assessment, treatment, or disposal of those materials.

5.2.3 Cultural Resources

Most of the proposed project area has already been surveyed for cultural resources. A historic dirt road (the "road from Phoenix to Prescott") was recorded in the project area in a survey dating back to 1895.

- The road's exact alignment should be researched and compared to the limits of disturbance for the levee construction, along with the eligibility of the road segment for inclusion in the National Register of Historic Places.
- For those areas not previously surveyed for cultural resources, a Class III (pedestrian) archeological survey should be conducted prior to ground-disturbing activities. All county, state, and federal archeological compliance guidelines should be followed during the design and implementation of future activities. New sites should be recorded and evaluated for possible inclusion in the National Register of Historic Places. While avoidance of known sites is preferred, unavoidable impacts might be mitigated by testing and data recovery of those sites.
- If previously unidentified cultural resources, including human remains, are encountered during activity related to the construction of the project, work should stop immediately at that location and all reasonable steps to secure the preservation of those resources should be taken. The appropriate authority(ies) should be contacted immediately to make arrangements for the proper treatment of those resources.

5.3 Recommended Alternative: Skunk Creek at New River Road (Site NR16)

The recommended alternative at this site consists of a pair of levees that will assist in constraining flows along Skunk Creek and help funnel water underneath the bridge at New River Road. No levees currently exist along Skunk Creek in the vicinity of the bridge. The following text is a brief description of ecological resources, hazardous materials concerns, and cultural resources at the site, along with a list of recommendations and mitigation measures to remind future planners, designers, and contractors of the possible permits, surveys, and other environmental clearances that may be required in an effort to minimize environmental harm of levee construction.

5.3.1 Ecological Resources

The habitat of the proposed project area can be described as high- and medium-quality xeroriparian vegetation along Skunk Creek, which is largely undisturbed and unfragmented in the area (only occasional structures built next to the wash). Upland vegetation is lush, and saguaros and other cacti are numerous. Skunk Creek here is generally wide and rocky and is an excellent wildlife corridor through the steep and not-easily-accessible uplands of the greater New River area and the Tonto National Forest to the east. The thick xeroriparian vegetation combined with upland saguaros represents habitat components for the CFPO. The abundance of rocky hillsides and eroded cliff banks in Skunk Creek could be home to Sonoran desert tortoises. Levees along Skunk Creek will undoubtedly require the removal of previously undisturbed upland and xeroriparian vegetation along their entire lengths. Impacts to wildlife and native plants will arise not only from the placement of the levees alongside the wash but also from construction activities staged in the

wash channel itself. Because of the proximity of the levees to Skunk Creek, noise impacts to wildlife while the levees are being built are likely.

- Construction of the levees should avoid the high-quality xeroriparian habitat present along Skunk Creek. Ecologically sensitive cliff habitat in Skunk Creek should also be avoided.
- Revegetation efforts along the levee should include an appropriate diversity and density of native plants, including the appropriate xeroriparian plants, to help mitigate impacts to Skunk Creek and maintain its usefulness as an important wildlife movement corridor in the area.
- Presence/absence surveys for CFPOs may be necessary for up to 2 years at sites located within Survey Zone 3 and outside the Phoenix Urban Exclusion Area if the USFWS determines that ground-disturbing activities may affect the CFPO or its habitat.
- If Sonoran desert tortoises are encountered during construction, the contractor should follow the guidelines for handling and relocating tortoises as provided in the AGFD's *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects*, as provided in Appendix H.
- AGFD should be contacted to obtain updated and current information on special status species during the design and environmental clearance stages.
- If protected native plants are impacted by construction activities, a permit should be obtained from the Arizona Department of Agriculture prior to clearing and grubbing. The permit may include salvaging provisions.
- Surveys for invasive species may be necessary. All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction should be seeded using species native to the project vicinity.
- A Clean Water Act Section 404/401 permit will be required on projects which impact delineated "waters of the U.S.", as defined by the US Army Corps of Engineers.
- Because more than 1 acre of ground will be disturbed during project activities, an Arizona Pollutant Discharge Elimination System permit will be required from ADEQ.

5.3.2 Hazardous Materials Concerns

No known hazardous materials concerns were discovered during a records check of the site; however, evidence of many instances of illegal dumping was seen scattered about during a site visit.

- During levee construction, efforts should be made to remove trash from the area.
- A Phase I Environmental Site Assessment for hazardous materials should be conducted prior to any property acquisition during the design phase. If suspected hazardous materials are encountered during construction, work should cease at that location and the appropriate authority should be contacted to arrange for proper assessment, treatment, or disposal of those materials.

5.3.3 Cultural Resources

Very little of the proposed project area has been surveyed for cultural resources (only a parcel along a portion of New River Road). An unnamed historic dirt road cuts across the site in its northern half.

- The road's exact alignment should be researched and compared to the limits of disturbance for the levee construction, along with the eligibility of the road segment for inclusion in the National Register of Historic Places.
- For those areas not previously surveyed for cultural resources, a Class III (pedestrian) archeological survey should be conducted prior to ground-disturbing activities. All county, state, and federal archeological compliance guidelines should be followed during the design and implementation of future activities. New sites should be recorded and evaluated for possible inclusion in the National Register of Historic Places. While avoidance of known sites is preferred, unavoidable impacts might be mitigated by testing and data recovery of those sites.
- If previously unidentified cultural resources, including human remains, are encountered during activity related to the construction of the project, work should stop immediately at that location and all reasonable steps to secure the preservation of those resources should be taken. The appropriate authority(ies) should be contacted immediately to make arrangements for the proper treatment of those resources.

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Appendix A. Plants Possibly Occurring in the Study Area and the Types of Habitat Where They Occur

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Narrowleaf cattail	*Typha angustifolia*				✔			
Three-awn grass	*Aristida* spp	✔	✔	✔	✔	✔	✔	
Buffelgrass	*Cenchrus cilliarus*	✔	✔	✔		✔	✔	
Bermuda grass	*Cynodon dactylon*			✔	✔	✔	✔	
Fluffgrass	*Erioneuron pulchellum*	✔	✔	✔		✔	✔	
Reed	*Phragmites communis*				✔			
Johnson grass	*Sorghum halapense*			✔	✔	✔		✔
California fan palm	*Washingtonia filifera*					✔	✔	
Horsetail casuarina	*Casuarina equisetifolia*				✔	✔		
Fremont cottonwood	*Populus fremontii*				✔			
Willow	*Salix* spp.				✔			
Mistletoe	*Phoradendron* spp.	✔	✔	✔			✔	
Four-wing saltbush	*Atriplex canescens*	✔		✔	✔			
Allscale	*Atriplex polycarpa*	✔		✔	✔			
Russian thistle	*Salsola iberica*	✔	✔	✔	✔	✔	✔	✔
Palmers amaranth	*Amaranthus palmeri*	✔	✔	✔	✔	✔	✔	
Wooly tidestromia	*Tidestromia lanuginosa*	✔	✔	✔		✔	✔	
Mustard	*Brassica tournefortii*	✔	✔	✔		✔	✔	
White-thorn acacia	*Acacia constricta*	✔	✔	✔				
Catclaw acacia	*Acacia greggii*	✔	✔	✔				
Blue paloverde	*Cercidium floridum*	✔	✔	✔				
Foothill paloverde	*Cercidium microphyllum*	✔	✔	✔				
Mexican paloverde	*Parkinsonia aculeata*	✔	✔	✔		✔	✔	
Western honey mesquite	*Prosopis glandulosa* var. *torreyana*	✔	✔	✔			✔	

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Ironwood	*Olneya tesota*	✔	✔	✔				
Eucalyptus	*Eucalyptus* spp.					✔	✔	
Creosotebush	*Larrea tridentata*	✔	✔	✔		✔	✔	
Spurge	*Euphorbia* spp.	✔	✔	✔	✔	✔	✔	✔
Jojoba	*Simmondsia chinensis*		✔					
Greythorn	*Zizyphus obtusifolia*	✔	✔	✔				
Globemallow	*Sphaeralcea ambigua*	✔	✔	✔		✔	✔	
Tamarisk (Salt Cedar)	*Tamarix* spp.			✔	✔	✔		
Saguaro	*Carnegiea gigantea*	✔	✔	✔			✔	
Fishhook barrel cactus	*Ferocactus wislizenii*		✔					
Teddy-bear cholla	*Opuntia bigelovii*		✔					
Buckhorn cholla	*Opuntia acanthocarpa*		✔					
Ocotillo	*Fouquieria splendens*		✔					
Rambling milkweed	*Sarcostemma hirtellum*			✔				
Yellow tree tobacco	*Nicotiana glauca*				✔			
Desert willow	*Chilopsis linearis*				✔			
Wolfberry	*Lycium* spp.	✔	✔	✔				
Canyon ragweed	*Ambrosia ambrosoides*	✔	✔	✔				
Triangle-leaf bursage	*Ambrosia deltoidea*	✔	✔	✔				
Desert broom	*Baccharis sarothroides*	✔	✔	✔	✔			
Brittlebush	*Encelia farinosa*		✔	✔				
Jimmyweed	*Haplopappus heterophyllus*	✔	✔	✔		✔	✔	
Burro brush	*Hymenoclea* spp.	✔	✔	✔		✔		
Arrow weed	*Pluchea sericea*				✔			✔

✔ = potentially occurs
Sources: Kearney and Peebles 1960; Lehr 1978

Appendix B. Mammals Possibly Occurring in Vegetation Communities in the Study Area

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Desert shrew	*Notiosorex crawfordi*	✔	✔	✔	✔			
California-leaf nosed bat	*Macrotus californicus*	✔	✔	✔	✔	✔		
Lesser long-nosed bat	*Leptonycteris curasoae*	✔	✔	✔				
Yuma myotis	*Myotis yumanensis*				✔			✔
Cave myotis	*Myotis velifer*	✔	✔	✔	✔	✔	✔	✔
California myotis	*Myotis californicus*	✔	✔	✔	✔	✔	✔	✔
Western pipistrelle	*Pipistrellus hesperus*	✔	✔	✔	✔	✔	✔	✔
Big brown bat	*Eptesicus fuscus*	✔	✔	✔	✔	✔	✔	✔
Southern yellow bat	*Lasiurus ega*	✔	✔	✔	✔	✔	✔	✔
Townsend's big-eared bat	*Corynorhinus townsendii*	✔	✔	✔	✔	✔	✔	✔
Pallid bat	*Antrozous pallidus*	✔	✔	✔	✔	✔	✔	✔
Brazilian free-tailed bat	*Tadarida brasiliensis*	✔	✔	✔	✔	✔	✔	✔
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	✔	✔	✔	✔	✔	✔	✔
Big free-tailed bat	*Nyctinomops macrotis*	✔	✔	✔	✔	✔	✔	✔
Western mastiff bat	*Eumops perotis*	✔	✔	✔	✔	✔	✔	✔
Desert cottontail	*Sylvilagus audubonii*	✔	✔	✔	✔	✔	✔	
Black-tailed jackrabbit	*Lepus californicus*	✔	✔	✔	✔	✔	✔	
Harris' antelope squirrel	*Ammospermophilus harrisii*	✔	✔	✔		✔	✔	
Rock squirrel	*Spermophilus variegatus*	✔	✔	✔	✔	✔		
Round-tailed ground squirrel	*Spermophilus tereticaudus*	✔	✔	✔		✔	✔	

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Botta's pocket gopher	*Thomomys bottae*	✔	✔	✔	✔	✔	✔	
Little pocket mouse	*Perognathus longimembris*	✔						
Arizona pocket mouse	*Perognathus amplus*	✔	✔					
Desert pocket mouse	*Chaetodipus penicillatus*	✔	✔	✔	✔	✔		
Bailey's pocket mouse	*Chaetodipus baileyi*	✔	✔	✔		✔		
Rock pocket mouse	*Chaetodipus intermedius*		✔					
Merriam's kangaroo rat	*Dipodomys merriami*	✔	✔					
Desert kangaroo rat	*Dipodomys deserti*	✔		✔				
Western harvest mouse	*Reithro-dontomys megalotis*	✔	✔	✔	✔	✔		
Cactus mouse	*Peromyscus eremicus*	✔	✔	✔	✔	✔		
Deer mouse	*Peromyscus maniculatus*				✔			
Southern grasshopper mouse	*Onychomys torridus*	✔	✔	✔				
Arizona cotton rat	*Sigmodon arizonae*	✔	✔	✔	✔	✔		✔
White-throated wood rat	*Neotoma albigula*	✔	✔	✔	✔			
Desert wood rat	*Neotoma lepida*	✔	✔	✔	✔			
House mouse	*Mus musculus*							✔
Coyote	*Canis latrans*	✔	✔	✔	✔	✔	✔	✔
Kit fox	*Vulpes macrotis*	✔		✔	✔			
Gray fox	*Urocyon cinereo-argenteus*	✔	✔	✔	✔			
Ringtail	*Bassariscus astutus*	✔	✔	✔	✔			
Raccoon	*Procyon lotor*				✔		✔	✔
Badger	*Taxidea taxus*	✔	✔	✔	✔	✔		

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Spotted skunk	*Spilogale gracilis*	✔	✔	✔	✔			
Striped skunk	*Mephitis mephitis*				✔	✔		
Mountain lion	*Felis concolor*		✔					
Bobcat	*Felis rufus*	✔	✔	✔	✔	✔		
Collared peccary	*Tayassu tajacu*		✔	✔	✔			
Mule deer	*Odocoileus hemionus*	✔	✔	✔	✔			
Bighorn sheep	*Ovis canadensis*		✔					

✔ = potentially occurring
Sources: Hoffmeister 1986; Jones et al 1992

Appendix C. Birds Possibly Occurring in Vegetation Communities in the Study Area

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Pied-billed grebe	*Podilymbus podiceps*							✔
Eared grebe	*Podiceps nigricollis*							✔
Great blue heron	*Ardea herodias*				✔			✔
Great egret	*A. alba*					✔		✔
Snowy egret	*Egretta thula*							✔
Cattle egret	*Bubulcus ibis*					✔		✔
Green heron	*Butorides virescens*				✔			✔
Black-crowned night-heron	*Nycticorax nycticorax*				✔			✔
Canada goose	*Branta canadensis*					✔		✔
Green-winged teal	*Anas crecca*							✔
Mallard	*A. platyrhynchos*				✔	✔	✔	✔
Northern pintail	*A. acuta*							✔
Blue-winged teal	*A. discors*							✔
Cinnamon teal	*A. cyanoptera*							✔
Northern Shoveler	*A. clypeata*							✔
Gadwall	*A. strepera*					✔		✔
American wigeon	*A. americana*					✔		✔
Canvasback	*Aythya valisineria*							✔
Redhead	*A. americana*							✔
Ring-necked duck	*A. collaris*							✔
Lesser scaup	*A. affinis*							✔
Bufflehead	*Bucephala albeola*							✔
Common merganser	*Mergus merganser*							✔
Ruddy duck	*Oxyura jamaicensis*							✔
Turkey vulture	*Cathartes aura*	✔	✔	✔	✔	✔	✔	

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Northern harrier	*Circus cyaneus*	✔	✔			✔		✔
Sharp-shinned hawk	*Accipiter striatus*	✔	✔	✔	✔	✔	✔	
Cooper's hawk	*A. cooperii*	✔	✔	✔	✔	✔	✔	
Gray hawk	*Asturina nitida*					✔		
Harris' hawk	*Parabuteo unicinctus*	✔	✔	✔	✔	✔	✔	
Swainson's hawk	*Buteo swainsoni*	✔	✔			✔		
Red-tailed hawk	*B. jamaicensis*	✔	✔	✔	✔	✔	✔	
Ferruginous hawk	*B. regalis*	✔				✔		
American kestrel	*Falco sparverius*	✔	✔	✔	✔	✔	✔	
Prairie falcon	*F. mexicanus*	✔	✔	✔	✔	✔	✔	
Peregrine falcon	*F. peregrinus*	✔	✔	✔	✔	✔	✔	✔
Gambel's quail	*Callipepla gambelii*	✔	✔	✔	✔	✔	✔	
Virginia rail	*Rallus limicola*							✔
Sora	*Porzana carolina*							✔
Common moorhen	*Gallinula chloropus*							✔
American coot	*Fulica americana*							✔
Semi-palmated plover	*Charadrius semipalmatus*							✔
Killdeer	*C. vociferus*				✔	✔	✔	✔
Black-necked stilt	*Himantopus mexicanus*							✔
American avocet	*Recurvirostra americana*							✔
Greater yellowlegs	*Tringa melanoleuca*					✔		✔
Lesser yellowlegs	*T. flavipes*					✔		✔
Spotted sandpiper	*Actitis macularia*							✔
Long-billed curlew	*Numenius americanus*					✔		✔

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Western sandpiper	*Calidris mauri*							✔
Least sandpiper	*C. minutilla*							✔
Baird's sandpiper	*C. bairdii*							✔
Pectoral sandpiper	*C. melanotus*							✔
Long-billed dowitcher	*Limnodromus scolopaceus*							✔
Common snipe	*Gallinago gallinago*					✔		✔
Wilson's phalarope	*Phalaropus tricolor*							✔
Red-necked phalarope	*P. lobatus*							✔
Ring-billed gull	*Larus delawarensis*					✔		✔
Forster's tern	*Sterna forsteri*							✔
Rock dove	*Columba livia*					✔	✔	
White-winged dove	*Zenaida asiatica*	✔	✔	✔	✔	✔	✔	
Mourning dove	*Zenaida macroura*	✔	✔	✔	✔	✔	✔	
Inca dove	*Columbina inca*	✔	✔	✔	✔	✔	✔	
Common ground-dove	*C. passerina*	✔		✔	✔	✔		
Greater roadrunner	*Geococcyx californianus*	✔	✔	✔	✔	✔	✔	
Western screech-owl	*Asio kennicottii*		✔	✔	✔		✔	
Great horned owl	*Bubo virginianus*		✔	✔	✔	✔	✔	
Elf owl	*Micrathene whitneyi*	✔	✔	✔	✔			
Burrowing owl	*Athene cunicularia*	✔	✔			✔		
Short-eared owl	*Asio flammeus*					✔		
Lesser nighthawk	*Chordeiles acutipennis*	✔	✔			✔		
Common poorwill	*Phalaenoptilus nuttallii*	✔	✔					
White-throated swift	*Aeronautes saxatalis*				✔		✔	✔

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Black-chinned humming-bird	*Archilochus alexandri*			✔	✔		✔	
Anna's humming-bird	*Calypte anna*			✔	✔	✔	✔	
Costa's humming-bird	*C. costae*	✔	✔	✔	✔			
Rufous humming-bird	*Selasphorus rufus*			✔	✔		✔	
Belted kingfisher	*Ceryle alcyon*				✔			✔
Gila woodpecker	*Melanerpes uropygialis*	✔	✔	✔	✔	✔	✔	
Red-naped sapsucker	*Sphyrapicus nuchalis*			✔	✔		✔	
Ladder-backed woodpecker	*Picoides scalaris*	✔	✔	✔	✔			
Northern flicker	*Colaptes auratus*		✔	✔	✔		✔	
Gilded flicker	*C. chrysoides*	✔	✔	✔	✔			
Western wood-pewee	*Contopus sordidulus*			✔	✔		✔	
Hammond's flycatcher	*Empidonax hammondii*			✔	✔			
Dusky flycatcher	*E. oberholseri*	✔	✔	✔	✔			
Gray flycatcher	*E. wrightii*			✔	✔	✔		
Pacific-slope flycatcher	*E. difficilis*	✔	✔	✔	✔			
Black phoebe	*Sayornis nigricans*			✔	✔			✔
Say's phoebe	*Sayornis saya*	✔	✔	✔	✔	✔	✔	
Vermilion flycatcher	*Pyrocephalus rubinus*			✔	✔	✔		✔
Ash-throated flycatcher	*Myiarchus cinerascens*		✔	✔	✔			
Brown-crested flycatcher	*M. tyrannulus*			✔	✔			

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Western kingbird	*Tyrannus verticalis*	✔	✔	✔	✔	✔	✔	
Horned lark	*Eremophila alpestris*	✔				✔		
Tree swallow	*Tachycineta bicolor*				✔			✔
Violet-green swallow	*T. thalassina*				✔			✔
Northern rough-winged swallow	*Stelgidopteryx serripennis*				✔			✔
Bank swallow	*Riparia riparia*				✔			✔
Cliff swallow	*Petrochelidon pyrrhonota*				✔		✔	✔
Barn swallow	*Hirundo rustica*				✔	✔	✔	✔
Common raven	*Corvus corax*	✔	✔	✔	✔	✔		
Verdin	*Auriparus flaviceps*	✔	✔	✔	✔		✔	
Cactus wren	*Campylo-rhynchus brunneicapillus*	✔	✔	✔	✔		✔	
Rock wren	*Salpinctes obsoletus*	✔	✔	✔				
Canyon wren	*Catherpes mexicanus*		✔					
Bewick's wren	*Thryomanes bewickii*			✔	✔		✔	
House wren	*Troglodytes aedon*			✔	✔			
Marsh wren	*Cistothorus palustris*				✔			✔
Ruby-crowned kinglet	*Regulus calendula*	✔	✔	✔	✔		✔	
Black-tailed gnatcatcher	*Polioptila melanura*	✔	✔	✔	✔			
Western bluebird	*Sialia mexicana*			✔	✔	✔		
American robin	*Turdus migratorius*					✔	✔	
Northern mockingbird	*Mimus polyglottos*	✔	✔	✔	✔	✔	✔	
Sage thrasher	*Oreoscoptes montanus*	✔	✔					

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Bendire's thrasher	*Toxostoma bendirei*	✔	✔	✔	✔	✔		
Curve-billed thrasher	*T. curvirostre*		✔	✔	✔		✔	
Crissal thrasher	*T. crissale*			✔	✔			
LeConte's thrasher	*T. lecontei*	✔						
American pipit	*Anthus rubescens*				✔	✔	✔	✔
Cedar waxwing	*Bombycilla cedrorum*				✔		✔	
Phainopepla	*Phainopepla nitens*	✔	✔	✔	✔			
Loggerhead shrike	*Lanius ludovicianus*	✔	✔	✔	✔	✔		
European starling	*Sturnus vulgaris*	✔	✔	✔	✔	✔	✔	
Bell's vireo	*Vireo bellii*			✔	✔			
Plumbeous vireo	*V. plumbeus*		✔	✔	✔			
Cassin's vireo	*V. cassinii*		✔	✔	✔			
Warbling vireo	*V. gilvus*	✔	✔	✔	✔			
Orange-crowned warbler	*Vermivora celata*				✔		✔	
Nashville warbler	*V. ruficapilla*				✔		✔	
Lucy's warber	*V. luciae*	✔	✔	✔	✔			
Yellow warbler	*Dendroica petechia*				✔		✔	
Yellow-rumped warbler	*Dendroica coronata*			✔	✔		✔	
Black-throated gray warbler	*D. nigriscens*				✔		✔	
Townsend's warbler	*D. townsendi*				✔		✔	
Mac-Gillivray's warber	*Oporornis tolmiei*				✔		✔	
Common yellowthroat	*Geothlypis trichas*				✔		✔	✔

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Wilson's warbler	*Wilsonia pusilla*			✔	✔		✔	
Yellow-breasted chat	*Icteria virens*				✔			
Summer tanager	*Pirangra rubra*				✔			
Western tanager	*P. ludoviciana*			✔	✔			
Northern cardinal	*Cardinalis cardinalis*		✔	✔	✔			
Pyrrhuloxia	*C. sinuatus*			✔	✔			
Black-headed grosbeak	*Pheucticus melano-cephalus*			✔	✔			
Blue grosbeak	*Guiraca caerulea*			✔	✔	✔		
Lazuli bunting	*Passerina amoena*			✔	✔	✔	✔	
Green-tailed towhee	*Pipilo chlorurus*			✔	✔		✔	
Canyon towhee	*P. fuscus*		✔	✔				
Abert's towhee	*P. aberti*			✔	✔	✔	✔	
Chipping sparrow	*Spizella passerina*		✔	✔	✔	✔	✔	
Brewer's sparrow	*S. breweri*		✔			✔	✔	
Vesper sparrow	*Pooecetes gramineus*	✔				✔		
Lark sparrow	*Chondestes grammacus*		✔	✔	✔	✔		
Black-throated sparrow	*Amphospiza bilineata*		✔	✔				
Sage sparrow	*A. belli*	✔						
Lark bunting	*Calamospiza melanocorys*		✔			✔		
Savannah sparrow	*Passerculus sandwichensis*	✔	✔			✔		
Song sparrow	*Melospiza meloda*				✔	✔		✔
Lincoln's sparrow					✔	✔		✔

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian Washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
White-crowned sparrow	*Zonotrichia leucophrys*	✔	✔	✔	✔	✔	✔	
Dark-eyed junco	*Junco hyemalis*	✔	✔	✔	✔	✔	✔	
Red-winged blackbird	*Agelaius phoeniceus*				✔	✔	✔	✔
Western meadowlark	*Sturnella neglecta*	✔	✔			✔		
Yellow-headed blackbird	*Xantho-cephalus xanthocephalus*					✔		✔
Brewer's blackbird	*Euphagus cyanocephalus*				✔	✔		✔
Great-tailed grackle	*Quiscalus mexicanus*				✔	✔	✔	✔
Brown-headed cowbird	*Molothrus ater*	✔	✔	✔	✔	✔		
Hooded oriole	*Icterus cucullatus*			✔		✔		
House finch	*Carpodacus mexicanus*	✔	✔	✔	✔	✔	✔	
Lesser goldfinch	*Carduelis psaltria*		✔	✔	✔		✔	
House sparrow	*Passer domesticus*					✔	✔	

✔ = potentially occurring
Sources: Peterson 1990; Witzeman et al. 1997; American Ornithologists' Union 1998; National Geographic Society 1999

Appendix D. Reptiles and Amphibians Possibly Occurring in Vegetation Communities in the Study Area

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Couch spadefoot	*Scaphiopus couchi*	✔		✔	✔			✔
Western spadefoot	*S. hammondi*	✔		✔	✔			✔
Woodhouse toad	*Bufo woodhousei*			✔	✔	✔	✔	✔
Red-spotted toad	*B. punctatus*		✔		✔			✔
Great Plains toad	*B. cognatus*	✔		✔	✔			✔
Sonoran Desert toad	*B. alvarius*				✔	✔	✔	✔
Lowland leopard frog	*Rana yavapaiensis*				✔	✔		✔
Bullfrog	*R. catesbiana*				✔	✔		✔
Desert tortoise	*Gopherus agassizi*	✔	✔	✔				
Banded gecko	*Coleonyx variegatus*	✔	✔	✔				
Desert iguana	*Dipsosaurus dorsalis*	✔	✔					
Chuckwalla	*Sauromalus obesus*	✔	✔					
Zebratail lizard	*Callisaurus draconoides*	✔	✔					
Fringe-toed lizard	*Uma notata*	✔						
Collared lizard	*Crotophytus collaris*	✔	✔	✔	✔			
Long-nosed leopard lizard	*C. wislizenii*	✔	✔					
Desert spiny lizard	*Sceloperus magister*	✔	✔	✔	✔			
Clark's spiny lizard	*S. clarki*				✔			
Brush lizard	*Urosaurus graciosus*	✔						
Tree Lizard	*U. ornatus*		✔	✔	✔	✔	✔	
Side-blotched lizard	*Uta stansburiana*	✔	✔	✔				
Desert horned lizard	*Phrynosoma platyrhinos*	✔	✔	✔				

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Regal horned lizard	*P. solare*	✔	✔					
Western whiptail	*Cnemido-phorus tigris*	✔	✔	✔	✔			
Gila monster	*Heloderma suspectum*	✔	✔	✔	✔			
Rosy boa	*Lichanura trivirgata*	✔	✔	✔	✔			
Western blind snake	*Lepto-typhlops humilis*	✔	✔	✔	✔			
Spotted leaf-nosed snake	*Phyllo-rhynchus decurtatus*	✔		✔				
Saddled leaf-nosed snake	*P. browni*		✔	✔				
Coachwhip	*Masticophis flagellum*		✔	✔				
Sonoran whipsnake	*M. bilineatus*	✔	✔	✔				
Western patch-nosed snake	*Salvadora hexalepsis*	✔	✔	✔				
Glossy snake	*Arizona elegans*	✔	✔	✔				
Gopher snake	*Pituophis melano-leucus*		✔	✔	✔	✔		
Common kingsnake	*Lampropeltis getulus*		✔	✔	✔			
Long-nosed snake	*Rhinocheilus lecontei*	✔	✔	✔				
Checkered garter snake	*Thamnophis marcianus*				✔	✔	✔	✔
Western ground snake	*Sonora semiannulata*	✔	✔	✔	✔	✔		
Western shovel-nosed snake	*Chionactus occipitalis*	✔	✔	✔				
Banded sand snake	*Chilo-meniscus cinctus*	✔	✔	✔				
Arizona coral snake	*Micruroides euryxanthus*		✔	✔	✔			

Common Name	Scientific Name	Lower Colorado River Subdivision	Arizona Upland Subdivision	Xero-riparian washes	Riparian Washes	Agri-culture Areas	Urban Areas	Canals, Ponds, and Lakes
Western diamond-back rattlesnake	*Crotalus atrox*	✔	✔	✔	✔	✔		
Sidewinder	*C. cerastes*	✔		✔				
Tiger rattlesnake	*C. tigris*	✔	✔	✔				
Mohave rattlesnake	*C. scutulatus*	✔	✔	✔		✔		

✔ = potentially occurring
Sources: Stebbins 1985; Sredl et al 1997

Appendix E. Special Status Wildlife and Plant Species Known in Maricopa County

Common Name	Scientific Name	Habitat
MAMMALS		
California leaf-nosed bat	*Macrotus californicus*	Primarily cave and mine dwellers, mostly in Sonoran desertscrub
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Desertscrub with agave and columnar cacti present as food plants
Red bat	*Lasiurus borealis*	Over ponds, along waterways, among oaks, sycamores, walnuts, cottonwoods, and pine-fir forest
Southern yellow bat	*Lasiurus ega*	Associated with Washington fan palms
Spotted bat	*Euderma maculatum*	Uneven cliffs within a mile of a riparian situation
Jaguar	*Panthera onca*	Low mountains, chaparral, open forest
Chihuahuan pronghorn	*Antilocapra americana mexicana*	Plains and meadows of shortgrass from the deserts of the south to the high plateaus of the north
Sonoran pronghorn	*Antilocapra americana sonoriensis*	Broad, intermountain alluvial valleys with creosote-bursage and paloverde-mixed cacti
BIRDS		
American bittern	*Botaurus lentiginosus*	Marshy areas
Least bittern	*Ixobrychus exilis*	Cattail marshes
Great egret	*Ardea alba*	Ponds, streams, and marshes
Snowy egret	*Egretta thula*	Ponds, streams, and marshes
Black-bellied whistling duck	*Dendrocygna autumnalis*	Ponds
Osprey	*Pandion haliaetus*	Near lakes and streams
Mississippi kite	*Ictinia mississippiensis*	Riparian areas of upper Gila and San Pedro Rivers
Bald eagle	*Haliaeetus leucocephalus*	Large trees or cliffs near water (reservoirs, rivers and streams) with abundant prey
Northern goshawk	*Accipiter gentilis*	Pinyon-juniper to mixed conifer zones
Gray hawk	*Asturina nitida*	Riparian areas in Sonoran zones
Common black-hawk	*Buteogallus anthracinus*	Riparian areas in Sonoran zones
Ferruginous hawk	*Buteo regalis*	Dry open country, fields
Peregrine falcon	*Falco peregrinus*	Cliffs near Salt River reservoir, generally distributed, tops of tall urban buildings
Yuma clapper rail	*Rallus longirostris yumanensis*	Fresh water and brackish marshes
Snowy plover	*Charadrius alexandrinus*	Ponds
Western yellow-billed cuckoo	*Coccyzus americanus*	Riparian areas of lower Sonoran zone

Common Name	Scientific Name	Habitat
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	Mature cottonwood/willow, mesquite bosques, and Sonoran desertscrub
Mexican spotted owl	*Strix occidentalis lucida*	Nests in canyons and dense forests with multi-layered foliage structure
Belted kingfisher	*Ceryle alcyon*	Ponds, streams, and canals
Southwestern willow flycatcher	*Empidonax trailli extimus*	Cottonwood/willow and tamarisk vegetation communities along rivers and streams
Tropical kingbird	*Tyrannus melancholicus*	Lowlands near water, often nests in cottonwood
REPTILES and AMPHIBIANS		
Chiricahua leopard frog	*Rana chiricahuensis*	Rocky streams and other wetlands between 3,500-7,900 ft. elevation
Lowland leopard frog	*Rana yavapaiensis*	Restricted to permanent waters: pools of foothill streams, overflow ponds below 4,800 ft. elevation
Great plains narrow-mouthed toad	*Gastrophryne olivacea*	Ranges from mesquite grassland to oak woodland in southern Arizona
Desert tortoise	*Gopherus agassizii*	Riverbanks, washes, dunes, and rocky slopes
Arizona skink	*Eumeces gilberti arizonensis*	Pinyon-juniper woodland and yellow pine forest
Mexican garter snake	*Thamnophis eques*	Canyons of pine-oak and pinyon-juniper woodlands down to mesquite grasslands in southern Arizona, near water
Narrow-headed garter snake	*Thamnophis rufipunctatus*	Pinyon-juniper and oak-pine belts to ponderosa pine forests along clear, permanent, or semi-permanent rocky streams
FISH		
Colorado squawfish	*Ptychocheilus lucius*	Water deeper than a meter and with strong to moderate currents
Bonytail chub	*Gila elegans*	Eddies and pools, not in swift currents
Gila chub	*Gila intermedia*	Deep water or near cover in smaller creeks, cienegas, and other impoundments
Roundtail chub	*Gila robusta*	Eddies and pools, often in swift currents below rapids
Spikedace	*Meda fulgida*	Shallow water, often near the downstream ends of riffles or in eddies
Razorback sucker	*Xyrauchen texanus*	Riverine and lacustrine areas, generally not in fast-moving water and may use backwaters
Desert pupfish	*Cyprinodon macularius macularius*	Shallow springs, small streams, and marshes. Tolerates saline and warm water.
Gila topminnow	*Poeciliopsis occidentalis occidentalis*	Concentrates in shallow water, especially where aquatic vegetation or debris is present
PLANTS		
Arizona agave	*Agave arizonica*	Transition zone between oak-juniper woodland and mountain mahogany oak scrub
Tonto Basin agave	*Agave delamateri*	Found in foothills of Sierra Ancha and Mazatzal Mountains, Tonto Basin, Globe, and vicinity

Common Name	Scientific Name	Habitat
Hohokam agave	*Agave murpheyi*	In Maricopa County, found in Paradise Valley
Arizona cliffrose	*Purshia subintegra*	Characteristic white soils or tertiary limestone lakebed deposits
Crested or Fan-top saguaro	*Carnegiea gigantea*	Rocky hillsides and outwash slopes
Arizona hedgehog cactus	*Echinocereus triglochidiatus arizonicus*	Ecotone between interior chaparral and madrean evergreen woodland
Acuna cactus	*Echinomastus erectocentrus acunensis*	Limestone hills and flatlands in western lower Sonoran desert
Lemmon fleabane	*Erigeron lemmoni*	Cliff areas within Fish Creek Canyon in Maricopa County

Sources: Minckley 1973; Monson and Phillips 1981; Stebbins 1985; Hoffmeister 1986; Arizona Department of Agriculture 1999; Arizona Game and Fish Department 1996; Witzeman et al. 1997; US Fish and Wildlife Service 2003

Appendix F. Arizona Game and Fish Department Response Letter

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.COM

GOVERNOR
JANET NAPOLITANO
COMMISSIONERS
CHAIRMAN, JOE CARTER, SAFFORD
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DIRECTOR
DUANE L. SHROUFE
DEPUTY DIRECTOR
STEVE K. FERRELL

July 7, 2003

Mr. Shero Holland
Logan Simpson Design Inc.
51 W. Third St.
Suite 450
Tempe, AZ 85281

Re: Special Status Species Information for **Adobe Dam/Desert Hills Area Drainage Master Plan, North Phoenix.**

Dear Mr. Holland:

The Arizona Game and Fish Department (Department) has reviewed your request, dated June 12, 2003, regarding special status species information associated with the above-referenced project area. The Department's Heritage Data Management System (HDMS) has been accessed and current records show that the special status species listed on the attachment have been documented as occurring in the project area (3-mile buffer). In addition, the project does not occur within the vicinity of any Proposed or Designated Critical Habitats.

The Department's HDMS data are not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity.

Making available this information does not substitute for the Department's review of project proposals, and should not decrease our opportunities to review and evaluate new project proposals and sites. The Department is also concerned about other resource values, such as other wildlife, including game species, and wildlife-related recreation. The Department would appreciate the opportunity to provide an evaluation of impacts to wildlife or wildlife habitats associated with project activities occurring in the subject area, when specific details become available.

If you have any questions regarding the attached species list, please contact me at (602) 789-3618. General status information, state-wide and county distribution lists, and abstracts for some special status species are also available on our web site at: http://www.azgfd.com/hdms.

Sincerely,

Sabra S. Schwartz
Heritage Data Management System, Coordinator

SSS:ss

Attachment

cc: Bob Broscheid, Project Evaluation Program Supervisor
Russ Haughey, Habitat Program Manager, Region VI

AGFD #06-15-03(11)

Special Status Species within 3 Miles of Adobe ADMP Study Area

Arizona Game and Fish Department, Heritage Data Management System

July 7, 2003

Scientific Name	Common Name	ESA	USFS	BLM	WSCA	NPL
AGAVE MURPHEYI	HOHOKAM AGAVE	SC	S	S		HS
AGAVE TOUMEYANA VAR BELLA	TOUMEY AGAVE					SR
ALLIUM BIGELOVII	BIGELOW ONION					SR
ATHENE CUNICULARIA HYPUGAEA	WESTERN BURROWING OWL	SC		S		
BUFO MICROSCAPHUS MICROSCAPHUS	ARIZONA TOAD	SC	S			
DENDROCYGNA AUTUMNALIS	BLACK-BELLIED WHISTLING-DUCK				WSC	
GOPHERUS AGASSIZII (SONORAN POPULATION)	SONORAN DESERT TORTOISE	SC			WSC	
MACROTUS CALIFORNICUS	CALIFORNIA LEAF-NOSED BAT	SC		S	WSC	
NYCTINOMOPS FEMOROSACCUS	POCKETED FREE-TAILED BAT			S		
RANA YAVAPAIENSIS	LOWLAND LEOPARD FROG	SC	S		WSC	

No Critical Habitats in project area. AGFD #06-15-03(11), Proposed Adobe Dam/Desert Hills Area Drainage Master Plan.

STATUS DEFINITIONS

ARIZONA GAME AND FISH DEPARTMENT (AGFD)
HERITAGE DATA MANAGEMENT SYSTEM (HDMS)

FEDERAL US STATUS

ESA **Endangered Species Act** (1973 as amended)
US Department of Interior, Fish and Wildlife Service (http://arizonaes.fws.gov)

Listed

- LE Listed Endangered: imminent jeopardy of extinction
- LT Listed Threatened: imminent jeopardy of becoming Endangered
- XN Experimental Nonessential population

Proposed for Listing

- PE Proposed Endangered
- PT Proposed Threatened

Candidate (Notice of Review: 1999)

- C Candidate. Species for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened under ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.
- SC Species of Concern. The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the US Fish and Wildlife Service, but neither term has official status (currently all former C2 species).

Critical Habitat (check with state or regional USFWS office for location details)

- Y Yes: Critical Habitat has been designated.
- P Proposed: Critical Habitat has been proposed.

[\N No Status: certain populations of this taxon do not have designated status (check with state or regional USFWS office for details about which populations have designated status)]

USFS **US Forest Service** (1999 Animals, 1999 Plants: corrected 2000)
US Department of Agriculture, Forest Service, Region 3 (http://www.fs.fed.us/r3/)

- S Sensitive: those taxa occurring on National Forests in Arizona which are considered sensitive by the Regional Forester.

BLM **US Bureau of Land Management** (2000 Animals, 2000 Plants)
US Department of Interior, Bureau of Land Management, Arizona State Office (http://azwww.az.blm.gov)

- S Sensitive: those taxa occurring on BLM Field Office Lands in Arizona which are considered sensitive by the Arizona State Office.
- P Population: only those populations of Banded Gila monster (*Heloderma suspectum cinctum*) that occur north and west of the Colorado River, are considered sensitive by the Arizona State Office.

TRIBAL STATUS

NESL **Navajo Endangered Species List** (2000)
Navajo Nation, Navajo Fish and Wildlife Department
(http://www.heritage.tnc.org/nhp/us/navajo/esl.html)

The Navajo Endangered Species List contains taxa with status from the entire Navajo Nation which includes parts of Arizona, Utah, and New Mexico. In this notebook we provide NESL status for only those taxa whose distribution includes part or all of the Arizona portion of the Navajo Nation.

Groups

1 Those species or subspecies that no longer occur on the Navajo Nation.

2 Any species or subspecies which is in danger of being eliminated from all or a significant portion of its range on the Navajo Nation.

3 Any species or subspecies which is likely to become an endangered species, within the foreseeable future, throughout all or a significant portion of its range on the Navajo Nation.

4 Any species or subspecies for which the Navajo Fish and Wildlife Department (NF&WD) does not currently have sufficient information to support their being listed in Group 2 or Group 3 but has reason to consider them. The NF&WD will actively seek information on these species to determine if they warrant inclusion in a different group or removal from the list.

MEXICAN STATUS

MEX **Mexican Federal Endangered Species List** (October 16, 2000)
Proyecto de Norma Oficial Mexicana PROY-NOM-059-ECOL-2000

The Mexican Federal Endangered Species List contains taxa with status from the entire Mexican Republic and waters under its jurisdiction. In this notebook we provide MEX designations for only those taxa occurring in Arizona and also in Mexico.

P En Peligro de Extinción(Determined Endangered in Mexico): in danger of extinction.

A Amenazada (Determined Threatened in Mexico): could become endangered if factors causing habitat deterioration or population decline continue.

Pr Sujeta a ProtecciónEspecial (Determined Subject to Special Protection in Mexico): utilization limited due to reduced populations, restricted distribution, or to favor recovery and conservation of the taxon or associated taxa.

E Probablemente extinta en el medio silvestre (Probably extinct in the wild of Mexico): A native species whose individuals in the wild have disappeared, based on pertinent documentation and studies that prove it The only existing individuals of the species are in captivity or outside the Mexican territory.

[| = One or more subspecies of this species has status in Mexico, but the HDMS does not track it at the subspecies level (most of these subspecies are endemic to Mexico). Please consult the NORMA Oficial Mexicana PROY-NOM-059-ECOL-2000 for details.]

STATE STATUS

NPL **Arizona Native Plant Law** (1999)
Arizona Department of Agriculture (http://agriculture.state.az.us/PSD/nativeplants.htm)

- **HS** Highly Safeguarded: no collection allowed
- **SR** Salvage Restricted: collection only with permit
- **ER** Export Restricted: transport out of State prohibited
- **SA** Salvage Assessed: permits required to remove live trees
- **HR** Harvest Restricted: permits required to remove plant by-products

WSCA **Wildlife of Special Concern in Arizona** (*1996 in prep*)
Arizona Game and Fish Department (http://www.azgfd.com)

- **WC** Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep) Species indicated on printouts as WC are currently the same as those in **Threatened Native Wildlife in Arizona** (1988)

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department

Revised January 17, 1997

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

Desert tortoises of the Sonoran population are those occurring south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position at all times and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 105 degrees Fahrenheit unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to two miles, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 105 degrees Fahrenheit, the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.

- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.

- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

RAC:NLO:rc

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES
ENCOUNTERED ON DEVELOPMENT PROJECTS
Arizona Game and Fish Department
Revised January 17, 1997

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RAC:NLO:rc

Appendix G. EDR Area Study Report

The EDR Area Study Report

Study Area
Adobe Dam/Desert Hills ADMP
Phoenix, AZ 85086

July 17, 2003

Inquiry number 1013147.1s

Environmental Data Resources, Inc.

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06890

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR).

TARGET PROPERTY INFORMATION

ADDRESS

ADOBE DAM/DESERT HILLS ADMP
PHOENIX, AZ 85086

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following databases:

FEDERAL ASTM STANDARD

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP..... CERCLIS No Further Remedial Action Planned
CORRACTS..... Corrective Action Report
RCRIS-TSD..... Resource Conservation and Recovery Information System
RCRIS-LQG..... Resource Conservation and Recovery Information System
ERNS..... Emergency Response Notification System

STATE ASTM STANDARD

SPL..... Superfund Program List
SHWS..... ZipAcids List
AZ WQARF..... Water Quality Assurance Revolving Fund Sites
INDIAN UST..... Underground Storage Tanks on Indian Land

FEDERAL ASTM SUPPLEMENTAL

CONSENT..... Superfund (CERCLA) Consent Decrees
ROD..... Records Of Decision
Delisted NPL..... National Priority List Deletions
HMIRS..... Hazardous Materials Information Reporting System
MLTS..... Material Licensing Tracking System
NPL Liens..... Federal Superfund Liens
PADS..... PCB Activity Database System
DOD..... Department of Defense Sites
RAATS..... RCRA Administrative Action Tracking System
TSCA..... Toxic Substances Control Act
SSTS..... Section 7 Tracking Systems

EXECUTIVE SUMMARY

FTTS..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

AZ DOD..... Department of Defense Sites
Aquifer..... Waste Water Treatment Facilities
AZ AIRS..... Arizona Airs Database

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas..... Former Manufactured Gas (Coal Gas) Sites

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL ASTM STANDARD

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-SQG list, as provided by EDR, and dated 05/09/2003 has revealed that there are 2 RCRIS-SQG sites within the searched area.

Site	Address	Map ID	Page
PHOENIX CITY PUBLIC WKS GARAGE	***3165 W HAPPY VALLEY RD***	***4***	***5***
FORM FLO EQUIPMENT MANUFACTURE	***23619 N 35TH DR***	***6***	***7***

STATE ASTM STANDARD

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Department of Environmental Quality's Municipal Solid Waste Landfills.../Closed Solid Waste Landfills...database.

A review of the SWF/LF list, as provided by EDR, has revealed that there are 2 SWF/LF sites within the searched area.

Site	Address	Map ID	Page
SKUNK CREEK	1 MILES W OF I-17 ON HA	4	4
SKUNK CREEK	3165 W. HAPPY VALLEY RD	4	5

EXECUTIVE SUMMARY

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Quality's LUST File Listing by Zip Code.

A review of the LUST list, as provided by EDR, and dated 02/14/2003 has revealed that there is 1 LUST site within the searched area.

Site	Address	Map ID	Page
SKUNK CREEK LANDFILL	***3148 W HAPPY VALLEY RD***	***4***	***6***

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Quality's Arizona UST-DMS Facility and Tank Data Listing by City database.

A review of the UST list, as provided by EDR, and dated 02/14/2003 has revealed that there are 7 UST sites within the searched area.

Site	Address	Map ID	Page
4 SONS FOOD STORES	445 E CAREFREE HWY	2	3
UNOCAL DESERT EXPRESS	620 E CAREFREE HWY	2	3
SKUNK CREEK LANDFILL	***3148 W HAPPY VALLEY RD***	***4***	***6***
CIRCLE K # 5322	24838 N 35TH AVE	5	6
4 SONS FOOD STORE #504	3610 W PINNACLE PEAK RD	7	7
4 SONS FOOD STORES #504	3610 W PINNACLE PEAK RD	7	8
BCW/BLUE CIRCLE WEST INC	3535 W PINNACLE PEAK RD	7	8

FEDERAL ASTM SUPPLEMENTAL

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 03/19/2003 has revealed that there are 3 FINDS sites within the searched area.

Site	Address	Map ID	Page
SKUNK CREEK LANDFILL	3165 WEST HAPPY VALLEY	4	5
PHOENIX CITY PUBLIC WKS GARAGE	***3165 W HAPPY VALLEY RD***	***4***	***5***
FORM FLO EQUIPMENT MANUFACTURE	***23619 N 35TH DR***	***6***	***7***

EXECUTIVE SUMMARY

Mines: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the MINES list, as provided by EDR, and dated 03/11/2003 has revealed that there is 1 MINES site within the searched area.

Site	Address	Map ID	Page
MADISON GRANITE SUPPLY		3	4

TRIS: The Toxic Chemical Release Inventory System identifies facilities that release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III, Section 313. The source of this database is the U.S. EPA.

A review of the TRIS list, as provided by EDR, and dated 12/31/2000 has revealed that there is 1 TRIS site within the searched area.

Site	Address	Map ID	Page
FORM FLO EQUIPMENT MANUFACTURE	***23619 N 35TH DR***	***6***	***7***

STATE OR LOCAL ASTM SUPPLEMENTAL

AST: The Aboveground Storage Tank database contains registered ASTs. The data come from the Department of Environmental Quality's Arizona UST-DMS Facility and Tank Data Listing by City database.

A review of the AST list, as provided by EDR, and dated 12/31/2000 has revealed that there is 1 AST site within the searched area.

Site	Address	Map ID	Page
K/B OSTRICH RANCH	37224 N. 17TH AVE	1	3

SPILLS: The ADEQ Emergency Response unit documents chemical spills and incidents that are referred to the Unit. The logbook information for 1984-1986 consists of handwritten entries of the date, incident number and name of facility if known. Current logbooks are computerized and can be sorted by date, incident number, name, city (zip codes are not included), county, chemical and quantity. The sources is the Department of Environmental Quality's Hazardous Material Logbook.

A review of the AZ Spills list, as provided by EDR, has revealed that there are 3 AZ Spills sites within the searched area.

Site	Address	Map ID	Page
UNKNOWN/COP	3165 W. HAPPY VALLEY RD	4	4
WASTE MANAGEMENT OF PHOENIX	3165 W. HAPPY VALLEY	4	4
SUPERSTITION ROCK CRUSHING	3165 W. HAPPY VALLEY RD	4	5

EXECUTIVE SUMMARY

WWFAC: Statewide list of waste water treatment facilities.

A review of the WWFAC list, as provided by EDR, and dated 03/01/2003 has revealed that there is 1 WWFAC site within the searched area.

Site	Address	Map ID	Page
PHOENIX, CITY OF - SKUNK CREEK	3165 W HAPPY VALLEY RD	4	5

Drywells: Drywell is a bored, drilled, or driven shaft or hole whose depth is greater than its width and is designed and constructed specifically for the disposal of storm water. The source is Arizona's Department of Environmental Quality.

A review of the Dry Wells list, as provided by EDR, has revealed that there is 1 Dry Wells site within the searched area.

Site	Address	Map ID	Page
NORTH CANYON RANCH IND PARK -	23630 N. 35TH DRIVE	6	7

EXECUTIVE SUMMARY

Please refer to the end of the findings report for unmapped orphan sites due to poor or inadequate address information.

MAP FINDINGS SUMMARY

Database	Total Plotted
FEDERAL ASTM STANDARD	
NPL	0
Proposed NPL	0
CERCLIS	0
CERC-NFRAP	0
CORRACTS	0
RCRIS-TSD	0
RCRIS Lg. Quan. Gen.	0
RCRIS Sm. Quan. Gen.	2
ERNS	0
STATE ASTM STANDARD	
SPL	0
State Haz. Waste	0
State Landfill	2
LUST	1
UST	7
AZ WQARF	0
INDIAN UST	0
FEDERAL ASTM SUPPLEMENTAL	
CONSENT	0
ROD	0
Delisted NPL	0
FINDS	3
HMIRS	0
MLTS	0
MINES	1
NPL Liens	0
PADS	0
DOD	0
RAATS	0
TRIS	1
TSCA	0
SSTS	0
FTTS	0
STATE OR LOCAL ASTM SUPPLEMENTAL	
AST	1
AZ Spills	3
AZ DOD	0
WWFAC	1
Aquifer	0
Dry Wells	1

MAP FINDINGS SUMMARY

Database	Total Plotted
AZ AIRS	0
EDR PROPRIETARY HISTORICAL DATABASES	
Coal Gas	0

NOTES:

Sites may be listed in more than one database

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

---

1 **K/B OSTRICH RANCH** — **AST** — **A100170571**
37224 N. 17TH AVE — **N/A**
PHOENIX, AZ

AST:

Facility Status:	Not reported
Group Code:	AGSTS
Ownership:	Not reported
Owner:	J.D. Kimbrell 37224 N. 17th Ave Phoenix, AZ
Owner Telephone:	Not reported
Comments:	Not reported

---

2 **4 SONS FOOD STORES** — **UST** — **U001626149**
445 E CAREFREE HWY — **N/A**
PHOENIX, AZ 85085

UST:

Facility ID:	0-002812	Tank ID:	1
In Use:	True		
Date Installed:	01/20/1989		
Date Closed:	/ /		
In Use:	True		
Facility ID:	0-002812	Tank ID:	2
In Use:	True		
Date Installed:	01/20/1989		
Date Closed:	/ /		
In Use:	True		
Facility ID:	0-002812	Tank ID:	3
In Use:	True		
Date Installed:	01/20/1989		
Date Closed:	/ /		
In Use:	True		
Facility ID:	0-002812	Tank ID:	4
In Use:	True		
Date Installed:	01/20/1989		
Date Closed:	/ /		
In Use:	True		

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2 **UNOCAL DESERT EXPRESS** — **UST** — **U003799515**
620 E CAREFREE HWY — **N/A**
PHOENIX, AZ 85085

UST:

Facility ID:	0-009642	Tank ID:	1
In Use:	True		
Date Installed:	04/23/1999		
Date Closed:	/ /		
In Use:	True		
Facility ID:	0-009642	Tank ID:	2
In Use:	True		

UNOCAL DESERT EXPRESS (Continued) **U003799515**

Date Installed: 04/23/1999
Date Closed: / /
In Use: True

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3 **MADISON GRANITE SUPPLY** **MINES** **M100004568** **N/A**

MARICOPA (County), AZ

U.S. MINES:

Mine ID:	0201510	SIC Codes:	14230 00000 00000 00000 00000 00000
Entity Name:	MADISON GRANITE PIT	Company:	MADISON GRANITE SUPPLY
State FIPS code:	04	County FIPS code:	013
Status Date:	09/02/1982	Status:	Full-time permanent
Operation Class:	Non-coal mining	Number of Shops:	0
Number of Pits:	000	Number of Plants:	0
Latitude:	33 44 40	Longitude:	112 06 40

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4 **SKUNK CREEK** **SWF/LF** **S100293358** **N/A**
1 MILES W OF I-17 ON HAPPY VALLEY R
MARICOPA (County), AZ

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4 **UNKNOWN/COP** **AZ Spills** **S104559682** **N/A**
3165 W. HAPPY VALLEY RD
PHOENIX, AZ

Az Spills:

Facility ID:	96-094-D	Incident Date:	12/31/96
Response Date:	Not reported	Report / Assist:	Not reported
Type:	Threat	No of Samples:	Dr
Referred to:	Not reported		
Chemicals:	Oil		
Property Mngmt:	City		
Fund Amount:	City/Unk		
Quantity:	Not reported		

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4 **WASTE MANAGEMENT OF PHOENIX** **AZ Spills** **S104559681** **N/A**
3165 W. HAPPY VALLEY
PHOENIX, AZ

Az Spills:

Facility ID:	97-017-C	Incident Date:	03/13/97
Response Date:	Not reported	Report / Assist:	Not reported
Type:	Release	No of Samples:	Dr
Referred to:	SWS		
Chemicals:	Percloroethylene		
Property Mngmt:	Private		
Fund Amount:	Pvt/Unk		
Quantity:	Not reported		

Map ID Direction Distance Distance (ft.)	Site	Database(s)	EDR ID Number EPA ID Number
4	**SUPERSTITION ROCK CRUSHING** **3165 W. HAPPY VALLEY RD** **PHOENIX, AZ**	**AZ Spills**	**S104559683** **N/A**

Az Spills:

Facility ID:	99-101-D	Incident Date:	02/17/99
Response Date:	Not reported	Report / Assist:	Not reported
Type:	Fire	No of Samples:	Cr
Referred to:	MCESD		
Chemicals:	Oil (Unknown Odor)		
Property Mngmt:	City		
Fund Amount:	Pvt/Unk		
Quantity:	Not reported		

4	**PHOENIX, CITY OF - SKUNK CREEK LANDFILL** **3165 W HAPPY VALLEY RD** **PHOENIX, AZ 85001**	**WWFAC**	**S105752026** **N/A**

AZ WWFAC:

Facility ID :	1172
Unique ID :	100896
Facility Code :	LDF
Facility Type :	MUNICIPAL SOLID WASTE LANDFILL

4	**SKUNK CREEK LANDFILL** **3165 WEST HAPPY VALLEY ROAD** **PHOENIX, AZ 85027**	**FINDS**	**1006589645** **110002572252**
4	**SKUNK CREEK** **3165 W. HAPPY VALLEY RD.** **MARICOPA (County), AZ**	**SWF/LF**	**S103278338** **N/A**

LF:

Facility Type:	Municipal
Facility Status:	Active
Operator:	City of Phoenix
Operator Telephone:	(602) 256-3309
Operator Address:	3060 S. 27th Ave Phoenix, Az 85009

4	**PHOENIX CITY PUBLIC WKS GARAGE** **3165 W HAPPY VALLEY RD LANDFL** **PHOENIX, AZ 85027**	**RCRIS-SQG** **FINDS**	**1000208016** **AZD981636194**

RCRIS:

Owner:	PHOENIX CITY OF (602) 262-4666
EPA ID:	AZD981636194
Contact:	ERLE JONES (602) 495-3620
Classification:	Small Quantity Generator
TSDF Activities:	Not reported

PHOENIX CITY PUBLIC WKS GARAGE (Continued) **1000208016**

Violation Status: Violations exist

Regulation Violated:	279
Area of Violation:	09GUO
Date Violation Determined:	01/06/1998
Actual Date Achieved Compliance:	03/25/2003

There are 1 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance
Compliance Evaluation Inspection	09GUO	20030325

FINDS:
Other Pertinent Environmental Activity Identified at Site:
AIRS Facility System (AIRS/AFS)
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

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4 **SKUNK CREEK LANDFILL** **LUST U001001267**
3148 W HAPPY VALLEY RD **UST N/A**
PHOENIX, AZ 85027

LUST:

Facility ID:	0-003869
Lust Number:	0204.01
Leak Priority:	CLOSED SUSPECTED RELEASE CASE (FALSE ALARM)
Notification:	08/12/1986
Date Closed:	12/16/1987

UST:

Facility ID:	0-003869	Tank ID:	1
In Use:	False		
Date Installed:	05/02/1980		
Date Closed:	/ /		
In Use:	False		
Facility ID:	0-003869	Tank ID:	2
In Use:	False		
Date Installed:	05/02/1980		
Date Closed:	/ /		
In Use:	False		

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5 **CIRCLE K # 5322** **UST U003229152**
24838 N 35TH AVE **N/A**
PHOENIX, AZ 85027

UST:

Facility ID:	0-009086	Tank ID:	1
In Use:	True		
Date Installed:	11/09/1996		
Date Closed:	/ /		
In Use:	True		
Facility ID:	0-009086	Tank ID:	2
In Use:	True		
Date Installed:	11/09/1996		
Date Closed:	/ /		
In Use:	True		

CIRCLE K # 5322 (Continued) **U003229152**

Facility ID: 0-009086 Tank ID: 3
In Use: True
Date Installed: 11/09/1996
Date Closed: / /
In Use: True

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6 **FORM FLO EQUIPMENT MANUFACTURERS** **RCRIS-SQG 1001480940**
23619 N 35TH DR **FINDS 92583SKYLN49**
GLENDALE, AZ 85310 **TRIS**

RCRIS:
Owner: STEPHEN SIMMONS
(415) 555-1212
EPA ID: AZD982437998

Contact: ARNE J KESLEN
(623) 412-0162

Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported

Violation Status: Violations exist

Regulation Violated: 262.20-23.B
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 04/20/1999
Actual Date Achieved Compliance: 05/11/1999

There are 1 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance
Compliance Evaluation Inspection	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19990511

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

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6 **NORTH CANYON RANCH IND PARK - LOT 7** **Dry Wells S105113728**
23630 N. 35TH DRIVE **N/A**
GLENDALE, AZ 85310

DRY WELLS:
Number of Wells: 1
Beginning Registration Number: 21797

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7 **4 SONS FOOD STORE #504** **UST U003153964**
3610 W PINNACLE PEAK RD **N/A**
GLENDALE, AZ 85310

UST:
Facility ID: 0-008997 Tank ID: 1
In Use: True
Date Installed: 02/15/1996
Date Closed: / /
In Use: True

Facility ID: 0-008997 Tank ID: 2
In Use: True

4 SONS FOOD STORE #504 (Continued) — **U003153964**

Date Installed: 02/15/1996
Date Closed: / /
In Use: True

Facility ID: 0-008997 Tank ID: 3
In Use: True
Date Installed: 02/15/1996
Date Closed: / /
In Use: True

Facility ID: 0-008997 Tank ID: 4
In Use: True
Date Installed: 02/15/1996
Date Closed: / /
In Use: True

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7 **4 SONS FOOD STORES #504**
3610 W PINNACLE PEAK RD
GLENDALE, AZ 85310
UST — **U003153953** / **N/A**

UST:
Facility ID: 0-008984 Tank ID: 1
In Use: True
Date Installed: 01/01/1996
Date Closed: / /
In Use: True

Facility ID: 0-008984 Tank ID: 2
In Use: True
Date Installed: 01/01/1996
Date Closed: / /
In Use: True

Facility ID: 0-008984 Tank ID: 3
In Use: True
Date Installed: 01/01/1996
Date Closed: / /
In Use: True

Facility ID: 0-008984 Tank ID: 4
In Use: True
Date Installed: 01/01/1996
Date Closed: / /
In Use: True

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7 **BCW/BLUE CIRCLE WEST INC**
3535 W PINNACLE PEAK RD
PHOENIX, AZ 85027
UST — **U000016862** / **N/A**

UST:
Facility ID: 0-000699 Tank ID: 1
In Use: False
Date Installed: / /
Date Closed: / /
In Use: False

BCW/BLUE CIRCLE WEST INC (Continued) **U000016862**

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
CAVE CREEK	1001486731	JANSON CLEANERS	29606 N CAVE CREEK RD STE 106	85331	RCRIS-SQG, FINDS
CAVE CREEK	U001628484	AT&T CAVE CREEK RS	6.5 MI E OF CAVE CREEK BARLETT D	85331	UST
CAVE CREEK	S105752458	CAVE CREEK RECREATION AREA	37109 N LAVA LN	85331	WWFAC
CAVE CREEK	U003547335	AT&T COMMUNICATIONS	6.2 MILES E OF CAVE CREEK	85331	UST
CAVE CREEK	S102787860	CAVE CREEK, TOWN OF WWTP	5600 E. RANCHO MANANA BLV	85331	Aquifer, WWFAC
CAVECREEK	1006804818	HOME DEPOT THE #488	4925 E CAREFREE HWY	85331	RCRIS-SQG
GLENDALE	1001212570	ULTRA CLEANERS	6750 W DEER VALLEY RD STE C 10	85310	RCRIS-SQG, FINDS
MARICOPA COUNTY	S103895113	DEER VALLEY	19TH AVE. AND SOUTH OF GREENWAY		SWF/LF
MARICOPA COUNTY	S103895110	CITY OF PHOENIX 22ND AVE.	22ND AVE. AND LOWER BUCKEYE RD.		SWF/LF
MARICOPA COUNTY	S103895104	ARIZONA SAND & ROCK	AGUA FRIA RIVER AND GRAND AVE.		SWF/LF
MARICOPA COUNTY	S103895000	MARTORI FARMS	AGUILA, AZ		SWF/LF
MARICOPA COUNTY	S103278189	QUEEN CREEK	26402 B.SOUTH HAWES RD.1/2 MILE S.OF CHANDLE HIGHT		SWF/LF
MARICOPA COUNTY	S103895106	BEARDSLEY	BETWEEN CENTRAL AVE. AND 7TH ST SOUTH BEARDSLEY		SWF/LF
MARICOPA COUNTY	S103277500	DEL RIO	BETWEEN 7TH AND 16TH ST. NORTH OF ELWC RD.		SWF/LF
MARICOPA COUNTY	S103894989	ARIZONA MEDICAL WASTE	2 BLOCKS NORTH OF CAMELBACK RD. ON 51S AVE. 2 BLO		SWF/LF
MARICOPA COUNTY	S103086637	RESOURCE PROCESSING INC.	CENTRAL PORTION OF GILA BEND BASIN		SWF/LF
MARICOPA COUNTY	S103895118	LAYLOR MATERIALS	NORTHEAST CORNER OF 16TH ST. BEARDSLE		SWF/LF
MARICOPA COUNTY	S103895127	UFI	SOUTHEAST CORNER OF 123RD. AVE. AND BE RD.		SWF/LF
MARICOPA COUNTY	S103895128	VAL VISTA	SOUTHEAST CORNER OF RAY RD. AND VAL VISTA DR		SWF/LF
MARICOPA COUNTY	S103895130	WILLIAMS AIR FORCE BASE	SOUTHWEST CORNER OF WILLIAMS AIR FORC BASE		SWF/LF
MARICOPA COUNTY	S103894997	DEER VALLEY	SW CORNER OF 12TH ST. AND ALAMEDA		SWF/LF
MARICOPA COUNTY	S103895108	CITY OF MESA	NORTHEAST CORNER OF CENTER ST. AND LE RD.		SWF/LF
MARICOPA COUNTY	S103895120	OLD TOWN DUMP	DYSART RD. TO RID CANAL NORTH OF THOMA MILE		SWF/LF
MARICOPA COUNTY	S103895115	GENERAL MOTORS PROVING GROUNDS	ELLIOT RD. EAST TO SOSSMAN RD. SOUTH TC WARNER GO		SWF/LF
MARICOPA COUNTY	S103894995	CITY OF CHANDLER	GILA AND SALT RIVER BASE AND MERIDIAN		SWF/LF
MARICOPA COUNTY	S103086668	CHANDLER INT. #1 INTERIM	SOUTHEAST INTERSECTION OF FRYE AND DOBSON RD.		SWF/LF
MARICOPA COUNTY	S103809877	WQ-GILA RIVER DDT	LOWER GILA RIVER--SW AZ		SHWS
MARICOPA COUNTY	S103278512	TERRA QUEST	1.5 MILE SOUTH OF BASELINE EAST SIDE PRIEST AVE. A		SWF/LF
MARICOPA COUNTY	S103086670	CHANDLER INT. #3 INTERIM	MILE NORTH OF GERMAN RD. MILE EAST OF GILBERT RD.		SWF/LF
MARICOPA COUNTY	S103895116	GOODYEAR - SUMP #1	1 MILE NORTH OF MC DOWELL RD.		SWF/LF

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MARICOPA COUNTY	S103895119	MORRISTOWN	1 MILE SOUTH OF US 60 OFF MORRISTOWN OVERPASS		SWF/LF
MARICOPA COUNTY	S103895123	SALT RIVER/PIMA TRIBE/TRI-CITY	1 MILE NORTH OF MC DOWELL ON THE BEELI HIGHWAY A		SWF/LF
MARICOPA COUNTY	S103895109	CITY OF PHOENIX 19TH AVE.	1 MILE SOUTH OF I-17ON EAST SIDE OF 19TH AVE.		SWF/LF
MARICOPA COUNTY	S103278201	RAINBOW VALLEY	5.5 MILES FROM AZ 85 WEST TO AIRPORT RD. SOUTH OF		SWF/LF
MARICOPA COUNTY	S103301969	GILA BEND	3.4 MILES NORTH OF AZ 85 ON WEST SIDE OF US 88		SHWS, SWF/LF
MARICOPA COUNTY	S100293355	NEW RIVER	4.3 MILES W OF I-17 ON THE E SIDE O		SWF/LF
MARICOPA COUNTY	S103895200	TOWN OF WICKENBURG	4.6 MILES WEST OF INTERSECTION OF US 60 AND AZ 89		SWF/LF
MARICOPA COUNTY	S103086710	SATORISE (EARTHWORKS)	1.5 MILES EAST OF I-17 ON END OF GREENWAY RD.		SWF/LF
MARICOPA COUNTY	S103895202	UNION ROCK CENTRAL AVE.	.25 MILES SOUTH OF I-17 ON CENTRAL AVE. WEST .25MI		SWF/LF
MARICOPA COUNTY	S103895005	REMAT/METCO RECYCLING FACILITY	3 1/2 MILES SOUTH OF I-10 AT 830 N. MILLER RD.CENT		SWF/LF
MARICOPA COUNTY	S103894988	ALLIED WASTE SOUTHWEST REGIONAL	6 MILES SOUTH OF BUCKEYE		SWF/LF
MARICOPA COUNTY	S100293348	CAVE CREEK	8.3 MILES EAST OF I-17 ON THE SOUTH		SWF/LF
MARICOPA COUNTY	S100293351	GILA BEND	3.4 MILES N OF AZ. 85 ON WEST SIDE		SWF/LF
MARICOPA COUNTY	S100293356	NORTHWEST REGIONAL	3.5 MILES WEST OF U.S. 89 ON DEER V		SWF/LF
MARICOPA COUNTY	S100293357	QUEEN CREEK	.5 MILES S OF CHANDLER HEIGHTS ROAD		SWF/LF
MARICOPA COUNTY	S100293360	WEINBERGER	.5 MILES SOUTH OF LOWER BUCKEYE ROA		SWF/LF
MARICOPA COUNTY	S103894987	APS/PALO VERDE RUBBISH	6 MILES SOUTH OF I-10 ON WINTERSBERG RD.WEST OF PH		SWF/LF
MARICOPA COUNTY	S103895103	AGUILA	3.1 MILES WEST OF AQUILA ON THE SOUTH SIDE OF US		SWF/LF
MARICOPA COUNTY	S103277326	BUCKEYE	AT MILLER RD. AND GILA RIVER		SWF/LF
MARICOPA COUNTY	S103894996	CITY OF GLENDALE	NORTHSIDE OF GLENDALE AVE.EAST OF THE AGUA FRIA RI		SWF/LF
MARICOPA COUNTY	S100240624	ALLIED	SOUTH OF INDIAN SCHOOL RD, WEST SID		SWF/LF
MARICOPA COUNTY	S103894998	K & B TIRE CO.	SOUTH OF MC DOWELL RD. BETWEEN 27TH A 19TH. AVE.		SWF/LF
MARICOPA COUNTY	S103895002	NORTHWEST REGIONAL	SOUTH OF 195TH AVE AND DEER VALLEY		SWF/LF
MARICOPA COUNTY	S103895114	ESTES	EAST SIDE OF 40TH ST. SOUTH OF THE SALT RIVER		SWF/LF
MARICOPA COUNTY	S103895105	AVONDALE	NORTH SIDE OF INTERSECTION OF US 80 AND AGUA FRIA		SWF/LF
MARICOPA COUNTY	S103895112	CITY OF TEMPE	SOUTH SIDE OF SALT RIVER ON HAYDEN DR.		SWF/LF
MARICOPA COUNTY	S100293345	40TH STREET LANDFILL	NO. SIDE OF MAGNOLIA, .25 MLS. EAST		SWF/LF
MARICOPA COUNTY	S103086789	CHANDLER INT. #2 INTERIM	SOUTH SIDE OF QUEEN CREEK RD. 1 MILE EA OF VAL VI		SWF/LF
MARICOPA COUNTY	S103895111	CITY OF PHOENIX 91ST AVE.	WEST SIDE OF 91ST. AVE.		SWF/LF
MARICOPA COUNTY	S100293344	27TH AVENUE	THE SOUTHWEST CORNER OF 27TH AVE AN		SWF/LF
MARICOPA COUNTY	S100293350	DEER VALLEY LANDFILL	THE SOUTHWEST CORNER OF 16TH STREET		SWF/LF

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MARICOPA COUNTY	S100293354	LONE CACTUS LANDFILL	ON THE N WEST CORNER OF 7TH ST /		SWF/LF
MARICOPA COUNTY	S103895121	PERRYVILLE	YUMA RD. EAST OF LUKE AIR FORCE AUXILAF FIELD #		SWF/LF
NEW RIVER	1006804537	ATF ERIC LEWIS	44830 N 27TH AVE	85027	RCRIS-SQG
NEW RIVER	U003051778	NEW RIVER STATION	47020 N OLD BLACK CANYON HWY	85027	UST
PHOENIX	1000213780	U S D O J B P FED CORRECTIONAL INST	I 17 AT PIONEER RD	85027	RCRIS-SQG, FINDS
PHOENIX	1006804421	CITY OF PHOENIX HH HAZWASTE DAY BOPA	19601 N 19TH AVE DEER VLY PARK	85027	RCRIS-SQG
PHOENIX	1006804692	JOHN C LINCOLN DBA PINNACLE DV	19636 N 27TH AVE LL1	85027	RCRIS-SQG
PHOENIX	1004675315	RIM COUNTRY TANNERY LLC	39512 N 4TH AVE	85086	RCRIS-SQG, FINDS
PHOENIX	S103809881	WQ-WADDELL DAM PROJECT	T. 6N, R.1E SEC. 21		SHWS
PHOENIX	1006804590	TRIM AND DOOR SHOP	21622 N 7TH AVE	85027	RCRIS-SQG
PHOENIX	92288690	IN A REMOTE AREA OF NORTH PHOENIX	IN A REMOTE AREA OF NORTH PHOENIX		ERNS
PHOENIX	92256445	AREA OF 6TH & OSBORNE	AREA OF 6TH & OSBORNE		ERNS
PHOENIX	S103809875	WQ-WELL CONST. STUDY	AREA WIDE		SHWS
PHOENIX	S103809874	WQ-WEST VAN BUREN AREA	AREA WIDE		SHWS
PHOENIX	S103809876	WQ-WEST CENTRAL PHOENIX	AREA WIDE		SHWS
PHOENIX	1006804279	APS PIONEER SUBSTATION	I17 AT CAREFREE HWY 1200 FT E	85027	RCRIS-SQG
PHOENIX	96497684	ON B.L.M LAND NORTH OF BEARDSLEY IN THE AREA OF 112TH STREET	ON B.L.M LAND NORTH OF BEARDSLEY IN THE AREA OF 112TH STREET		ERNS
PHOENIX	1006804474	ARIZONA DEPART OF TRANS	19601 N BLACK CANYON STE 210	85027	RCRIS-SQG
PHOENIX	S102787304	ARDDEN BOWERS	45840 N BLACK CANYON HWY	85027	WWFAC
PHOENIX	S103809871	WQ-EAST CENTRAL PHOENIX	CAMELBACK TO THOMAS, 16TH TO 56TH STRE		SHWS
PHOENIX	1006804797	FRYS FOOD & DRUG #67	4815 E CAREFREE HIGHWAY	85085	RCRIS-SQG
PHOENIX	1000208065	PHOENIX ENGINE REBUILDERS	2117 W DEER VALLEY RD BLDG C	85027	RCRIS-SQG, FINDS
PHOENIX	1000388896	PRESTIGE AUTO BODY	1 W DEER VALLEY 115	85027	RCRIS-SQG
PHOENIX	1004675060	PAN AM INTERNATIONAL FLIGHT ACADEMY	530 W DEER VALLEY RD STE 200	85027	RCRIS-SQG, FINDS
PHOENIX	1006804484	AVONTI MFG INC	701 W DEER VALLEY RD 7 A	85027	RCRIS-SQG
PHOENIX	96475605	DOING UPGRADES AND FOUND A LEAK IN DISPENSER AREA UNK CAUSE	DOING UPGRADES AND FOUND A LEAK IN DISPENSER AREA UNK CAUSE		ERNS
PHOENIX	98418204	DUMP AREA	DUMP AREA		ERNS
PHOENIX	98421397	DYNAIR CARGO AREA	DYNAIR CARGO AREA		ERNS
PHOENIX	92288716	FACILITY HAZ WASTE STORAGE AREA	FACILITY HAZ WASTE STORAGE AREA		ERNS
PHOENIX	96476170	FEDERAL EXPRESS AREA PHOENIX SKY HARBOR	FEDERAL EXPRESS AREA PHOENIX SKY HARE		ERNS
PHOENIX	1006804665	EMPYREAN BIOSCIENCE INC	2238 W LONE CACTUS DR STE 200	85027	RCRIS-SQG
PHOENIX	1006804842	TREND SETTERS THE	2043 W LONE CACTUS DR	85027	RCRIS-SQG
PHOENIX	1006804719	OSBORN PRODUCTS INC	1127 W MELINDA LN	85027	RCRIS-SQG
PHOENIX	1000817779	A J S LLC	21002 B N 19TH AVE STE 3	85027	RCRIS-SQG, FINDS
PHOENIX	S103809883	RIO SALADO PROJECT - PHOENIX REACH	SALT RIVER I-10 OVERPASS/19TH AVE OVERPASS		SHWS
SCOTTSDALE	S102788990	LONE MOUNTAIN RANCH SUBDIVISION	5601 E LONE MOUNTAIN RD	85331	WWFAC

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List
Source: EPA
Telephone: N/A
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/30/03
Date Made Active at EDR: 06/02/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 05/05/03
Elapsed ASTM days: 28
Date of Last EDR Contact: 05/09/03

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 6
Telephone: 214-655-6659

EPA Region 8
Telephone: 303-312-6774

Proposed NPL: Proposed National Priority List Sites
Source: EPA
Telephone: N/A

Date of Government Version: 04/30/03
Date Made Active at EDR: 06/02/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 05/05/03
Elapsed ASTM days: 28
Date of Last EDR Contact: 05/05/03

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/19/03
Date Made Active at EDR: 04/08/03
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 03/24/03
Elapsed ASTM days: 15
Date of Last EDR Contact: 06/23/03

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 03/19/03
Date Made Active at EDR: 04/08/03
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 03/24/03
Elapsed ASTM days: 15
Date of Last EDR Contact: 06/23/03

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/31/03
Date Made Active at EDR: 05/08/03
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 04/07/03
Elapsed ASTM days: 31
Date of Last EDR Contact: 06/09/03

RCRIS: Resource Conservation and Recovery Information System
Source: EPA/NTIS
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version: 05/09/03
Date Made Active at EDR: 07/01/03
Database Release Frequency: Varies
Date of Data Arrival at EDR: 05/09/03
Elapsed ASTM days: 53
Date of Last EDR Contact: 06/26/03

ERNS: Emergency Response Notification System
Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/02
Date Made Active at EDR: 02/03/03
Database Release Frequency: Annually
Date of Data Arrival at EDR: 01/27/03
Elapsed ASTM days: 7
Date of Last EDR Contact: 04/28/03

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/99
Database Release Frequency: Biennially
Date of Last EDR Contact: 06/16/03
Date of Next Scheduled EDR Contact: 09/15/03

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A
Database Release Frequency: Varies
Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

ROD: Records Of Decision
Source: EPA
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/09/03
Database Release Frequency: Annually

Date of Last EDR Contact: 04/07/03
Date of Next Scheduled EDR Contact: 07/07/03

DELISTED NPL: National Priority List Deletions
Source: EPA
Telephone: N/A
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/30/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 05/05/03
Date of Next Scheduled EDR Contact: 08/04/03

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: N/A
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 03/19/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/07/03
Date of Next Scheduled EDR Contact: 07/07/03

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 01/31/03
Database Release Frequency: Annually

Date of Last EDR Contact: 04/30/03
Date of Next Scheduled EDR Contact: 07/21/03

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/23/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/07/03
Date of Next Scheduled EDR Contact: 07/07/03

MINES: Mines Master Index File
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Date of Government Version: 03/11/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/31/03
Date of Next Scheduled EDR Contact: 06/30/03

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 205-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 05/27/03
Date of Next Scheduled EDR Contact: 08/25/03

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-564-3887
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/26/03
Database Release Frequency: Annually
Date of Last EDR Contact: 05/12/03
Date of Next Scheduled EDR Contact: 08/11/03

DOD: Department of Defense Sites
Source: USGS
Telephone: 703-648-5920
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 04/01/03
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 05/12/03
Date of Next Scheduled EDR Contact: 08/11/03

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 06/09/03
Date of Next Scheduled EDR Contact: 09/08/03

TRIS: Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-260-1531
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/00
Database Release Frequency: Annually
Date of Last EDR Contact: 06/27/03
Date of Next Scheduled EDR Contact: 09/22/03

TSCA: Toxic Substances Control Act
Source: EPA
Telephone: 202-260-5521
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/98
Database Release Frequency: Every 4 Years
Date of Last EDR Contact: 06/09/03
Date of Next Scheduled EDR Contact: 09/08/03

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA
Telephone: 202-564-2501

Date of Government Version: 04/15/03
Database Release Frequency: Quarterly
Date of Last EDR Contact: 06/23/03
Date of Next Scheduled EDR Contact: 09/22/03

SSTS: Section 7 Tracking Systems
Source: EPA
Telephone: 202-564-5008
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/00
Database Release Frequency: Annually
Date of Last EDR Contact: 05/09/03
Date of Next Scheduled EDR Contact: 07/21/03

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-564-2501
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/15/03
Database Release Frequency: Quarterly
Date of Last EDR Contact: 06/23/03
Date of Next Scheduled EDR Contact: 09/22/03

STATE OF ARIZONA ASTM STANDARD RECORDS

SPL: Superfund Program List
Source: Department of Environmental Quality
Telephone: 602-771-4360
The list is representative of the sites and potential sites within the jurisdiction of the Superfund Program Section. It is comprised of the following elements: 1) Water Quality Assurance Revolving Fund Registry Sites; 2) Potential WQARF Registry sites; 3) NPL sites; and 4) Department of Defense sites requiring SPS oversight.

Date of Government Version: 05/23/03
Date Made Active at EDR: 06/26/03
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 06/02/03
Elapsed ASTM days: 24
Date of Last EDR Contact: 06/02/03

SHWS: ZipAcids List
Source: Department of Environmental Quality
Telephone: 602-771-4360
The ACIDS list consists of more than 750 locations subject to investigation under the State Water Quality Assurance Revolving Fund (WQARF) and Federal CERCLA programs. The list is no longer updated by the state.

Date of Government Version: 01/03/00
Date Made Active at EDR: 05/16/00
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 04/11/00
Elapsed ASTM days: 35
Date of Last EDR Contact: 04/21/03

SWF/LF: Directory of Solid Waste Facilities
Source: Department of Environmental Quality
Telephone: 602-771-4132
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/01/00
Date Made Active at EDR: 02/01/01
Database Release Frequency: Annually
Date of Data Arrival at EDR: 01/02/01
Elapsed ASTM days: 30
Date of Last EDR Contact: 03/31/03

LUST: Leaking Underground Storage Tank Listing
Source: Department of Environmental Quality
Telephone: 602-771-4345
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 02/14/03
Date Made Active at EDR: 03/04/03
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 02/24/03
Elapsed ASTM days: 8
Date of Last EDR Contact: 05/13/03

UST: Underground Storage Tank Listing
Source: Department of Environmental Quality
Telephone: 602-771-4345
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 02/14/03
Date Made Active at EDR: 03/06/03
Database Release Frequency: Annually
Date of Data Arrival at EDR: 02/24/03
Elapsed ASTM days: 10
Date of Last EDR Contact: 05/12/03

WQARF: Water Quality Assurance Revolving Fund Sites
Source: Department of Environmental Quality
Telephone: 602-771-4360
Sites which may have an actual or potential impact upon the waters of the state, cause by hazardous substances. The WQARF program provides matching funds to political subdivisions and other state agencies for clean-up activities.

Date of Government Version: 03/08/02
Date Made Active at EDR: 04/30/02
Database Release Frequency: Annually
Date of Data Arrival at EDR: 03/25/02
Elapsed ASTM days: 36
Date of Last EDR Contact: 06/26/03

INDIAN UST: Underground Storage Tanks on Indian Land
Source: EPA Region 9
Telephone: 415-972-3368

Date of Government Version: N/A
Date Made Active at EDR: N/A
Database Release Frequency: Varies
Date of Data Arrival at EDR: N/A
Elapsed ASTM days: 0
Date of Last EDR Contact: N/A

STATE OF ARIZONA ASTM SUPPLEMENTAL RECORDS

AST: List of Aboveground Storage Tanks
Source: Department of Building & Fire Safety
Telephone: 602-364-1003
Aboveground storage tanks that the Dept. of Building & Fire Safety have permitted.

Date of Government Version: 12/31/00
Database Release Frequency: Annually
Date of Last EDR Contact: 04/15/03
Date of Next Scheduled EDR Contact: 07/14/03

SPILLS: Hazardous Material Logbook
Source: Department of Environmental Quality
Telephone: 602-771-4153
ADEQ Emergency Response Unit. The ADEQ Emergency Response Unit documents chemical spills and incidents which are referred to the Unit. The logbook information for 1984-1986 consists of handwritten entries of the date, incident number and name of facility if known. Current logbooks are computerized and can be sorted by date, incident number, name, city (zip codes are not included), county, chemical and quantity.

Date of Government Version: 06/30/00
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 05/05/03
Date of Next Scheduled EDR Contact: 06/30/03

DOD: Department of Defense Sites
Source: Department of Environmental Quality
Telephone: 602-771-4360
These sites are federal facilities that are either being assessed for potential contamination, or have active remediation taking place on them.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/08/02
Database Release Frequency: Annually

Date of Last EDR Contact: 06/26/03
Date of Next Scheduled EDR Contact: 09/22/03

WWFAC: Waste Water Treatment Facilities
Source: Department of Environmental Quality
Telephone: 602-771-4623
Statewide list of waste water treatment facilities.

Date of Government Version: 03/01/03
Database Release Frequency: Varies

Date of Last EDR Contact: 05/27/03
Date of Next Scheduled EDR Contact: 08/25/03

AQUIFER: Waste Water Treatment Facilities
Source: Department of Environmental Quality
Telephone: 602-771-4623
Waste Water Treatment Facilities with APP (Aquifer Protection Permits.)

Date of Government Version: 11/01/01
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/28/03
Date of Next Scheduled EDR Contact: 07/28/03

DRY WELLS: Drywell Registration
Source: Department of Environmental Quality
Telephone: 602-771-4686
A drywell is a bored, drilled, or driven shaft or hole whose depth is greater than its width and is designed and constructed specifically for the disposal of storm water.

Date of Government Version: 03/26/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 06/23/03
Date of Next Scheduled EDR Contact: 09/22/03

AZ AIRS: Arizona Airs Database
Source: Department of Environmental Quality
Telephone: 602-771-2344
Arizona major (has the potential to emit over 100 tons of criteria pollutant) and minor (below 100 tons) sources.

Date of Government Version: 05/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 05/19/03
Date of Next Scheduled EDR Contact: 08/04/03

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

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OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Facilities & Group Homes
Source: Department of Health Services
Telephone: 602-674-4220

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

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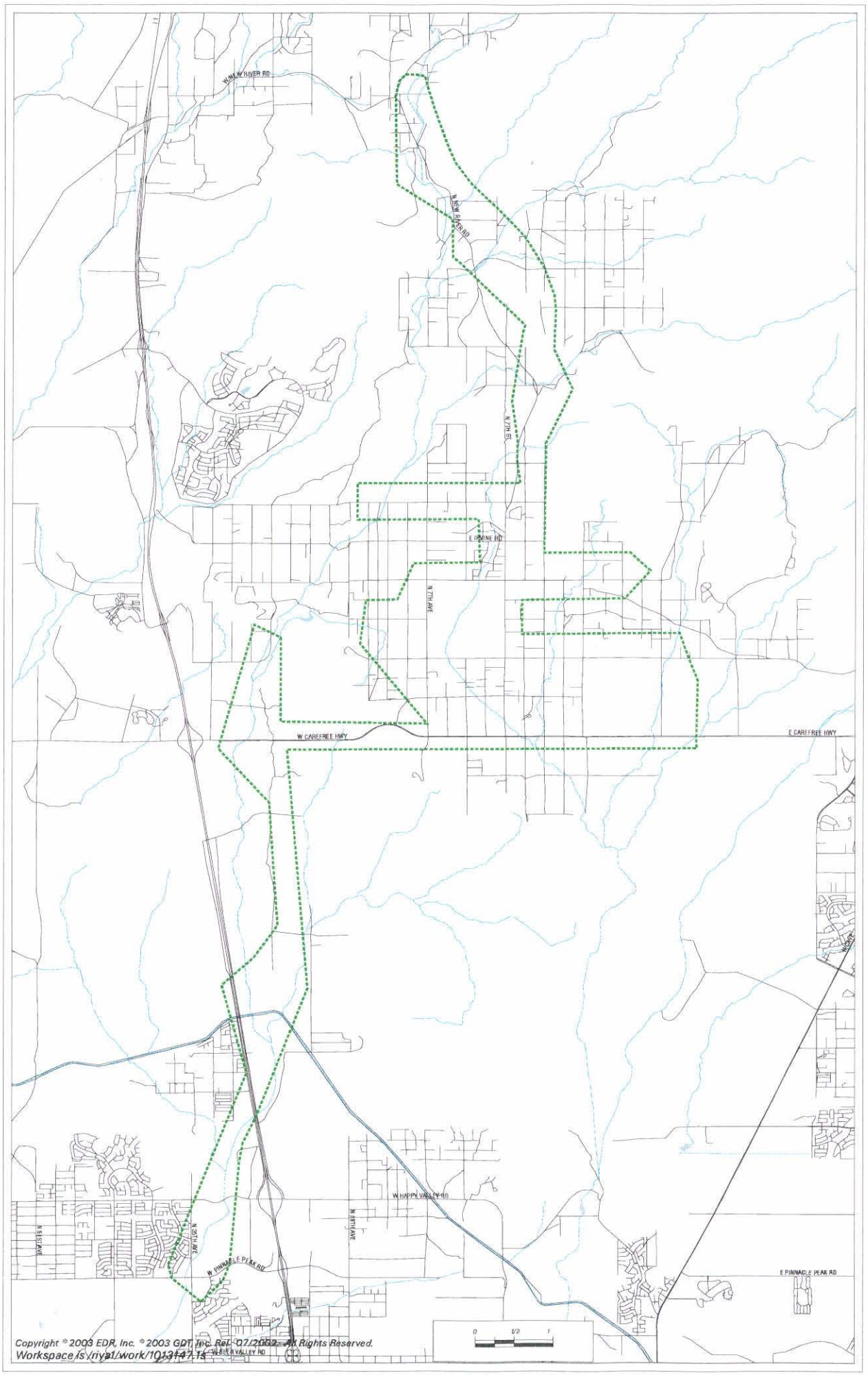

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Appendix H. Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department
Revised January 17, 1997

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

Desert tortoises of the Sonoran population are those occurring south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position at all times and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 105 degrees fahrenheit unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to two miles, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 105 degrees fahrenheit, the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.

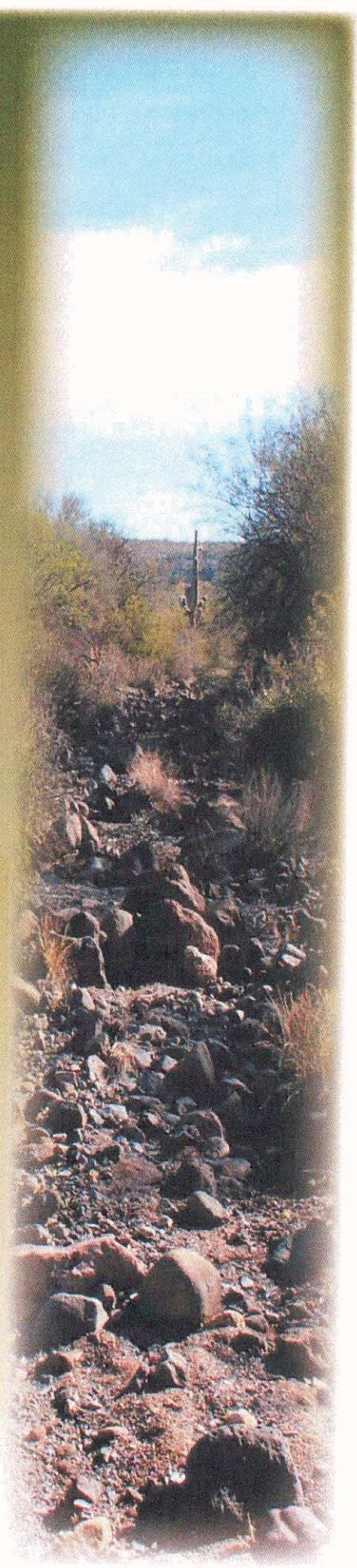
- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.

- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

RAC:NLO:rc

ADOBE
DAM/DESERT
HILLS

AREA DRAINAGE MASTER PLAN



Part 6

Landscape Character Analysis Report

Flood Control District of Maricopa County

December 2004

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1.0 Introduction

Ephemeral wash with xeroriparian vegetation

One of the overall goals of the Flood Control District of Maricopa County (District) is to enhance the value of any flood protection facilities by preserving the Sonoran Desertscrub landscape, enhancing and protecting community character, and creating aesthetic value. The Landscape Character Analysis for the Adobe Dam/Desert Hills Area Drainage Master Plan (ADMP) has been prepared to meet this goal and the specific objectives of this study. The intent of the Adobe Dam/Desert Hills ADMP is to create a plan to maintain the physical characteristics and manage the flow of Skunk Creek and related tributaries. The study will analyze current watershed conditions and identify drainage and flooding issues. The study area is approximately 100 square miles including 7 square miles in the Town of Cave Creek and 47 square miles in the City of Phoenix (see Figure 1.1). The remaining area is in unincorporated portions of Maricopa County.

The Adobe Dam/Desert Hills ADMP study area has been divided into four geographic subareas as described below going from south to north:

- Phoenix South of the Central Arizona Project (CAP) Canal (PSC) – Buchanan Wash from the Skunk Creek confluence to the CAP Canal and Skunk Creek from Adobe Dam to the CAP Canal

- Phoenix North of the CAP Canal (PNC) – Sonoran Wash, upper Buchanan Wash, and Skunk Creek from the CAP Canal to the Cloud Road crossing

- Desert Hills (DH) – Desert Hills Wash and tributaries, upper Apache Wash, upper Paradise Wash, Skunk Tank Wash, and Skunk Creek from the Cloud Road crossing to the Rodger Creek confluence

- New River/Skunk Creek (NR) – Cline Creek and tributaries, Rodger Creek, and upper Skunk Creek from the Rodger Creek confluence to the Tonto National Forest boundary

Within each subarea, the District, its consultant, other agencies, and local residents have determined 16 specific problem sites where flooding or erosion problems have been identified. These sites have been numbered sequentially from south to north. The four subareas and 16 sites are shown in Figure 1.2. This Landscape Character Analysis Report is organized by the geographic subareas and describes each of the 16 specific problem sites in terms of their existing visual conditions and landscape character units. The Landscape Character Analysis will be used in evaluating potential flood protection alternatives and eventually be the basis for the Landscape Character themes and aesthetic design guidelines for the recommended flood control/alternative.

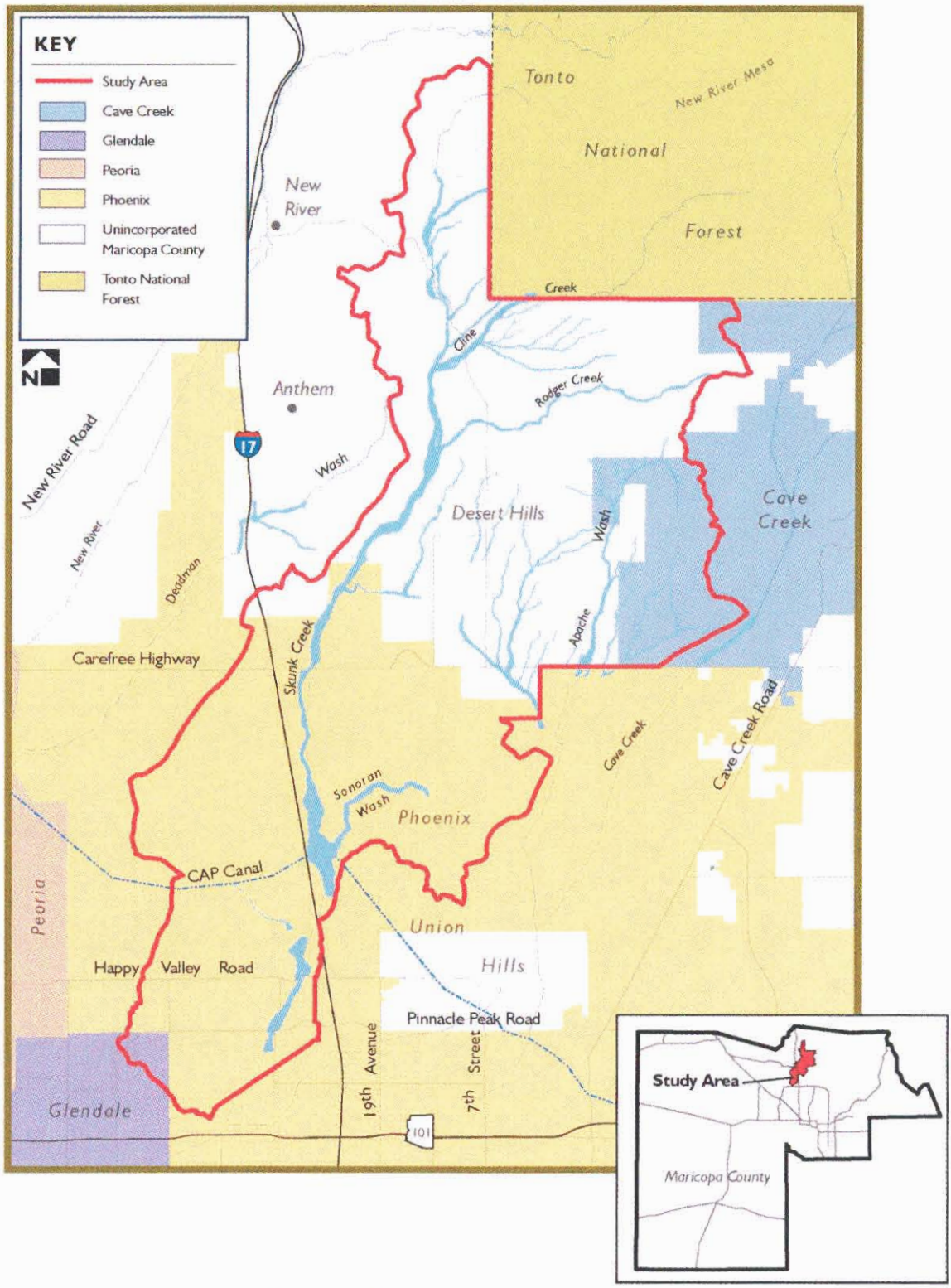


Figure 1.1 Adobe Dam/Desert Hills ADMP Study Area

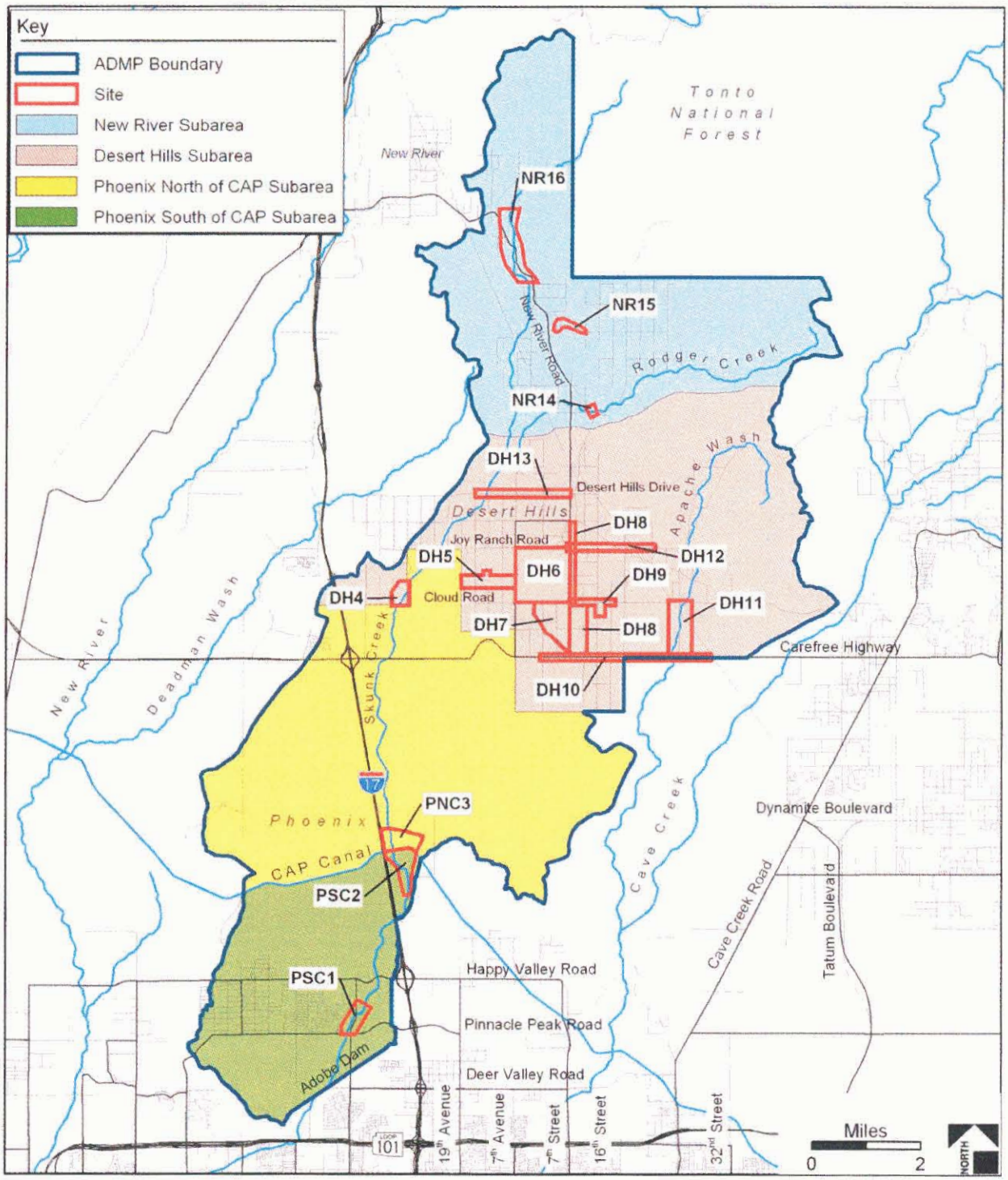
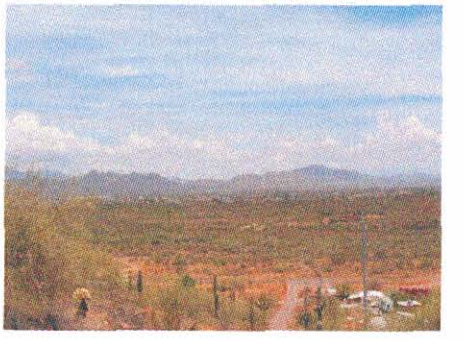


Figure 1.2. Adobe Dam/Desert Hills ADMP Subareas and Sites

2.0 Purpose of the Landscape Character Analysis

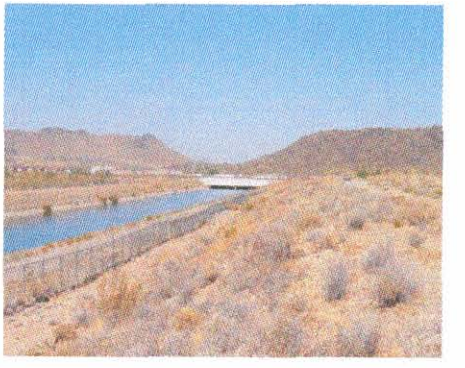


View south to Union Hills

The purpose of the Landscape Character Analysis for the Adobe Dam/Desert Hills ADMP is to establish the existing scenery resources of the cultural and physical landscape within the study area in order to develop landscape character themes and aesthetic design guidelines for the Recommended Alternative. These landscape character themes and aesthetic design guidelines will be crafted to preserve the Sonoran Desertscrub landscape, protect and enhance local community character, and create aesthetic value. As specific projects are implemented as a result of the recommendations made in the Adobe Dam/Desert Hills ADMP, a detailed assessment of scenery resources will be prepared by the District or its contracted consultant. The themes and design guidelines developed as part of this study will be brought forward into the implementation stage to help guide the design.

The methodology, terms, and premises used in the evaluation of the visual resources are based on the United States Department of Agriculture Forest Service's *National Forest Landscape Management Volumes 1 and 2* (1974), and *Landscape Aesthetics: A Handbook for Scenery Management* (1995). The Forest Service's visual resource management process is used as the basis of this visual analysis because their process has been generally accepted throughout the United States as the standard in defining and managing landscape aesthetics. The Forest Service's methodology has been modified for this study to account for assessing a more developed rural setting rather than a predominately natural landscape.

3.0 Methodology Description



CAP Canal and Union Hills

Scenery resources of the sites were evaluated in terms of the existing visual conditions and landscape character. The existing visual conditions analysis included an identification of distinct features, notable utility and transportation corridors, areas of preservation, visually discordant features, key landmarks, and location of major viewpoints. *Distinct features* are those features comprising landscape elements and patterns that make a memorable visual impression. Viewpoints, as well as the other components of the existing visual conditions, are described based on publicly accessible locations. A major viewpoint is one where the distant view of distinct landforms/landmarks attracts attention away from the foreground area (area within 0.25 miles of the viewer's position).

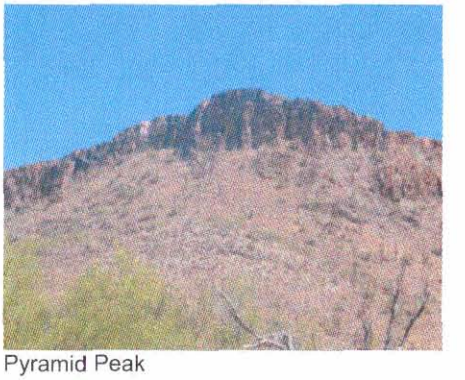
The second component of the scenery resources evaluation for the Adobe Dam/Desert Hills ADMP is the delineation of landscape character units or zones. *Landscape character* is the physical appearance of the landscape including the natural, physical, and architectural/cultural features that provide an identity and

"sense of place." The existing landscape character is based on defining areas of similar land use, vegetation, spatial enclosure, landforms, or architectural/cultural patterns. For each landscape character unit, the relative scenic quality, level of visual intactness or scenic integrity, and visual sensitivity of the landscape were determined. *Scenic quality*, or attractiveness, is a combination of attributes based on landforms, water resources characteristics, vegetation patterns, and architectural/cultural elements. Scenic quality was rated as very low, low, moderately low, moderate, moderately high, high, and very high, depending on the distinctiveness, unity, and intactness of the patterns and attributes of an area. *Unity* is the visual coherence and harmony of the landscape when considered as a whole. *Visual intactness* relates to the integrity of visual order in the natural and built landscape and the extent to which the landscape elements, and patterns that they create, are cohesive. The level of visual intactness was expressed as low, moderate, or high. An example of very high scenic quality would be the Grand Canyon; very low scenic quality would be gravel mining operations. In general, new planned area residential developments have a high level of intactness while industrial developments are considered to have a low level of intactness.

The general visual sensitivity of the sites has also been determined. *Visual sensitivity* is the measure of people's concern for the visual environment based on the viewer's activity and awareness as well as their values, opinions, and preconceptions. The general public or jurisdictional agencies were not sent questionnaires to determine their relative sensitivity to change in the landscape. The evaluation of visual sensitivity was therefore based on viewer's potential perceptions of existing and planned land uses rather than any visual preference evaluations. Visual sensitivity was rated as high for residential and recreation uses, vacant undisturbed areas (Sonoran Desertscrub vegetation), and transportation corridors; moderate for commercial, office, retail, and light industrial uses; and low for utility corridors, existing flood control facilities, and vacant disturbed area uses.

4.0 Existing Landscape Character

4.1 Visual Conditions Analysis


Pyramid Peak

This section of the Landscape Character Analysis Report describes the existing visual conditions within each of the four subareas in the Adobe Dam/Desert Hills ADMP study area. Within the subareas, a general description of each specific problem site and the area within the foreground distance zone is provided in Table 4.1. Table 4.1 identifies the distinct built and natural features, vegetation characteristics, terrain, notable land uses, and viewpoints. Figures 4.1 to 4.16 graphically represent the existing visual conditions provided in Table 4.1.

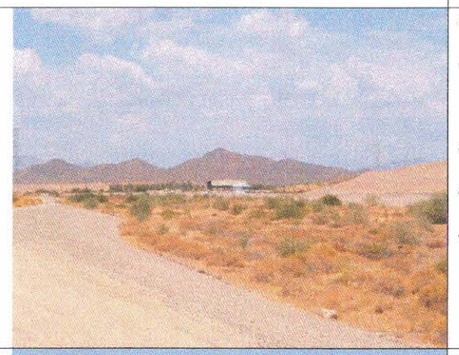
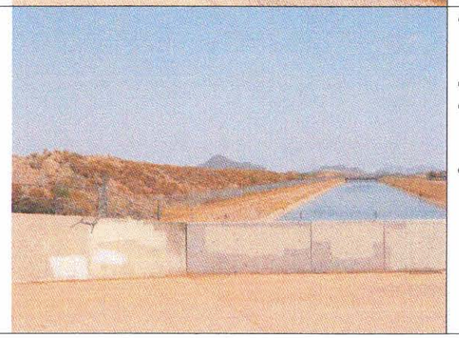
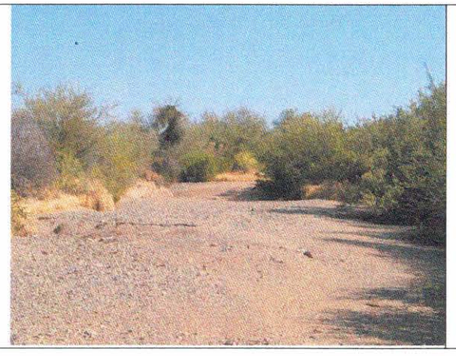
Phoenix South of CAP Subarea		Distinct Built Features	Distinct Natural Features	Vegetation Characteristics	Terrain	Notable Land Use	Notable Viewpoints
PCS1		• City of Phoenix Skunk Creek Landfill • Flood control structures – rock levee, concrete and Earthen Embankments, and grade-control structure • Channelized Skunk Creek drainage • Overhead transmission lines and towers • Pinnacle Peak Road bridge over Skunk Creek	• Adobe Mountain • Skunk Creek	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • No cactus species present • Majority of the vegetation cover disturbed by the random dirt roads and wildcat dumping of debris throughout subarea	• Relatively flat terrain • Relief provided by built landforms/structures that contain and control Skunk Creek in addition to the significant landscape modification created by the landfill	• Pinnacle Peak Road considered major arterial street within the city of Phoenix • Overhead transmission lines with both wire-frame towers and wood poles • Power substation • Adobe Dam Recreation Area • Paseo Highlands Park	• Skunk Creek Landfill: views to the surrounding landforms such as Hedgpeth Hills and Skunk Creek • Pinnacle Peak Road and desert flatlands: views to development and adjacent natural/built landforms such as Adobe Mountain and Paseo Highlands Park
PSC2		• CAP Canal is a distinct built features and a regional landmark • Fencing along CAP Canal • Flood control structures – grade-control, rock levee, and flood retarding structure • I-17 corridor	• Union Hills • Skunk Creek • Sonoran Wash • Xeroriparian vegetation associated with natural washes • Cliff formations	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • Few cactus species present • Vegetation cover disturbed by the random dirt roads present throughout subarea • Xeroriparian vegetation associated with natural washes and the washes are areas of preservation because of their high visual integrity	• Relatively flat terrain • Relief provided by built landforms/structures that contain and control Skunk Creek and Sonoran Wash	• I-17 corridor • Dynamite Mountain Ranch Subdivision	• CAP Canal and I-17: views to adjacent natural/built landforms such as Union Hills and Skunk Creek • Desert flatlands: views to adjacent natural landforms such as Deems Hills and Pyramid Peak
Phoenix North of CAP Canal Subarea							
PNC3		• CAP Canal is a distinct built feature and a regional landmark • Fencing along CAP Canal • Flood control structures – Grade-control, rock levee, and flood retarding structure • I-17 corridor	• Union Hills • Skunk Creek • Sonoran Wash • Xeroriparian vegetation associated with natural washes	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • Occasional saguaro cacti present • Vegetation cover disturbed by the random dirt roads throughout subarea • Xeroriparian vegetation associated with natural washes. These areas of preservation because of their high visual integrity and high habitat value	• Relatively flat terrain • Relief provided by built landforms/structures that contain and control Skunk Creek and Sonoran Wash	• I-17 corridor	• CAP Canal and I-17: views to adjacent natural/built landforms such as Union and Deems Hills • Desert flatlands: views to adjacent natural landforms such as Pyramid Peak and Middle Mountain

Table 4.1 Existing Landscape Conditions

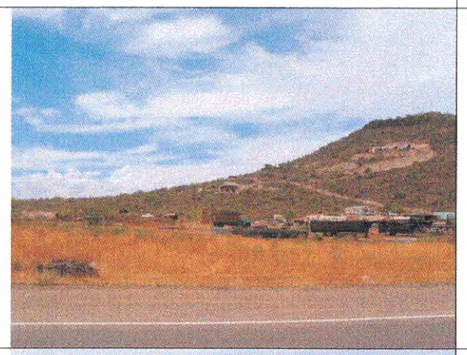
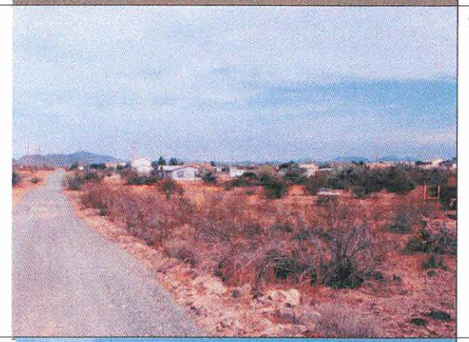
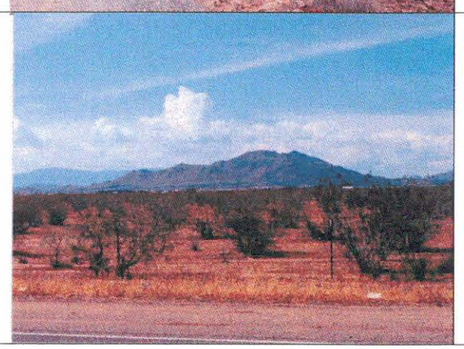
Desert Hills Subarea		Distinct Built Features	Distinct Natural Features	Vegetation Characteristics	Terrain	Notable Land Use	Notable Viewpoints
DH4		• Single family residences on hillside	• Skunk Creek • Cliff formations • Boulder outcrop • Unnamed hill	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • Saguaro and other cacti species present • Vegetation cover disturbed by the clearing of land for residential development	• Relatively flat terrain to hilly terrain	• Cloud Road/27th Avenue provides motorized local access • Tramonto Subdivision	• Local roads in hilly terrain: views to adjacent landforms/built features such as Skunk Creek and Tramonto Subdivision
DH5		• Single family residences	• Skunk Tank Wash • Distant unnamed hills	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • Vegetation cover disturbed by the random two-track dirt roads throughout subarea • Intact desert uplands on hill slopes in western portion of subarea • Dense stands of vegetation found along 7th Avenue where storm water ponds	• Relatively flat terrain to hilly terrain	• 7th Avenue provides local motorized access • Large parcel of ASLD is currently vacant • Equine facilities are noted by large barn, corral facilities, and oval tracks	• Local roads in hilly terrain areas and vacant ASLD parcel: views to adjacent landforms/built features such as residential development associated with Desert Hills community
DH6		• Desert Mountain Middle School	• Dense pocket of vegetation along western edge of site • Unnamed hills	• Vegetation dominated by creosotebush • No cacti species present • Vegetation cover disturbed by the random two-track dirt roads throughout site • Dense stands of vegetation found along 7th Avenue where storm water ponds	• Relatively flat terrain	• 7th Avenue and 7th Street provide local motorized access • Large parcel of ASLD is currently vacant	• Vacant ASLD parcel: views to adjacent landforms/built features such as unnamed hills and development associated with Desert Hills

Table 4.1 Existing Landscape Conditions - Continued

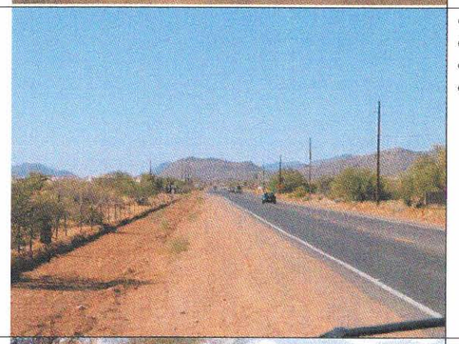
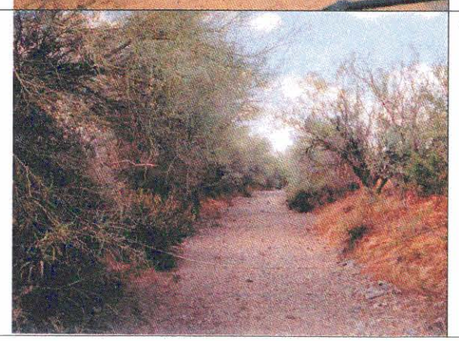
Desert Hills Subarea		Distinct Built Features	Distinct Natural Features	Vegetation Characteristics	Terrain	Notable Land Use	Notable Viewpoints
DH7		• Single family residences • Carefree Highway • Desert Mountain Middle School • Desert Hills Fellowship Church	• Desert Lake Wash • Distant unnamed hills	• Majority of vegetation (primarily native plant material in informal patterns) associated with residential property except for the portion of subarea encompassing the vacant section of ASLD property • Scattered creosotebush dominate vegetation on ASLD parcel • No cactus species present • Existing native vegetation cover disturbed by the random two-track dirt roads throughout subarea	• Relatively flat terrain	• Carefree Highway considered Road of Regional Significance and a designated Scenic Road • Desert Mountain Middle School	• Vacant ASLD parcel: views to distant unnamed hills
DH8		• Single family residences • Desert Hills Fellowship Church • Carefree Highway • Overhead transmission lines and support poles	• Desert Lake Wash • Unnamed hills	• Majority of vegetation (primarily native plant material in informal patterns) associated with residential property except for the portion of subarea encompassing the vacant section of ASLD property • Scattered creosotebush dominate vegetation on State Land parcel • No cactus species present	• Relatively flat terrain	• Carefree Highway considered Road of Regional Significance and a designated Scenic Road • Desert Mountain Middle School, Desert Hills Fellowship Church, Stepping Stone Academy, 76 Service Station/Burger King, Desert Hills Plaza, and Desert Hills Center	• Vacant ASLD parcel: views to distant unnamed hills
DH9		• Single family residences	• Desert Lake Wash • Desert Hills Wash	• Xeroriparian vegetation dominated by mesquites along washes • Scattered creosotebush and bursage • No cactus species present • Vegetation cover disturbed by the random two-track dirt roads throughout subarea	• Relatively flat terrain	• 7th Street provides local motorized access	• None noted

Table 4.1. Existing Landscape Conditions - Continued

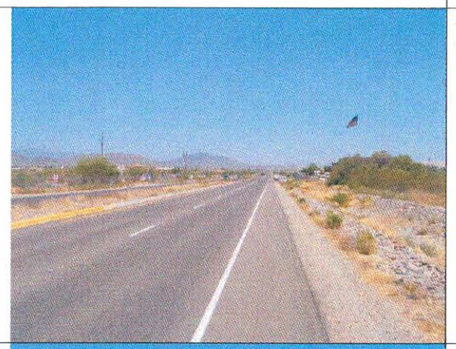
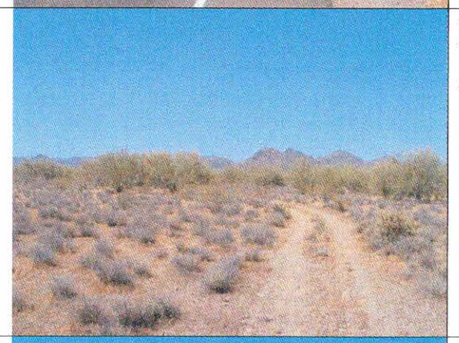
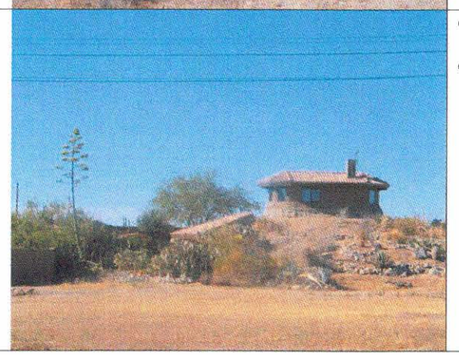
Desert Hills Subarea		Distinct Built Features	Distinct Natural Features	Vegetation Characteristics	Terrain	Notable Land Use	Notable Viewpoints
DH10		• Carefree Highway • Residential and commercial development associated with Desert Hills	• Apache Wash • Distant unnamed hills	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • Few cactus species present • Majority of vegetation cover disturbed by the random two-track dirt roads and cattle grazing • Residential vegetation characteristics are in general informal plantings of native plant species	• Relatively flat terrain except in western portion of subarea, which has rolling topography	• Carefree Highway considered Road of Regional Significance and a scenic road • 76 Service Station/Burger King, Desert Hills Plaza, Desert Hills Center, Cave Creek Equine Surgical Center, Arthur Ramirez Training Center, and Windrush Ranch	• Carefree Highway is a major viewing platform.
DH11		• Stock (water) tanks • Overhead transmission lines and towers • Carefree Highway	• Dense stand of paloverde trees • Apache Wash • Distant unnamed hills	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • No cactus species present • Vegetation cover disturbed by the cattle grazing	• Relatively flat terrain	• Carefree Highway considered Road of Regional Significance and a designated Scenic Road • Overhead transmission lines with steel towers	• Carefree Highway is a major viewing platform.
DH12		• Overhead transmission lines and towers • Single family residences	• Desert Hills Wash • Desert Lake Wash (east fork)	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush • No cactus species present • Vegetation cover disturbed by the random two-track dirt roads throughout subarea • Residential vegetation characteristics are in general informal plantings of native plant species	• Relatively flat terrain to gently rolling	• 7th Street provides local motorized transportation corridor • Overhead 500 kV transmission lines with both steel towers and wood poles	• None noted

Table 4.1. Existing Landscape Conditions - Continued

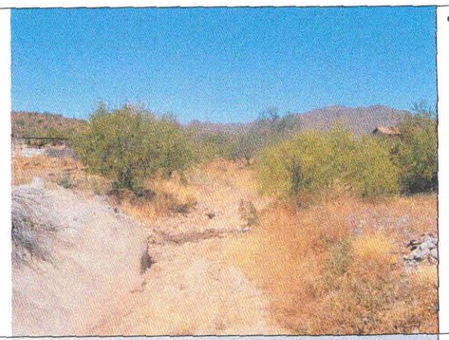
Desert Hills Subarea	Distinct Built Features	Distinct Natural Features	Vegetation Characteristics	Terrain	Notable Land Use	Notable Viewpoints
DH13	• Single family residences • Cleared and graded land for Anthem Subdivision	• Skunk Creek • Distant unnamed hills, Bradshaw and New River Mountains	• Vegetation dominated by mesquite, paloverde, and acacia trees • Scattered creosotebush and bursage • Few cactus species present • Vegetation cover disturbed by the random two-track dirt roads throughout subarea • Dense xeroriparian vegetation associated with Skunk Creek • Residential vegetation characteristics are in general, informal plantings of native plant species	• Relatively flat terrain to gently rolling	• 7th Street/New River Road provides local motorized transportation corridor • Clear area being prepared for construction of residences and infrastructure facilities for Anthem • Daisy Mountain Fire Station	• Intersection of 7th Street/New River Road and Desert Hills Drive: views of New River Mountains
New River Subarea						
NR14 	• Single family residences	• Rodger Creek • Desert uplands vegetation (saguaro, ocotillo, and other cacti species) • Distant unnamed hills, Apache Peak, Daisy Mountain, Pyramid Peak, Black Mountain, and Hieroglyphic Mountains	• Variety of vegetation including mesquite, paloverde, acacia, saguaro, ocotillo, and cholla) • Numerous cacti species present • Vegetation cover disturbed by the local motorized access roads and clearing of land for residences and associated structures • Residential vegetation characteristics are in general, informal plantings of native plant species	• Hilly terrain that spatially encloses subarea	• New River Road considered major motorized transportation corridor • Vacant land because of landforms	• New River Road at crossing of Rodger Creek: views of wash corridor • Local roads to hillside residences: views of distant unnamed hill, Apache Peak, Pyramid Peak, Daisy Mountain, Black Mountain, and Hieroglyphic Mountains
NR15	• Single family residences	• Cline Creek • Desert uplands vegetation (saguaro, ocotillo, and other cacti species) • Pyramid Peak • Distant unnamed hills, Daisy Mountain, and Apache Peak	• Variety of vegetation including mesquite, paloverde, acacia, saguaro, ocotillo, and cholla • Numerous cacti species present • Vegetation cover disturbed by the local motorized access roads and clearing of land for residences and associated structures • Residential vegetation characteristics are in general, informal plantings of native plant species	• Hilly terrain that spatially encloses subarea • Pyramid Peak is a major landform	• New River Road considered major motorized transportation corridor • Vacant land because of landforms • Church of Latter Day Saints and Daisy Mountain Fire Station	• New River Road at crossing of Cline Creek: views of wash corridor • Local roads to hillside residences: views of unnamed hills, Daisy Mountain, and Apache Peak

Table 4.1. Existing Landscape Conditions - Continued

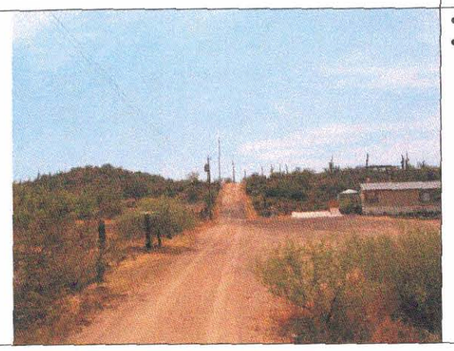
Desert Hills Subarea	Distinct Built Features	Distinct Natural Features	Vegetation Characteristics	Terrain	Notable Land Use	Notable Viewpoints
NH16 	• Single family residences • New River Bridge	• Skunk Creek • Desert uplands vegetation (saguaro, ocotillo, and other cactus species) • Distant unnamed hills, Daisy Mountain, Apache Peak, and Pyramid Peak	• Variety of vegetation including mesquite, paloverde, acacia, saguaro, ocotillo, and cholla • Numerous cactus species present • Vegetation cover disturbed by the local motorized access roads and clearing of land for residences and associated structures • Residential vegetation characteristics are in general, informal plantings of native plant species	• Hilly terrain that spatially encloses subarea	• New River Road considered major motorized transportation corridor • Vacant land because of landforms	• New River Road at crossing of Skunk Creek: views of wash corridor • Local access roads to hillside residences: views of unnamed hills, Daisy Mountain, Pyramid Peak, and Apache Peak

Table 4.1. Existing Landscape Conditions – Continued

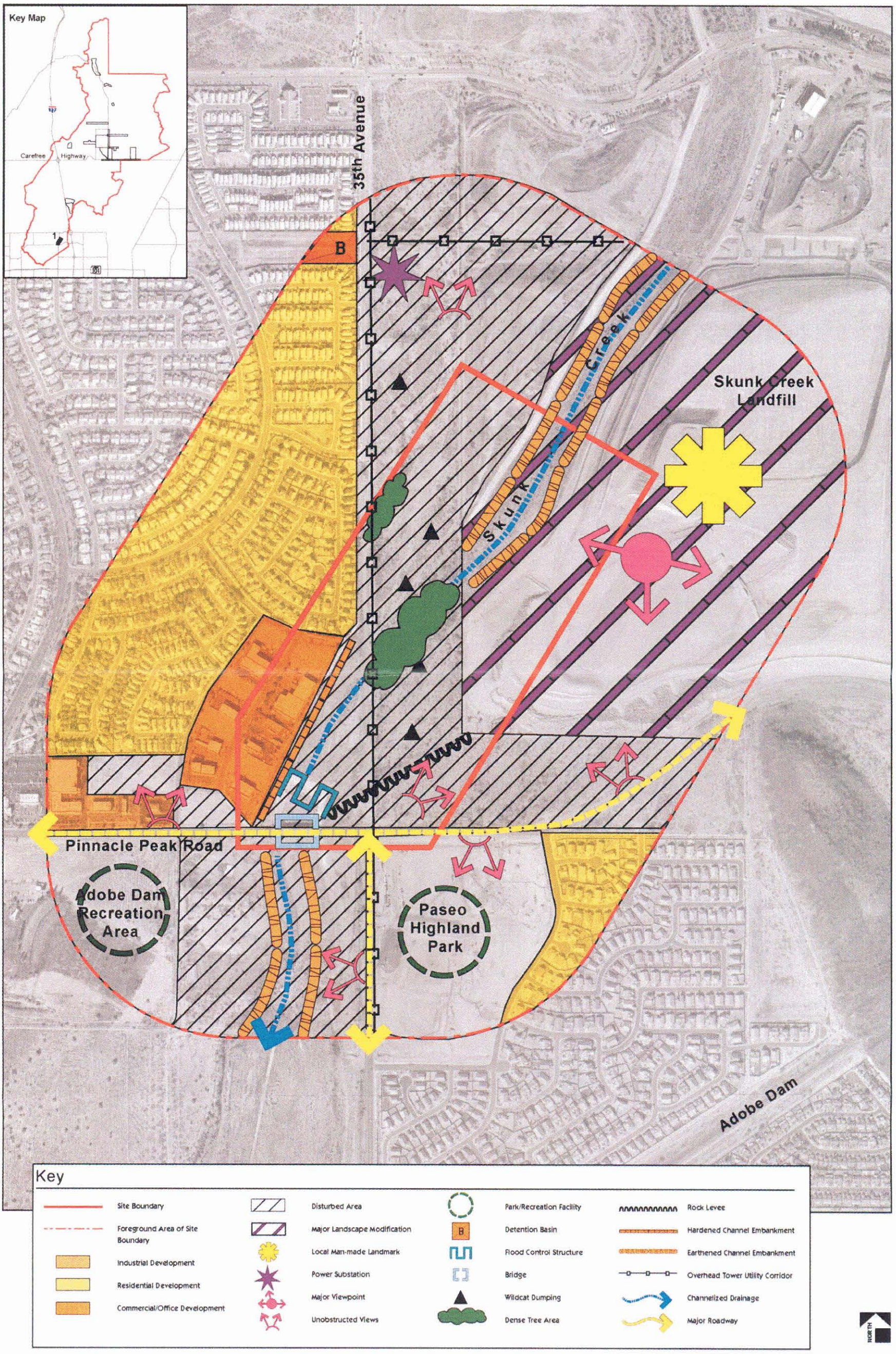


Figure 4.1 PSC1 Existing Visual Conditions

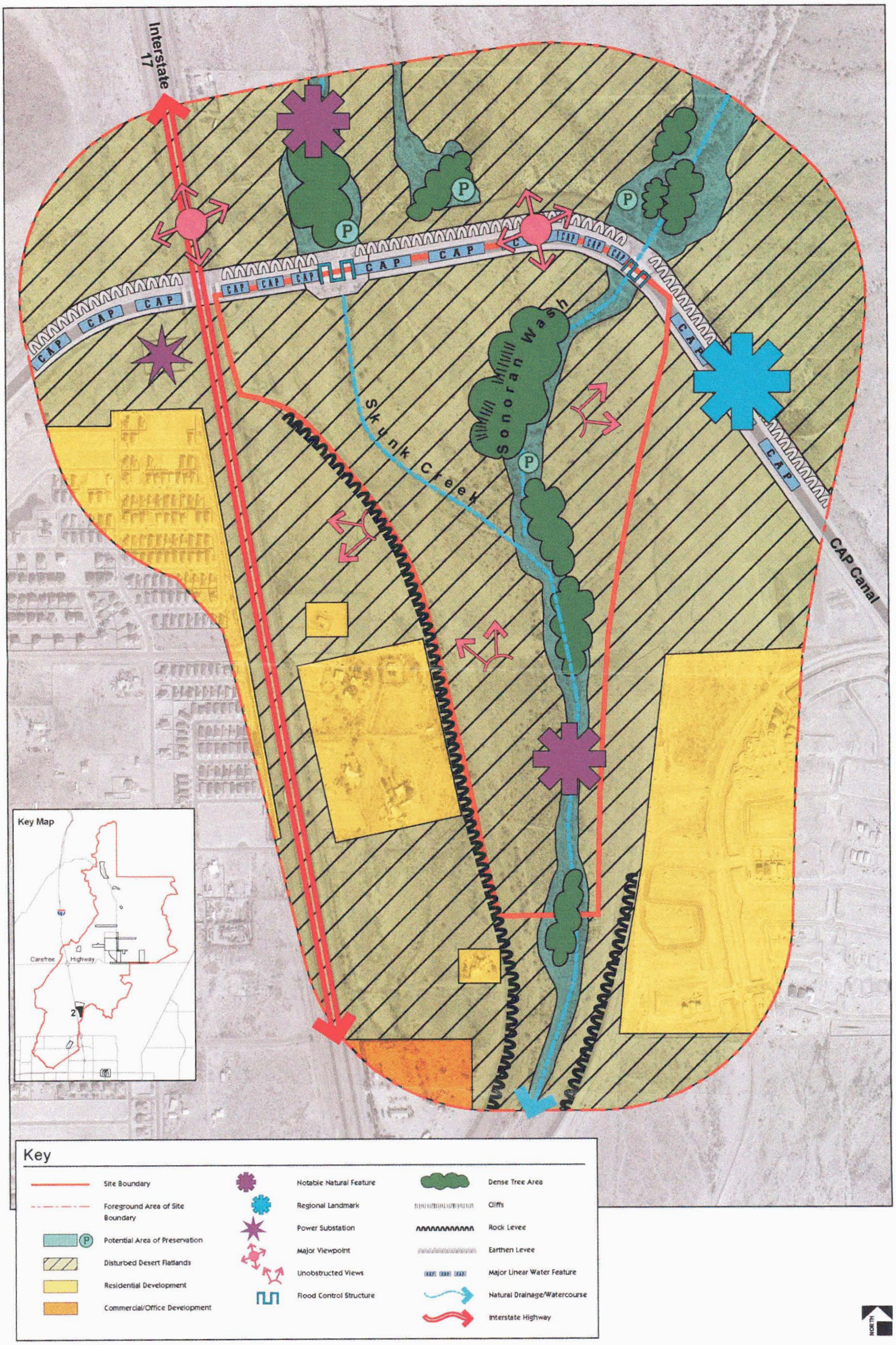


Figure 4.2 PSC2 Existing Visual Conditions

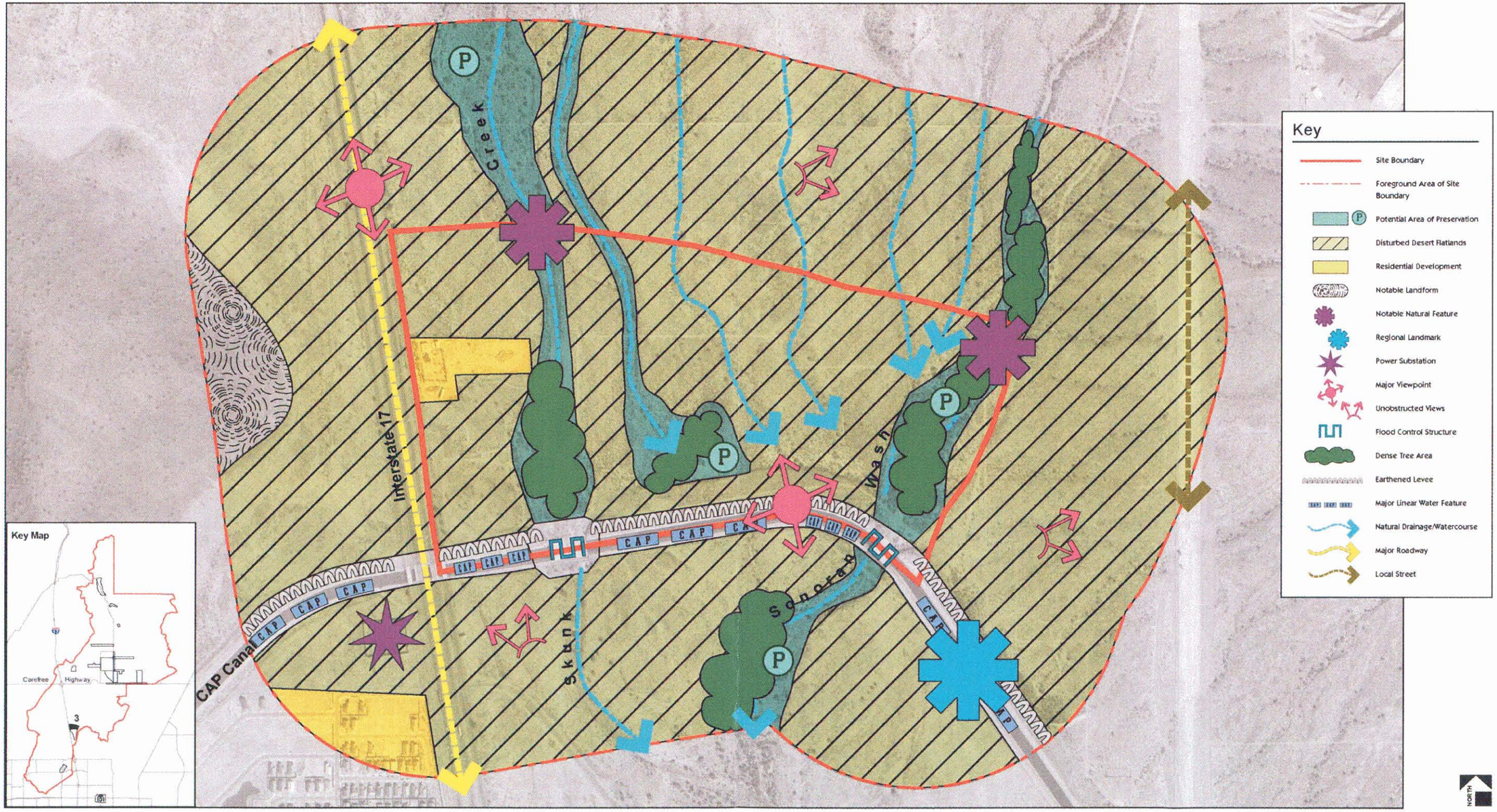


Figure 4.3 PNC3 Existing Visual Conditions

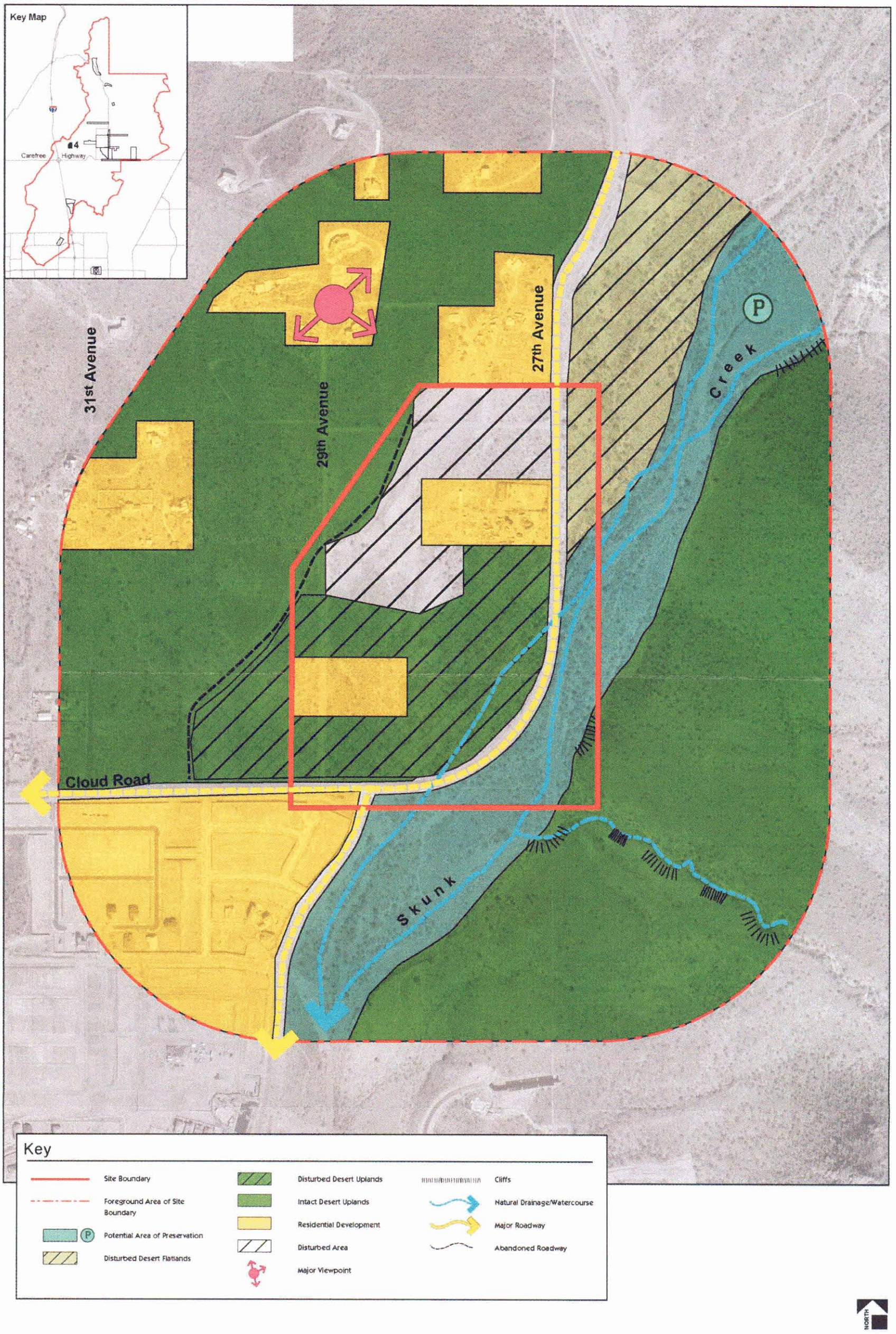


Figure 4.4 DH4 Existing Visual Conditions

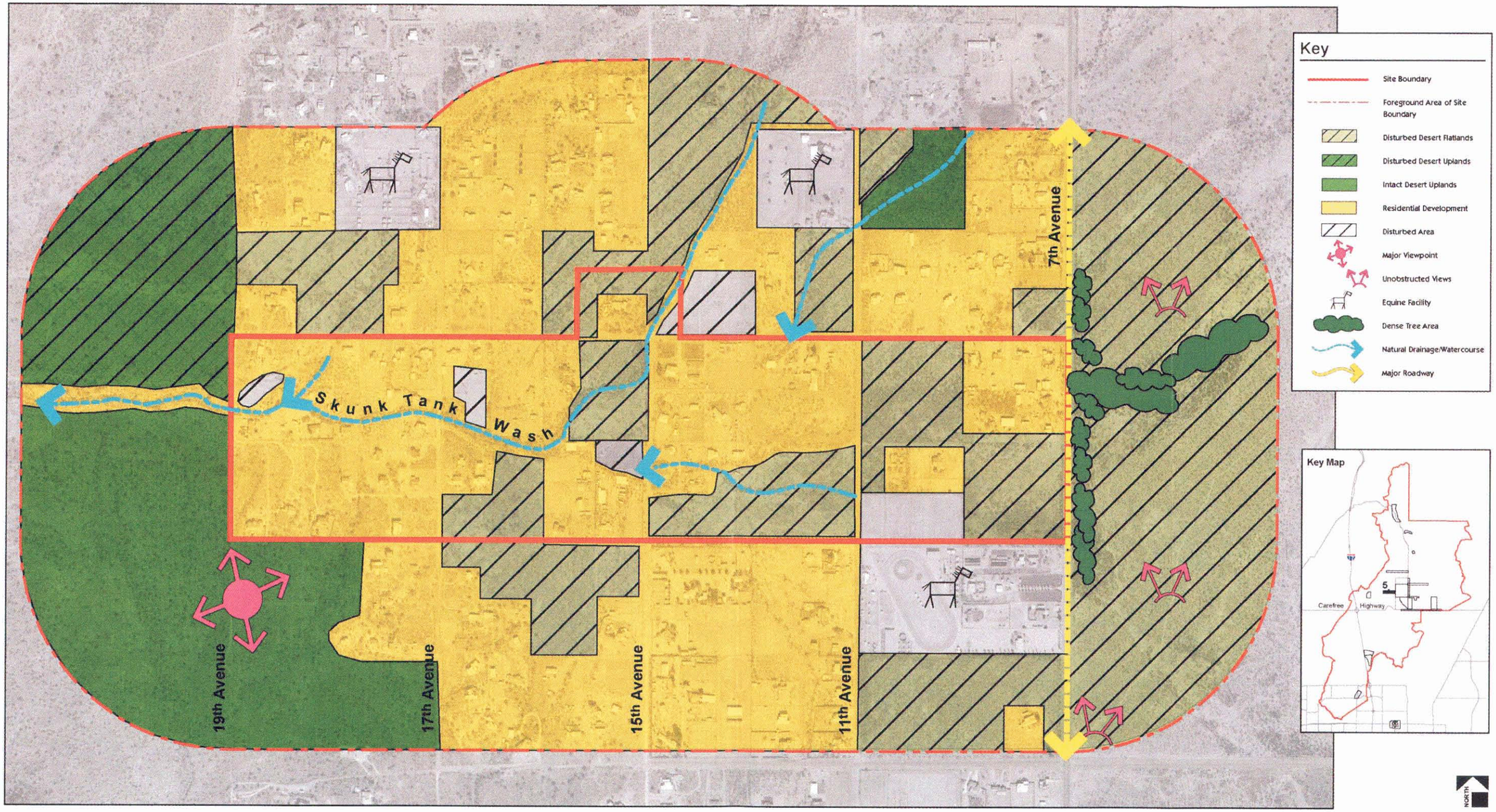


Figure 4.5 DH5 Existing Visual Conditions

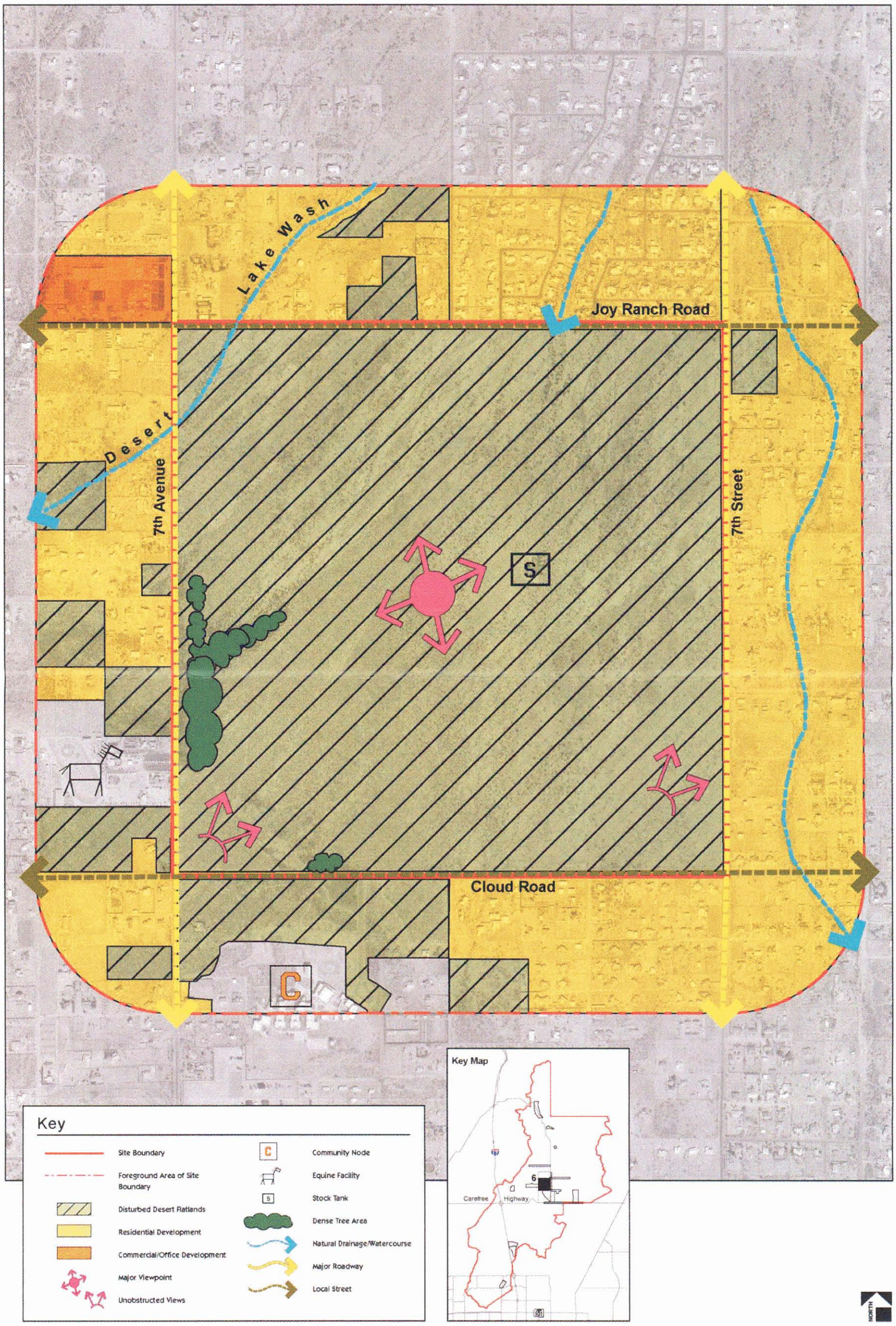


Figure 4.6 DH6 Existing Visual Conditions

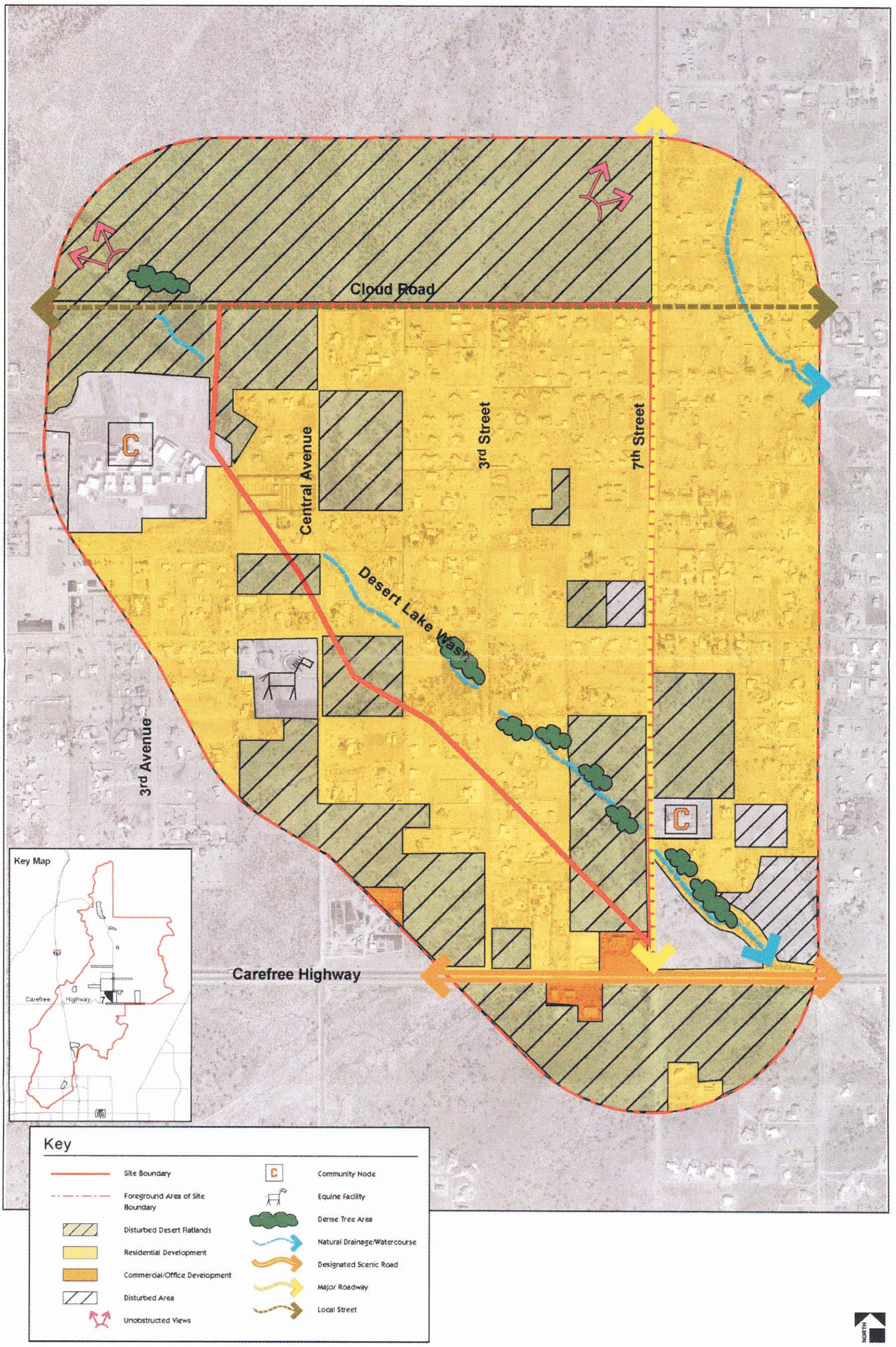


Figure 4.7 DH7 Existing Visual Conditions

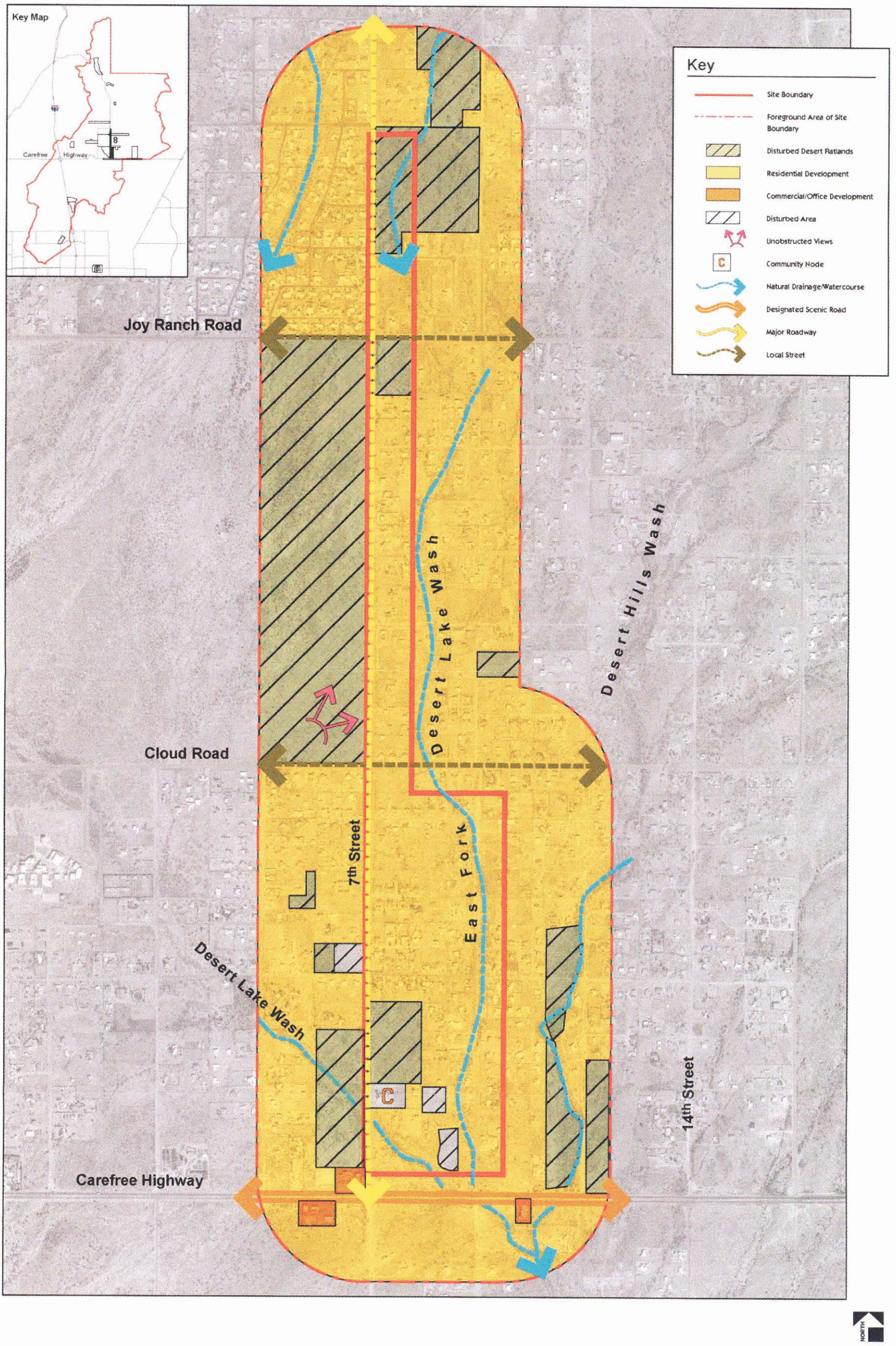


Figure 4.8 DH8 Existing Visual Conditions

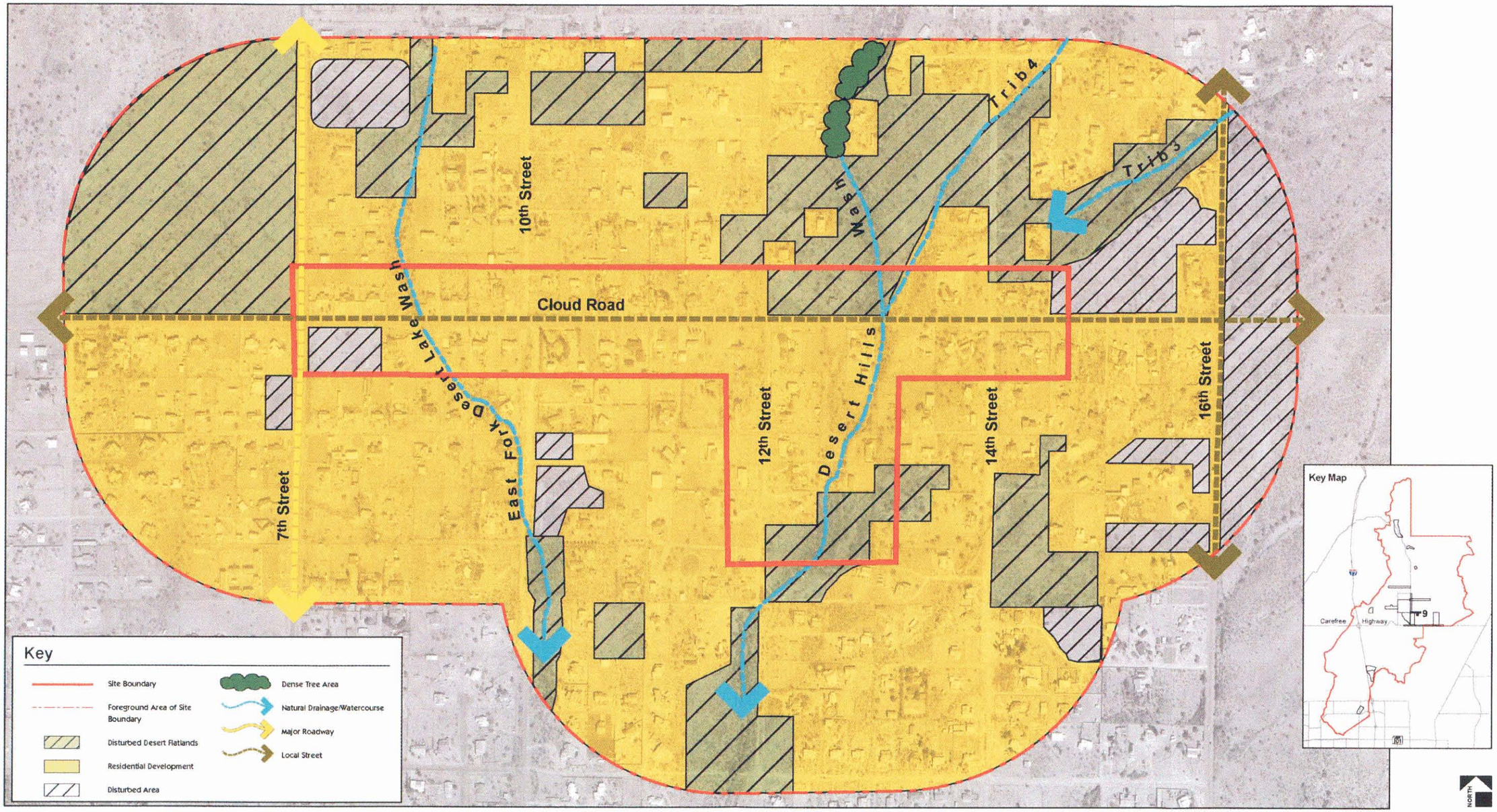


Figure 4.9 DH9 Existing Visual Conditions

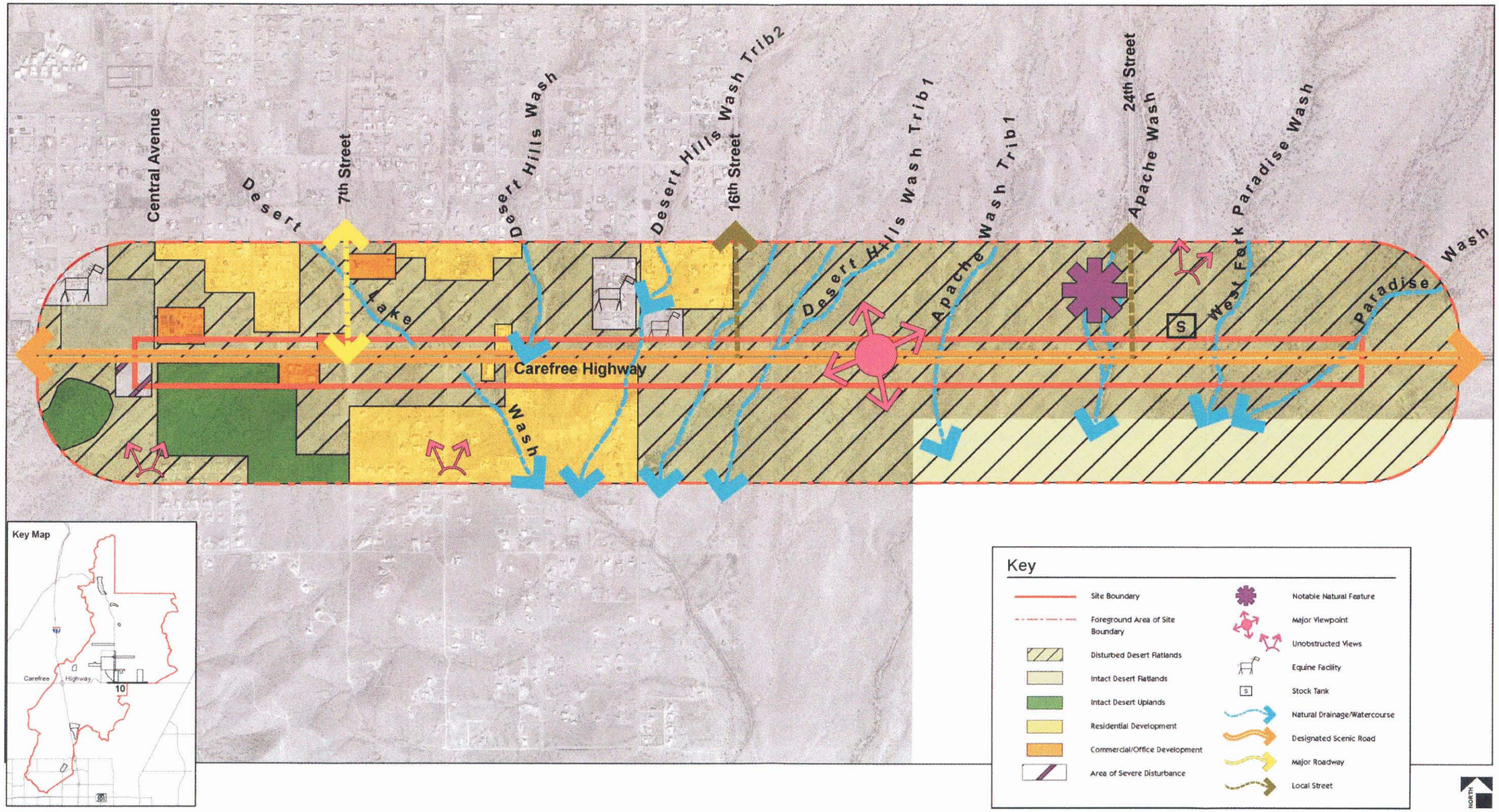


Figure 4.10 DH10 Existing Visual Conditions

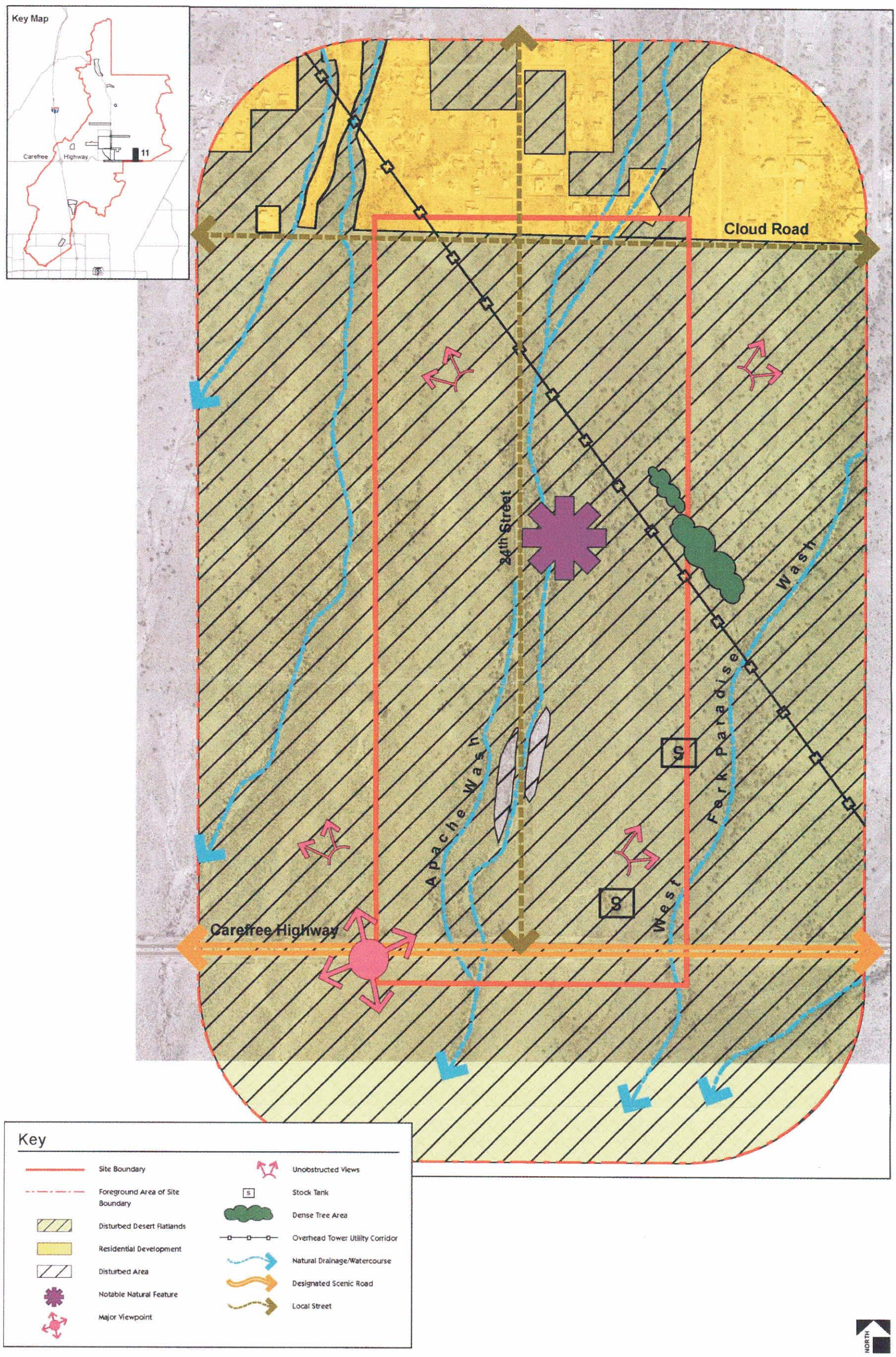


Figure 4.11 DH11 Existing Visual Conditions

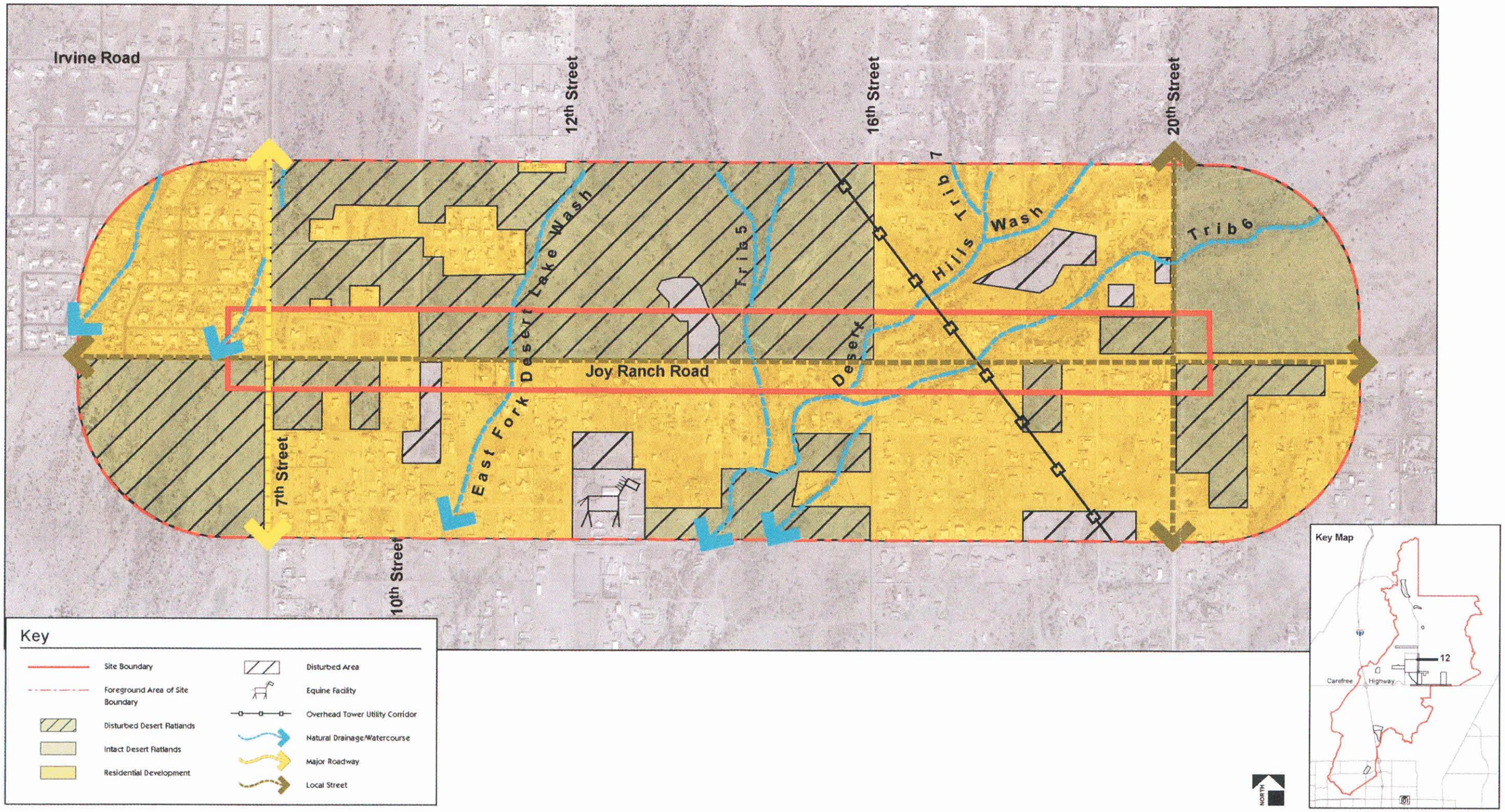


Figure 4.12 DH12 Existing Visual Conditions

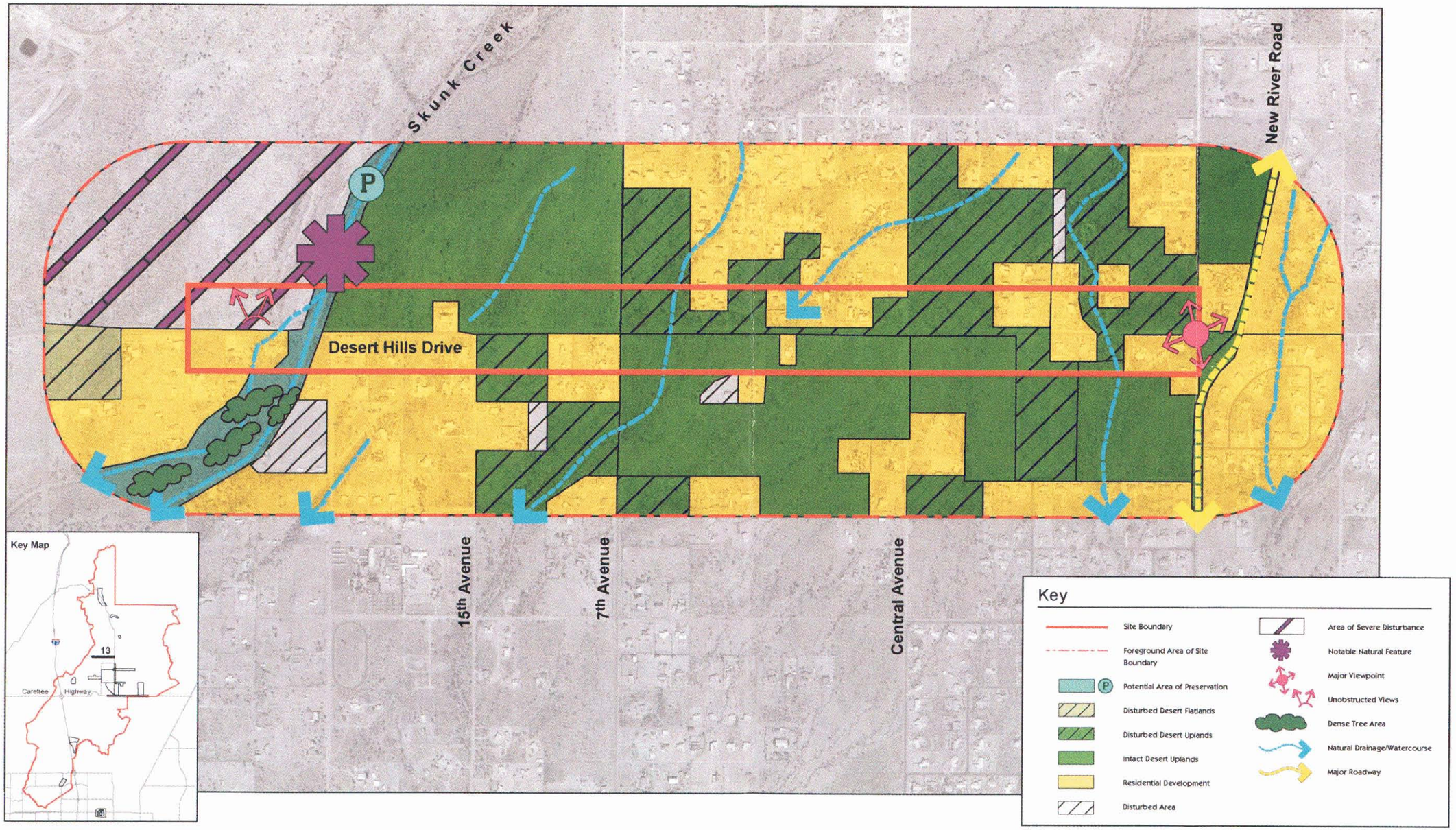


Figure 4.13 DH13 Existing Visual Conditions

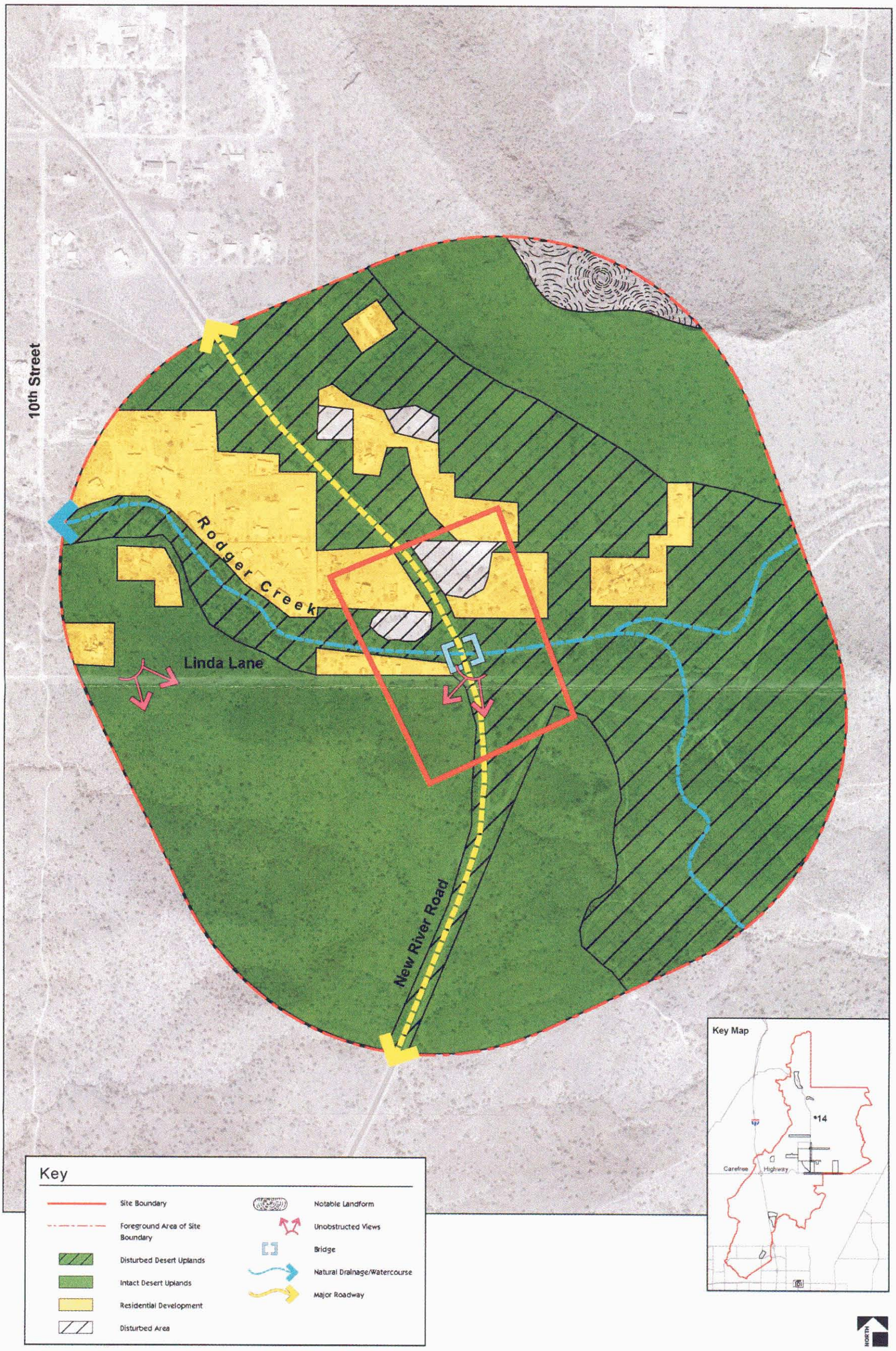


Figure 4.14 NR14 Existing Visual Conditions

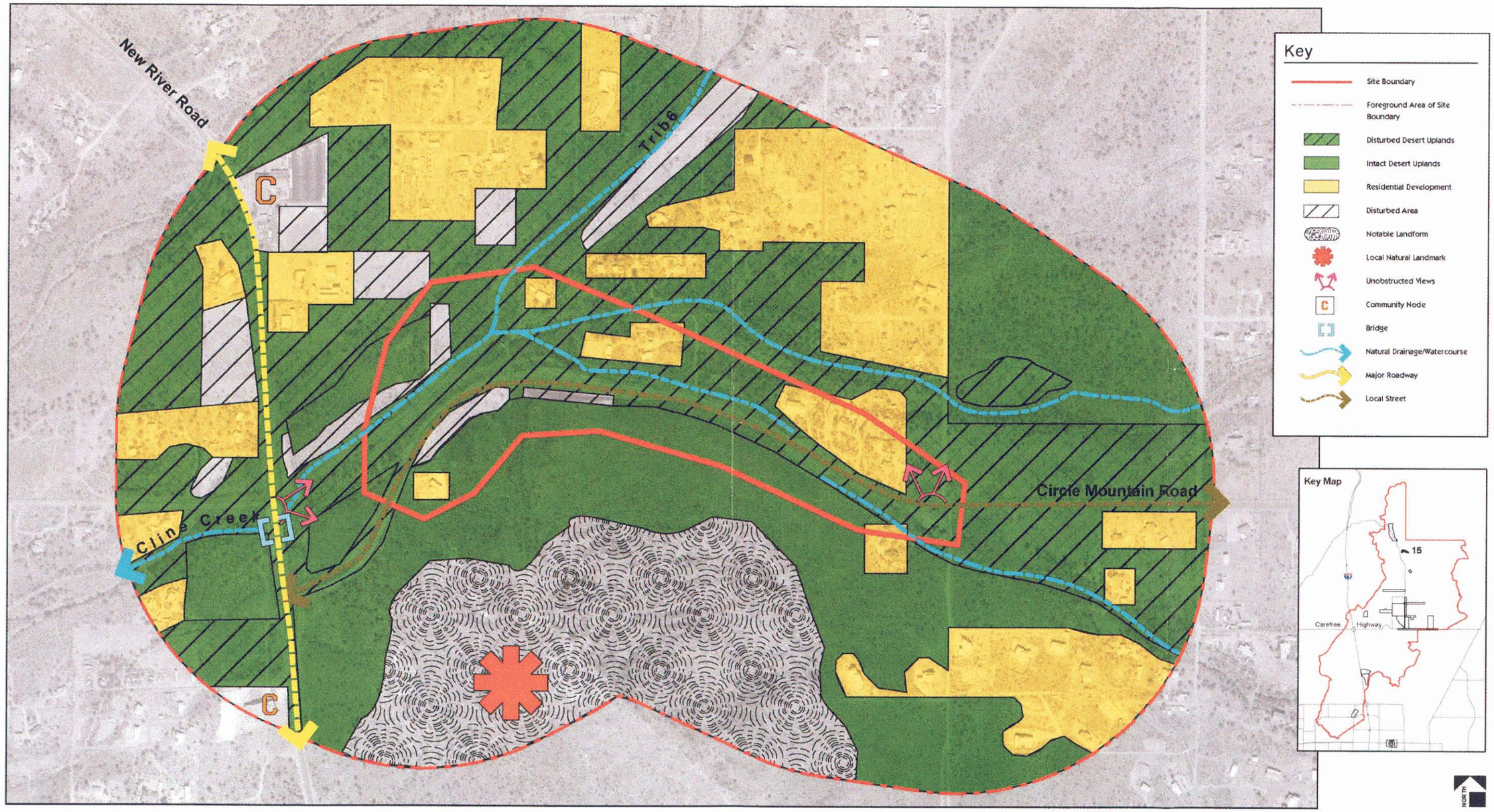


Figure 4.15 NR15 Existing Visual Conditions

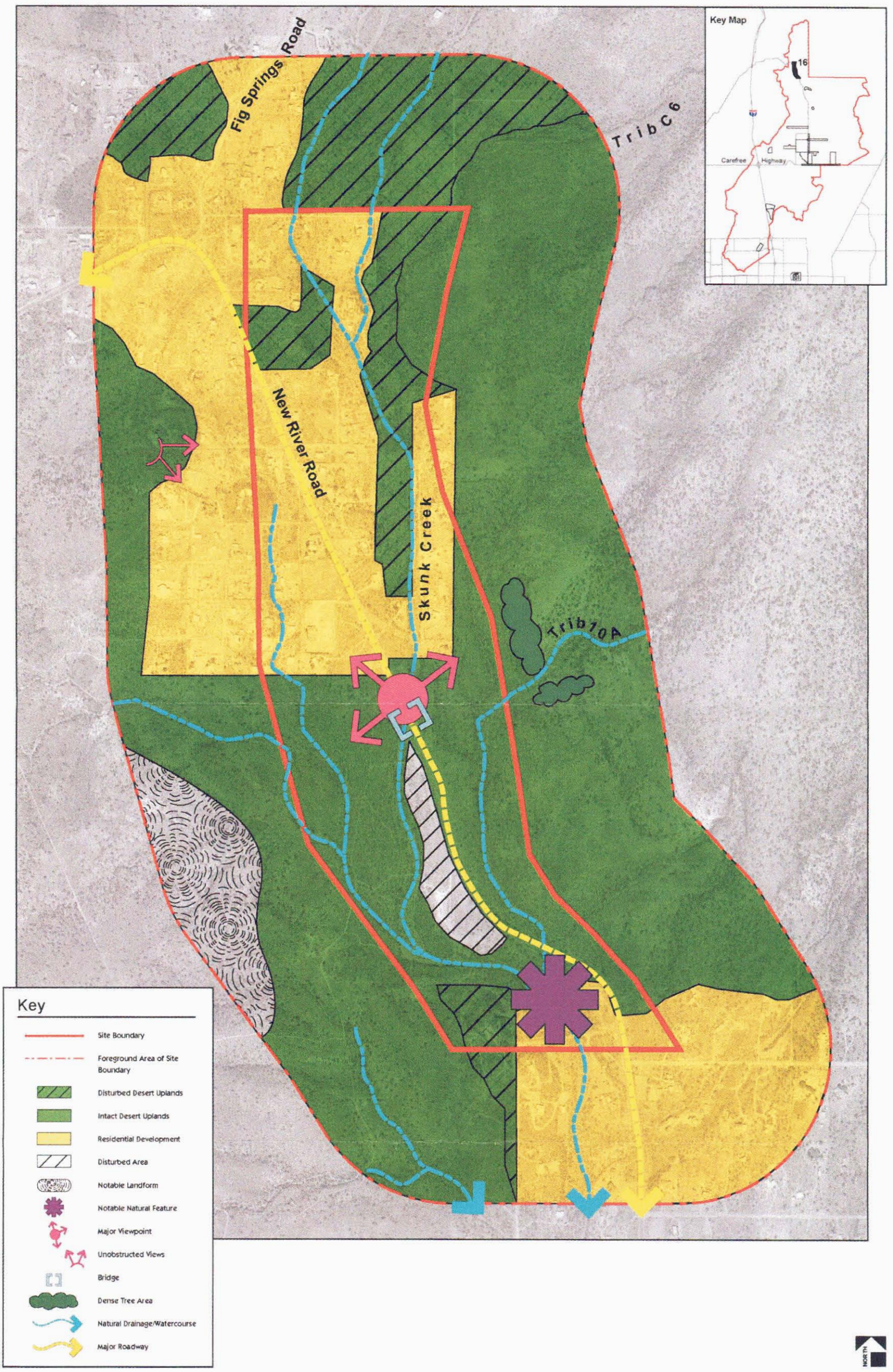
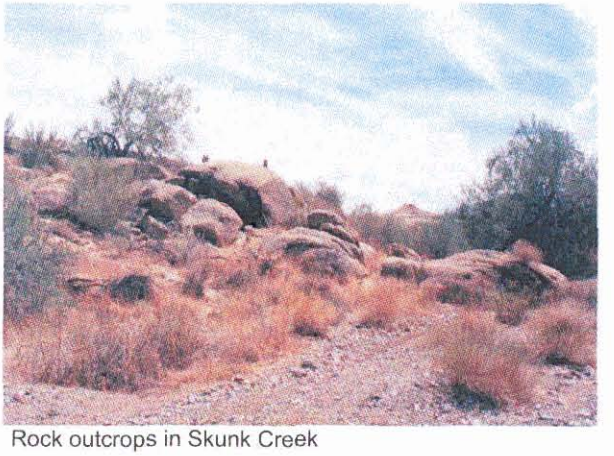


Figure 4.16 NR16 Existing Visual Conditions

There are numerous built and natural distinct features within the specific site areas. The distinct or memorable built features include the flood retarding structures, the CAP canal, newly constructed subdivisions, major overhead transmission lines and towers, and the Skunk Creek Landfill. The outstanding natural features visible from the study area include prominent on- and off-site landforms and vistas across the valley floor. The Sonoran Desertscrub vegetation creates a fabric consistent throughout the northern portion of the study area that is punctuated by statuesque saguaro cacti. Scattered throughout the study area are cliff formations in the channel banks, primarily along Skunk Creek and Apache Wash. Rock outcrops, also found along Skunk Creek, create distinct natural features in the landscape. Major viewpoints within the Adobe Dam/Desert Hills ADMP specific site areas include an existing bridge structure, the top of the embankments of the flood retarding structures, and the various roads leading to the bases of ridges and hills adjacent to the sites.


Rock outcrops in Skunk Creek

Cliff formations along Sonoran Wash

A substantial portion of the Adobe Dam/Desert Hills ADMP study area is currently undeveloped Sonoran Desert. The study area is located at the transition zone of two vegetative communities: the Lower Colorado River Valley (creosotebush-bursage series) and Arizona Upland (paloverde-cacti-mixed scrub series) subdivisions of the Sonoran Desertscrub Biotic Community. The dominant plant species in the Lower Colorado River Valley is creosotebush with the occasional mesquite, paloverde, ironwood, saguaro, or clump of desert broom visible in the upland landscape. The terrain within this vegetative community is generally of low relief, with the vegetative structure being open and simple. The Phoenix South of the CAP Canal, the Phoenix North of the CAP Canal, and the Desert Hills subareas generally support vegetation in the creosotebush-bursage series. The Arizona Upland vegetative community predominates in the New River subarea and is marked by a slightly higher elevation, rolling terrain, and more lush vegetation. Frequencies of mesquite, paloverde, and saguaro are higher and numerous species of cholla, prickly pear, and other cacti are present among the dense undergrowth of desert shrubs.

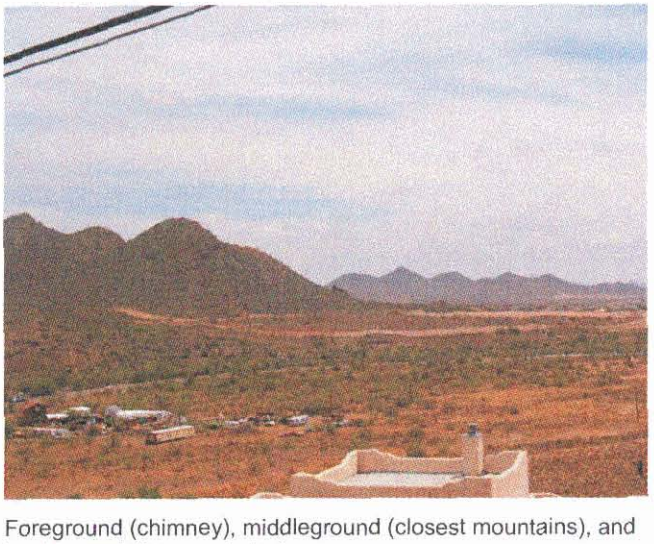
Notable land uses range from major utility and transportation corridors to park/open space facilities to single family residential subdivisions. In the southern portion of the study area, the City of Phoenix's Skunk Creek

Landfill and Paseo Highlands Park, a utility corridor (500 kilovolts [kV] and 69 kV overhead transmission lines, poles, and towers), Adobe Dam Recreation Area, and the Interstate 17 (I-17) transportation corridor are prominent land uses. The Desert Hills and New River subareas are predominately rural, single-family residential areas with notable land uses consisting of numerous equine facilities, a 500 kV utility corridor, and the transportation corridors of Carefree Highway, 7th Street, 7th Avenue, and New River Road. The two Daisy Mountain Fire Stations, Desert Mountain School, and churches are notable local community centers. The large, vacant, one square mile section of Arizona State Land Department (ASLD) land in Desert Hills (bounded by 7th Street, Cloud Road, 7th Avenue, and Joy Ranch Road) is distinct because it is the largest continuous parcel of flat land not developed in the study area.

Viewpoints that are readily accessible in the Adobe Dam/Desert Hills ADMP consists of the platforms from the roadways and significant landforms within and adjacent to the sites. Maricopa County designated Carefree Highway as a Scenic Road in 1997, in coordination with the City of Phoenix and the other jurisdictional entities adjacent to the highway. Roadways are designated as scenic roadways in order to preserve to the extent possible the natural quality of the adjacent desert vegetation and maintain the vistas of the nearby mountains and valley areas. Both the City of Phoenix and Maricopa County have established policies for development adjacent to these roadways including recommending watercourse-crossing setbacks that preserve the natural desert environment and vistas.

4.2. Landscape Character Units

To further describe the visual resources of the Adobe Dam/Desert Hills ADMP, the 16 problem area sites are broken into broad-based landscape character units. Landscape character units, as previously stated, are based on the presence of vegetation, changes in land use, degree of spatial enclosure, and the presence of notable landform and architectural/cultural patterns in the landscape. The resulting units are areas of similar visual character. Each unit has been named and described in terms of its vegetative cover, landform, land use, and special features in the foreground, middleground, or background. Distance zones refer to the relative position of the observation point as follows: (1) foreground - up to 0.25 miles; (2) middleground - 0.25 miles to three miles; and (3) background - 3 to 5 miles. The relative scenic quality, level of intactness, and visual sensitivity are provided for each of



Foreground (chimney), middleground (closest mountains), and background (far mountains)

the Landscape character units. Thirty-three different landscape character units were identified within the 16 sites and are as follows:

- Rural Ranch Residential Development
- Transition Ranch Residential Development
- Planned Area Residential Development
- Commercial/Retail Development
- Office/Light Industrial Development
- Pinnacle Peak Road Transportation Corridor
- Carefree Highway Transportation Corridor
- 7th Street Transportation Corridor
- Circle Mountain Road Transportation Corridor
- Cloud Road/27th Avenue Transportation Corridor
- 24th Street Transportation Corridor
- New River Road Transportation Corridor
- Xeroriparian with Subtle/Braided Channel Bed
- Xeroriparian with Distinct Channel Bed
- Disjointed Xeroriparian Areas with Subtle/Braided Channel Bed
- Distinct Channel Bed with Minimal Vegetation
- Channelized Skunk Creek
- Urban-impacted Skunk Creek
- Utility Corridor
- CAP Canal
- Equine Facility
- Stock Tank
- Skunk Creek Landfill
- Intact Desert Uplands
- Disturbed Desert Uplands
- Intact Desert Flatlands
- Disturbed Desert Flatlands
- Flood Control Structure – Rock Levee
- Flood Control Structure – Grade-Control Structure
- Flood Control Structure – Flood Retarding Structure
- Flood Control Structure – Earthen Embankment
- Flood Control Structure – Concrete Embankment Structure
- Disturbed Area

Tables 4.2 to 4.17 and Figures 4.17 to 4.33 describe each landscape character unit and its location, respectively, within each of the 16 sites.

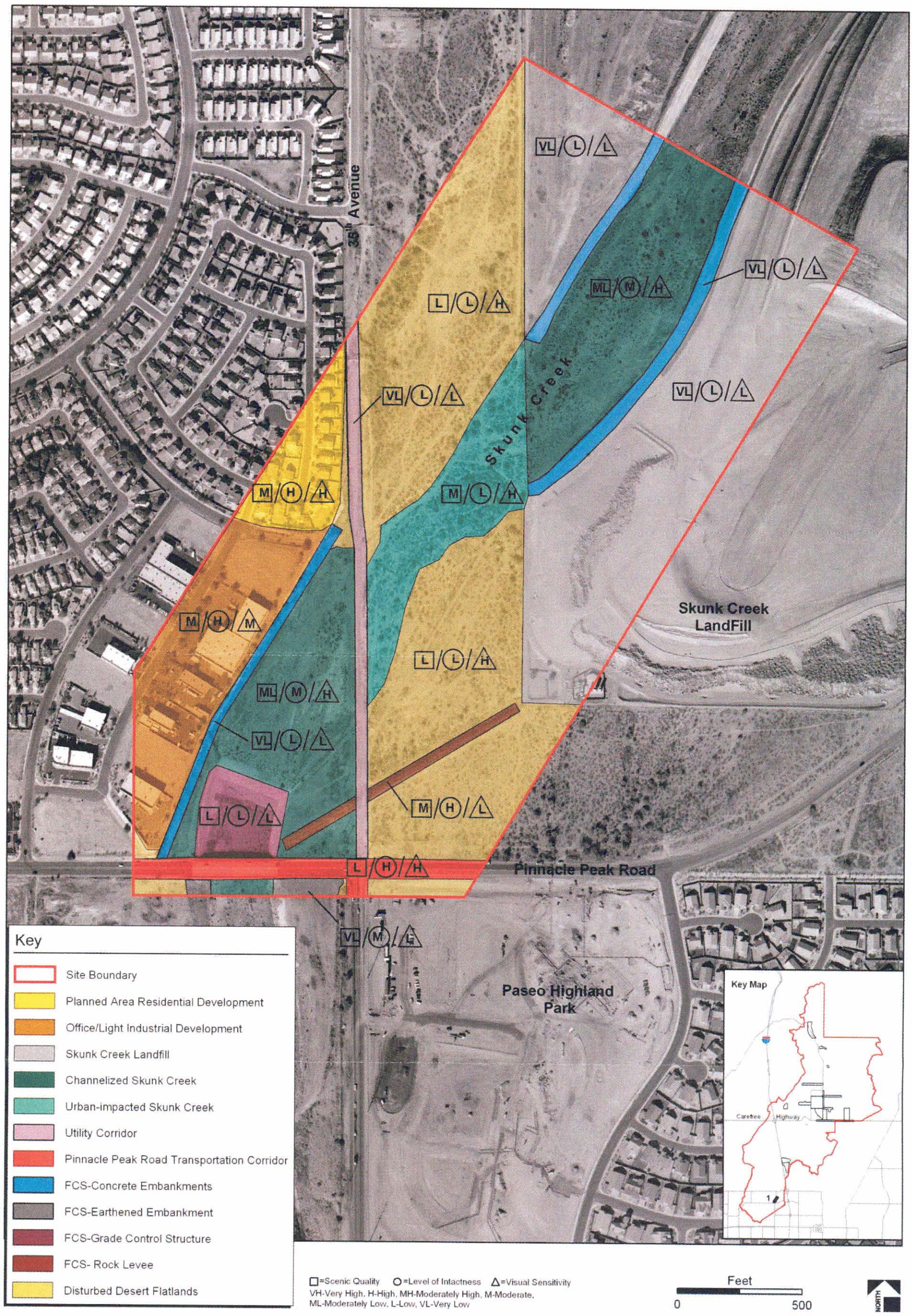


Figure 4.17 PSC1 Landscape Character Units

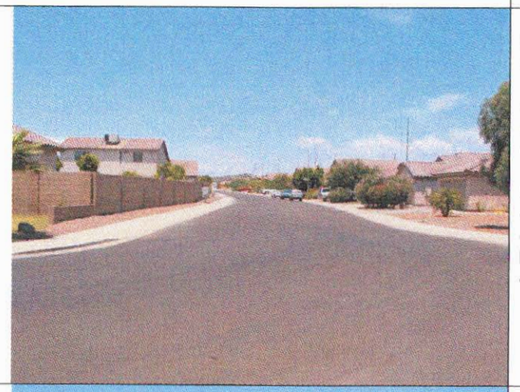
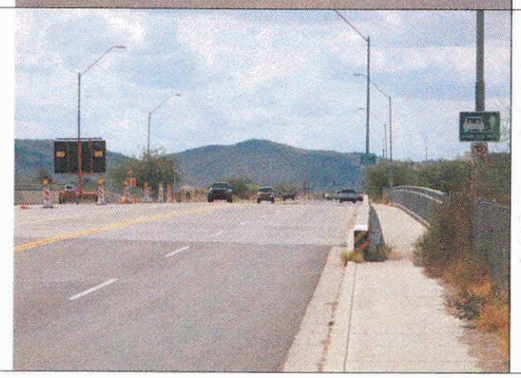
Phoenix South of CAP Canal Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PSC1 – Planned Area Residential Development		Foreground • Uniform-sized single family residential lots with repeated patterns of architectural styles, colors, and materials • Vegetation consisting of both native and exotic species • Buildings have same orientation to the street • Closeness of buildings and 6-foot high block walls around back and side yards limit views to foreground area except along street axis Middleground • Substantially obstructed • Limited distant views of Deems Hills to the north Background • Not visible	Distinctiveness • Subdivision consists of both one- and two-story structures of light tan colored stucco materials, red tile roofs, masonry block walls, sidewalks attached to rolled curbs • Buildings are typical of planned area subdivision development • Vegetation is minimal and does not create striking pattern • Terrain is flat • Infrastructure and buildings dominate setting Level of Intactness • Infrastructure and buildings create a visually consistent and uniform pattern • High level of intactness Unity • Harmonious architectural style • Void of visual encroachment from non-related man-made features Level of Scenic Quality: Moderate	High
PSC1 – Office/Light Industrial Development		Foreground • Large multi-story block buildings of similar material and color with expansive parking areas and fenced storage areas • Buildings have same orientation to the street • Vegetation consists of both native and exotic species and is limited to front of buildings Middleground • Building size and mass provide limited views to middleground area • Sporadic and partially obscured views of Skunk Creek Landfill, Deems Hills (north), Adobe Mountain (east), and Hedgpeth Hills (southwest) Background • Not visible	Distinctiveness • Commercial business park and warehouse area consist of both one- and two-story structures of masonry block painted dark reds, browns, blues, and grays • Buildings are typical of commercial/light industrial development • Vegetation is minimal and does not create striking pattern • Terrain is flat • Infrastructure and buildings dominate setting Level of Intactness • Infrastructure and buildings create a visually consistent and uniform pattern • High level of intactness Unity • Harmonious architectural style • Void of visual encroachment from man-made features Level of Scenic Quality: Moderate	Moderate
PSC1 – Pinnacle Peak Road Transportation Corridor		Foreground • Four and five-lane roadway section with sidewalks on both sides in most areas • Street light fixtures and overhead power transmission lines present • Vegetation limited to undeveloped areas adjacent to roadway • Roadway is at-grade and provides unobstructed views to areas of development and adjacent landforms specifically Skunk Creek Landfill and Adobe Mountain (east) Middleground • Views of Hedgpeth Hills (southwest) Background • No notable features visible	Distinctiveness • Significant expanse of asphalt and concrete (bridge) creates strong linear form common to the area and region • Roadway features are not visually striking • No vegetation or streetscape enhancements are present • Roadway adheres to the flat terrain • Infrastructure and buildings dominate setting Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Street lighting and overhead power transmission lines create a noticeable contrast in scale of the roadway Level of Scenic Quality: Low	High

Table 4.2 PSC1 Landscape Character Units

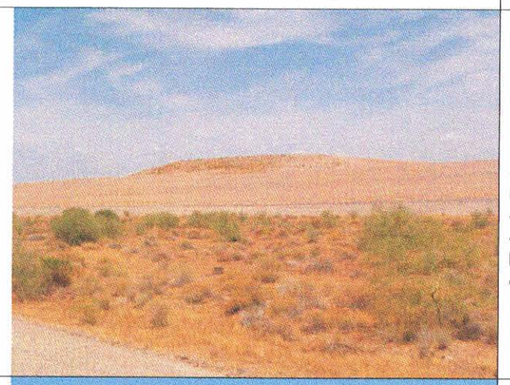
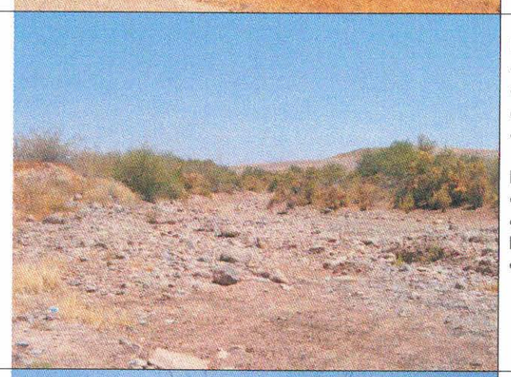
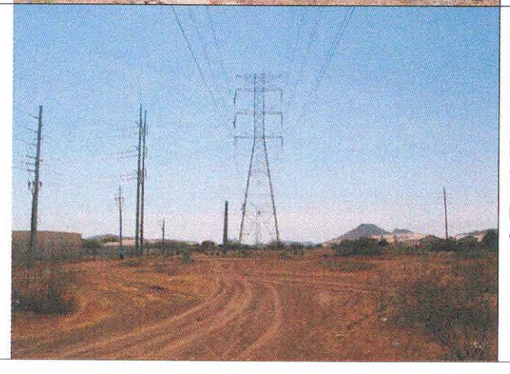
Phoenix South of CAP Canal Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PSC1 – Channelized Skunk Creek		Foreground • Broad, relatively level drainage channel spatially defined by Earthen Embankments • Grey-green, coarse-textured scrub vegetation with scattered trees covers channel area • Channel area relatively void of man-made features • Adjacent features (embankment and landfill) dominate setting Middleground • Middleground area partially obscured from view by embankment • Upper portion of Skunk Creek Landfill landform visible Background • Not visible	Distinctiveness • Vegetation common to local area and region • Relatively flat landform does not create a striking visual pattern • Adjacent features (embankment and landfill) provide notable visual contrast • Skunk Creek within this unit does not exhibit typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks Level of Intactness • Man-made features are not evident within the channel • Skunk Creek does not resemble a natural drainage • Moderate level of intactness Unity • Vegetation creates a coherent visual pattern in the landscape Level of Scenic Quality: Moderately Low	High
PSC1 – Urban-impacted Skunk Creek		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed littered with debris and cut through dirt roads • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of Skunk Creek Landfill landform visible Background • Not visible	Distinctiveness • Skunk Creek within this unit exhibits typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Skunk Creek with its associated xeroriparian vegetation creates a striking visual pattern Level of Intactness • Presence of wildcat dumping scattered throughout the wash and dirt roads randomly crossing the channel encroach on the otherwise intact natural drainage • Low level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: Moderate	High
PSC1 – Utility Corridor		Foreground • Single pole and towers for overhead transmission lines • Towers are open wire-frame gray structures, evenly spaced within the unit • Single poles are wood pole structures, even spaced within the unit • Area beneath utility lines either has minimal or is void of vegetation Middleground • Unobstructed views to areas of development and adjacent landforms specifically Skunk Creek Landfill and Adobe Mountain (east), Background • No notable features visible	Distinctiveness • Wood pole and wire-frame towers combine to create a substantial vertical form in the landscape and dominate the skyline character of the unit • Cleared areas around and beneath lines and towers add to the dominance of the utility features Level of Intactness • Utility features do not conform to the scale and form of the landscape • Low level of intactness Unity • Transmission towers are not visually compatible with the setting • Utility features contrast in scale, color, and form, and spatially dominate the landscape Level of Scenic Quality: Very Low	Low

Table 4.2 PSC1 Landscape Character Units - Continued

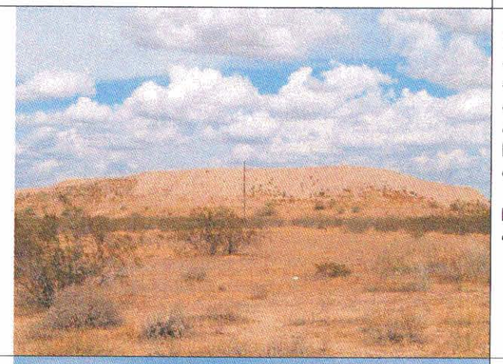
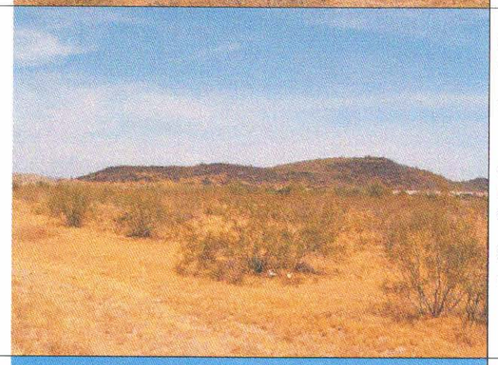
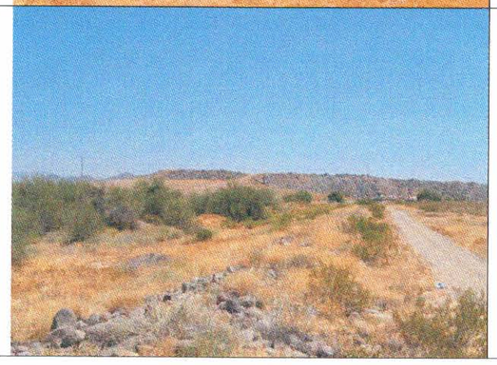
Phoenix South of CAP Canal Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PSC1 – Skunk Creek Landfill		Foreground • Expansive tiered landform with minimal vegetation dominates the unit • Configuration and height of landform does not blend with the setting • Boulders randomly placed along landform • Height of landform provides unobstructed panoramic views of landscape Middleground • Panoramic views of Deems Hills (north), Adobe Mountain (east), and Hedgpeth Hills (southwest) Background • No notable features visible	Distinctiveness • Stark landfill landform creates a distinct pattern in the landscape • Landfill creates an artificially hilly terrain • Vegetation is scare because of slow revegetation process Level of Intactness • Landfill has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Landfill is not visually compatible, severely contrasting in terms of scale, form, line, and color, and spatially dominates the setting. Level of Scenic Quality: Very low	Low
PSC1 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured creosote bush dominates vegetation with scattered mesquite, paloverde, and acacia trees also present • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, scattered areas of wildcat dumping, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of Skunk Creek Landfill, Deems Hills (north), Adobe Mountain (east), and Hedgpeth Hills (southwest) Background • No notable features visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of wildcat dumping, notable areas void of vegetation, and dirt roads encroach on the otherwise intact landscape • Low level of intactness Unity • Man-made features contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
PSC1 – Flood Control Structure – Rock Levee		Foreground • Relatively low structure (less than 6 feet in height) of dark colored, variable-sized rocks with coarse-textured vegetation covering structure • Presence of vegetation and natural appearing rocks are compatible with setting • Unobstructed views to surrounding landscape Middleground • Unobstructed views of Skunk Creek Landfill, Deems Hills (north), Adobe Mountain (east), and Hedgpeth Hills (southwest) Background • No notable features visible	Distinctiveness • Rock levee structure has a low profile in the landscape and does not form a striking visual pattern • Structure creates a low form that undulates the relatively flat terrain Level of Intactness • Long, linear man-made feature has revegetated with plant material similar to adjacent vegetation and creates a subtle form that does not detract from the setting • High level of intactness Unity • Man-made feature that creates a subtle contrast in terms of form and line in the landscape Level of Scenic Quality: Moderate	Low

Table 4.2 PSC1 Landscape Character Units - Continued

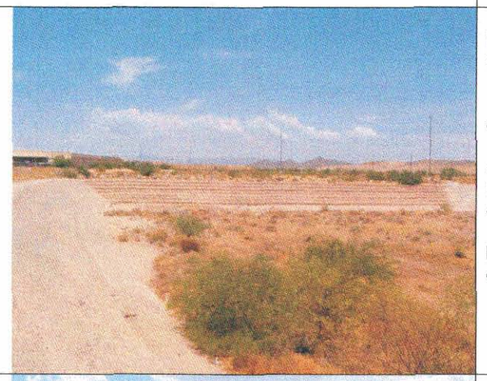
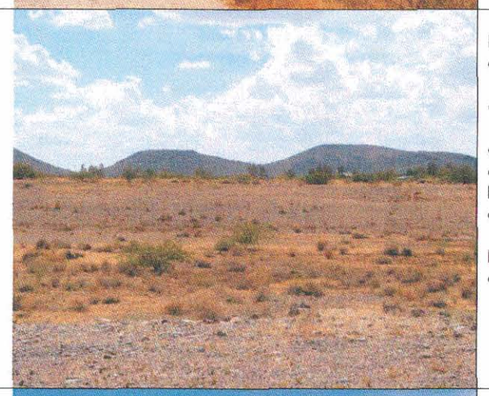
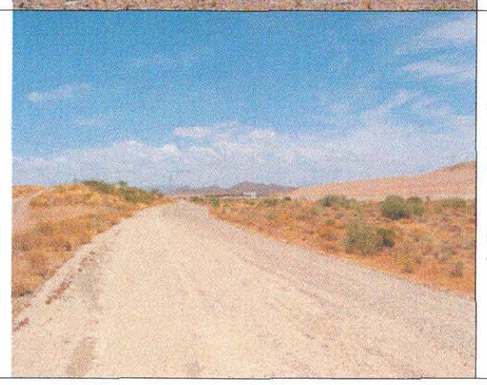
Phoenix South of CAP Canal Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PSC1 – Flood Control Structure – Grade-control Structure		Foreground • Concrete grade-control structure and hardened (concrete) channel embankments dominate landscape and visually contrast in terms of line, form, and color with setting • Grade-control structure has modified Skunk Creek's physical characteristics and the drainage does not resemble natural wash • Top of structure provides unobstructed views to surrounding landscape Middleground • Unobstructed views of Skunk Creek Landfill, Deems Hills (north), Adobe Mountain (east), and Hedgpeth Hills (southwest) Background • No notable features visible	Distinctiveness • Concrete grade-control structure creates distinct form and pattern because of its mass, rectangular form, color, and spatial dominance in the landscape • Structure artificially lowers the terrain at Skunk Creek Level of Intactness • Grade-control structure is a substantial visual encroachment on the setting • Grade-control structure does not conform to the setting because of its color, form, and texture • Low level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form, color, line, and texture in the landscape • Grade-control structure spatially dominates the setting and is not visually compatible with the surroundings Level of Scenic Quality: Low	Low
PSC1 – Flood Control Structure – Earthen Embankment		Foreground • Earthen channel embankment visually contrasts in terms of line and form with setting • Embankment has modified Skunk Creek's physical characteristics and the drainage does not resemble a natural wash • Presence of vegetation on the embankment is compatible with setting • Top of structure provides unobstructed views to surrounding landscape Middleground • Unobstructed views of Skunk Creek Landfill, Deems Hills (north), Adobe Mountain (east), and Hedgpeth Hills (southwest) Background • No notable features visible	Distinctiveness • Earthen embankment creates a distinct form and pattern because of its regular/uniform slope form in the landscape • Plant material on slope face is similar to adjacent vegetation • Embankment artificially creates changes in relatively flat terrain Level of Intactness • Vegetation reduces the visual encroachment of the embankment with setting • Earthen channel embankment does not conform to the setting because of the linear uniform form of the embankment • Moderate level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form and line in the landscape • Earthen channel embankment spatially dominates the setting Level of Scenic Quality: Very Low	Low
PSC1 – Flood Control Structure – Concrete Embankments		Foreground • Hardened (concrete) channel embankment dominates landscape and visually contrasts in terms of line, form, and color with setting • Embankment has modified Skunk Creek's physical characteristics and the drainage does not resemble a natural wash • Top of structure provides unobstructed views to surrounding landscape Middleground • Unobstructed views of Skunk Creek Landfill, Deems Hills (north), Adobe Mountain (east), and Hedgpeth Hills (southwest) Background • No notable features visible	Distinctiveness • Concrete channel embankment creates distinct form and pattern because of its mass, uniform linear form, color, and spatial dominance in the landscape • Embankment creates a ridge form in a relatively flat terrain Level of Intactness • Concrete embankment is a substantial visual encroachment on the setting • Embankment does not conform to the setting because of its color, form, and texture • Low level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form, color, line, and texture in the landscape • Earthen channel embankment spatially dominates the setting and is not visually compatible with the surroundings Level of Scenic Quality: Very Low	Low

Table 4.2 PSC1 Landscape Character Units - Continued

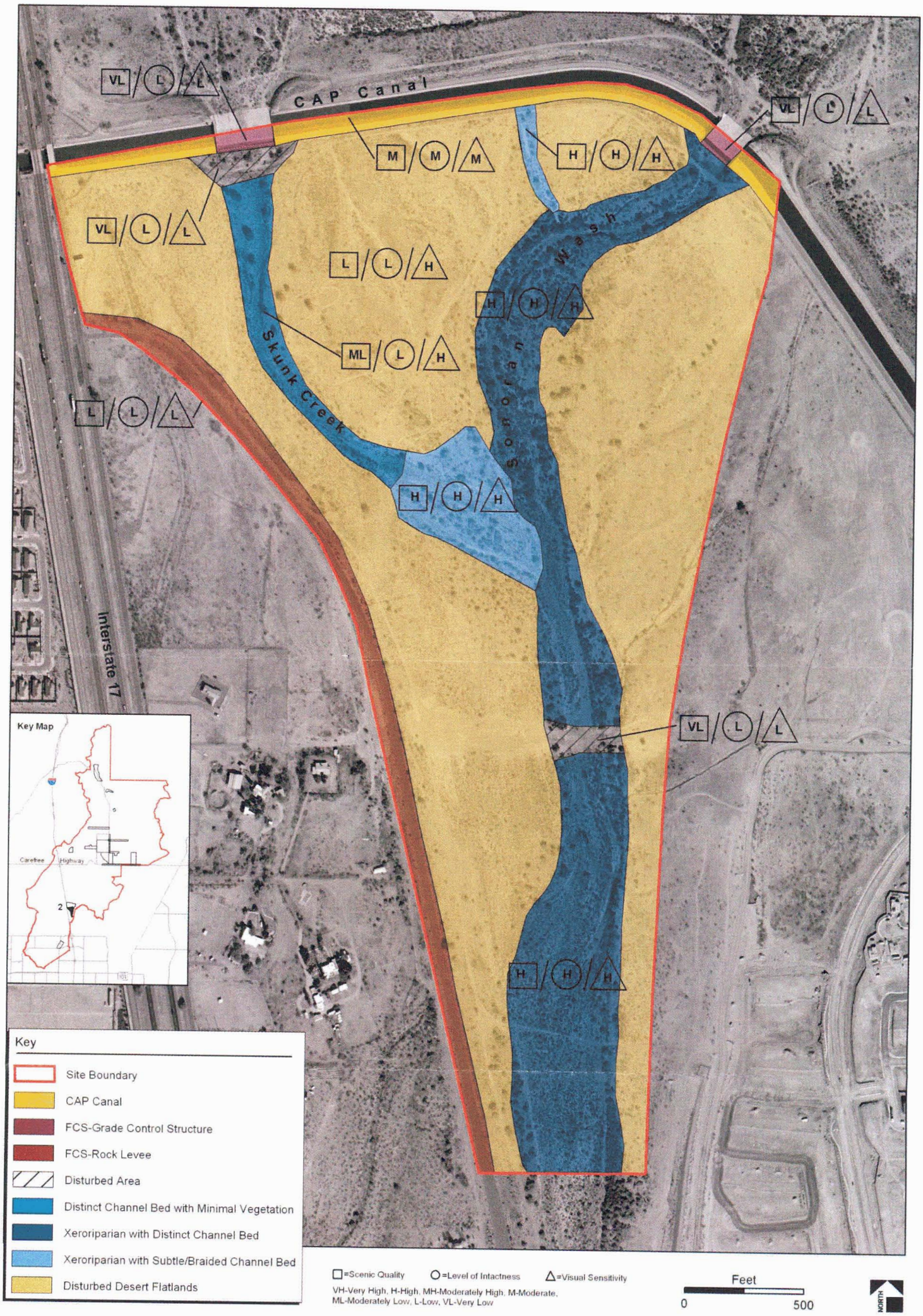


Figure 4.18 PSC2 Landscape Character Units

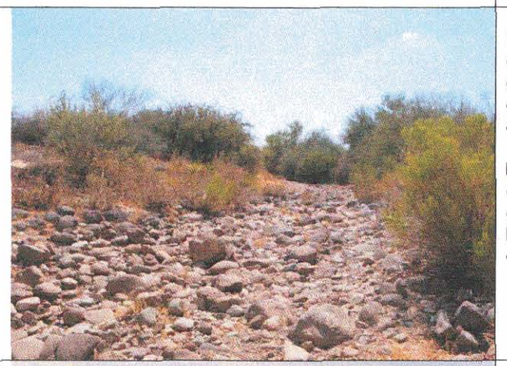
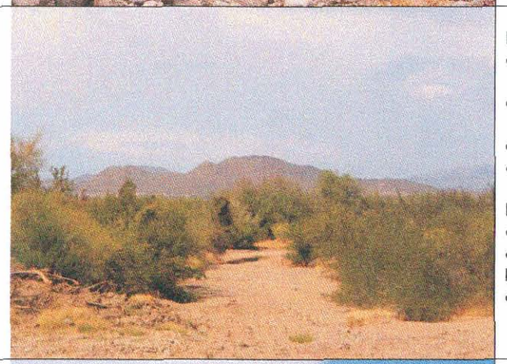
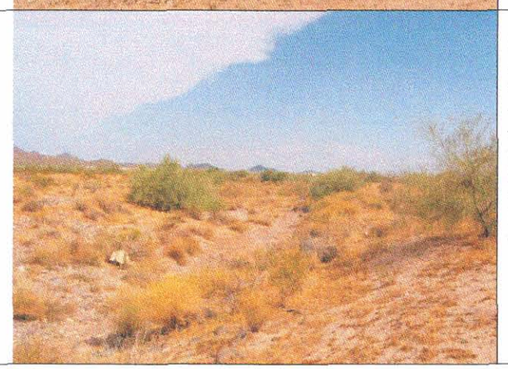
Phoenix South of CAP Canal Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PSC2 – Xeroriparian with Distinct Channel Bed		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible such as Union Hills to the east Background • Not visible	Distinctiveness • Washes within this unit exhibit typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Drainages with their associated xeroriparian vegetation creates a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
PSC2 – Xeroriparian with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are the dominant feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible such as Union Hills to the east Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
PSC2 – Distinct Channel Bed with Minimal Vegetation		Foreground • Incised drainage channel spatially defined by cobbled/sandy channel bottom • Typical dense xeroriparian vegetation not present on channel banks • Evidence of off-road vehicle activity and grazing • Vegetation is relatively sparse • Views beyond drainage channel not obscured Middleground • Upper portion of higher adjacent landforms visible such as Union Hills to the east Background • Not visible	Distinctiveness • Washes within this unit exhibit atypical stream bed characteristics of incised sandy/cobble bottom without the dense vegetation along channel banks • Drainages creates a notable visual pattern Level of Intactness • Lack of vegetation and presence of off-road vehicle and grazing uses reduces integrity of landscape • Low level of intactness Unity • Encroachment of off-road vehicle and grazing uses reduce harmonious visual pattern Level of Scenic Quality: Moderately low	High

Table 4.3. PSC2 Landscape Character Units

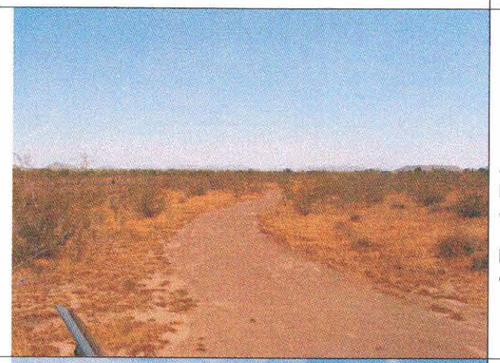
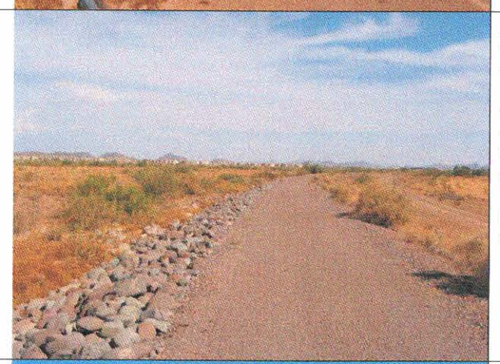
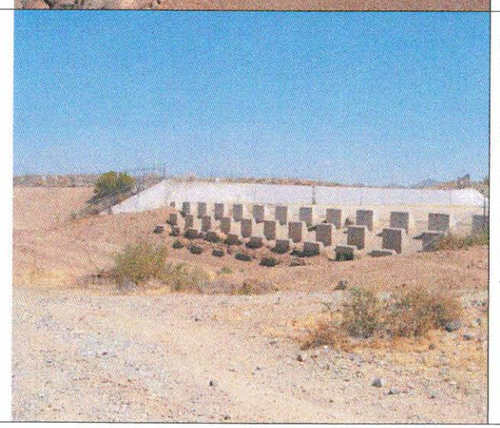
Phoenix South of CAP Canal Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PSC2 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured creosote bush dominates vegetation with scattered mesquite, paloverde, and acacia trees also present • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • Distant views to Bradshaw and New River Mountains (north) and North Mountains (south)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
PSC2 – Flood Control Structure – Rock Levee		Foreground • Levee constructed of dark colored, variable-sized rocks with a crushed rock service road creates relatively uniform linear form in landscape • Presence of variable-sized dark rocks are compatible with setting • Unobstructed views to surrounding landscape Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • Distant views to Bradshaw and New River Mountains (north) and North Mountains (south)	Distinctiveness • Rock levee does not form a striking visual pattern • Structure creates linear form that has a uniform line and rises in elevation from north to south Level of Intactness • Long, linear man-made feature with roadway creates a notable form that detracts from the setting • Low level of intactness Unity • Man-made feature that creates a notable contrast in terms of form and line in the landscape Level of Scenic Quality: Low	Low
PSC2 – Flood Control Structure – Grade-control Structure		Foreground • Concrete grade-control structure, energy dissipaters, fencing, and hardened (concrete) channel dominates landscape and visually contrast in terms of line, form, and color with setting • Grade-control structure has modified natural drainage physical characteristics and the drainages do not resemble natural washes • Top of structure provides unobstructed views to surrounding landscape Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • No notable features visible	Distinctiveness • Concrete grade-control structure and associated features create distinct forms and patterns because of their mass, rectangular form, color, and spatial dominance in the landscape • Flood control feature artificially lowers the terrain at Skunk Creek and Sonoran Wash Level of Intactness • Grade-control structure is a substantial visual encroachment on the setting • Grade-control structure does not conform to the setting because of its color, form, and texture • Low level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form, color, line, and texture in the landscape • Grade-control structure spatially dominates the setting and is not visually compatible with the surroundings Level of Scenic Quality: Very low	Low

Table 4.3. PSC2 Landscape Character Units - Continued

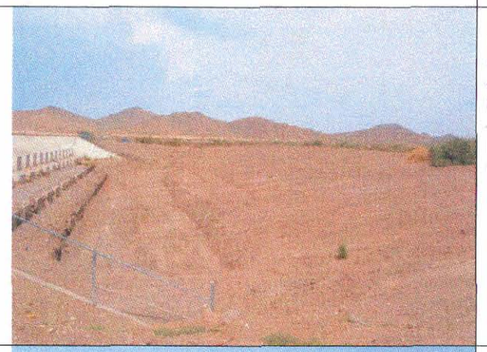
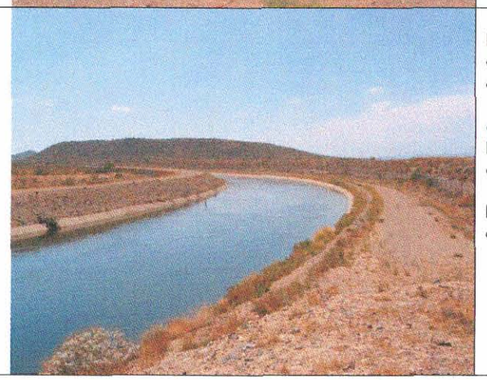
Phoenix South of CAP Canal Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PSC2 – Disturbed Area		Foreground • Cleared and grubbed area dominates the unit • Bladed area does not blend with setting Middleground • Unobstructed views of Union Hills (east) and Middle Mountain (west) Background • No notable features visible	Distinctiveness • Barren graded area creates a distinct pattern in the landscape • Cleared area has modified existing terrain • No vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, severely contrasts in terms of form, line, and color Level of Scenic Quality: Very low	Low
PSC2 – CAP Canal		Foreground • CAP Canal creates a strong linear elevated form in a relatively flat area • Presence of water, fencing, service roads, and embankments are visible from the foreground of the canal • Unobstructed views to surrounding landscape from service roads Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • Distant views to Bradshaw and New River Mountains (north) and North Mountains (south)	Distinctiveness • CAP Canal forms a striking visual pattern • Presence of permanent water is a scarce feature in the local area and region • Vegetation is limited to small shrubs and grasses on embankment slope face Level of Intactness • Long, uniform, linear man-made feature creates a notable form that detracts from the setting • Moderate level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form and line in the landscape • Vegetation on embankment slope face helps reduce color contrast Level of Scenic Quality: Moderate	Moderate

Table 4.3. PSC2 Landscape Character Units - Continued

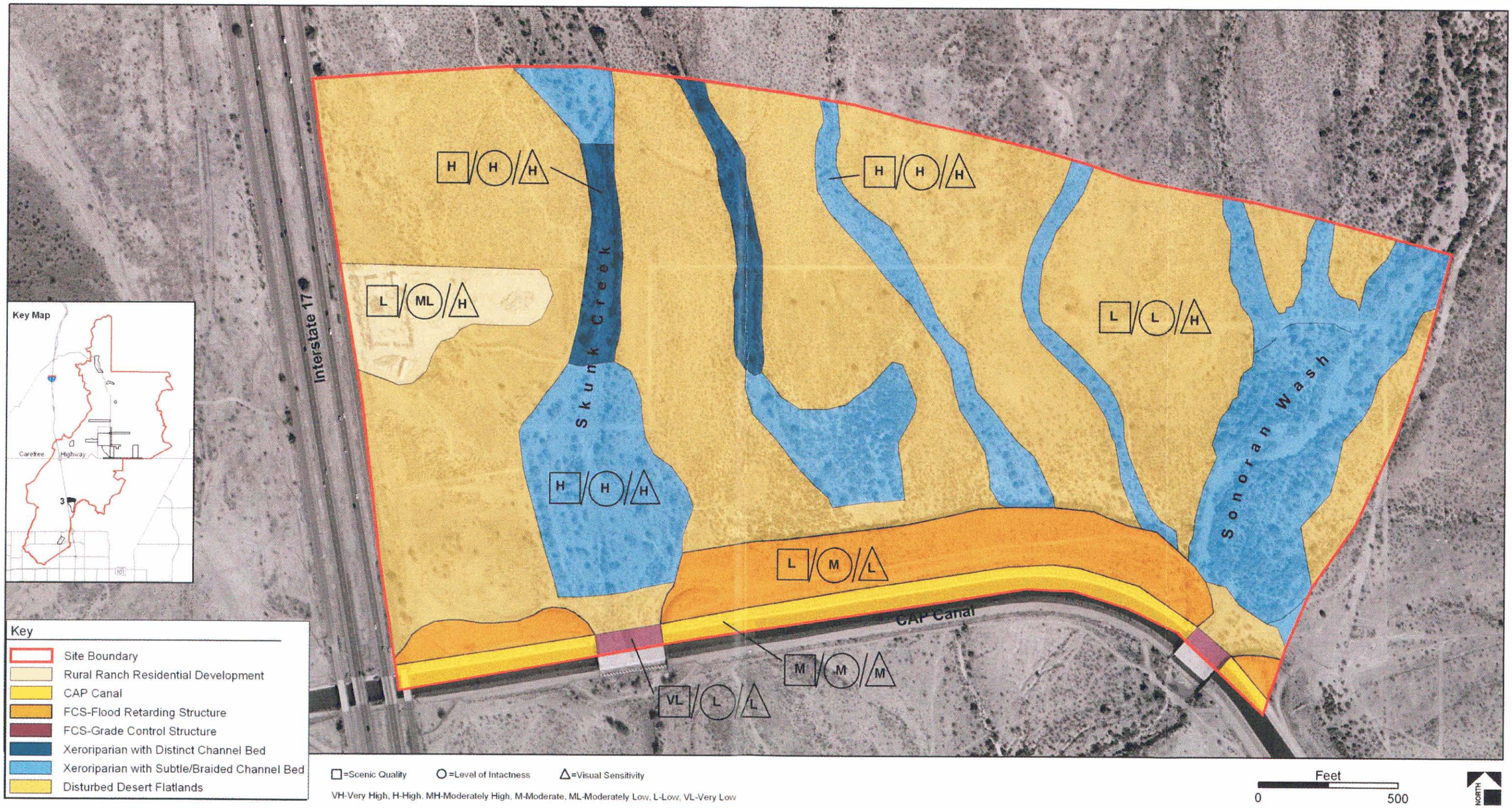


Figure 4.19 PNC3 Landscape Character Units

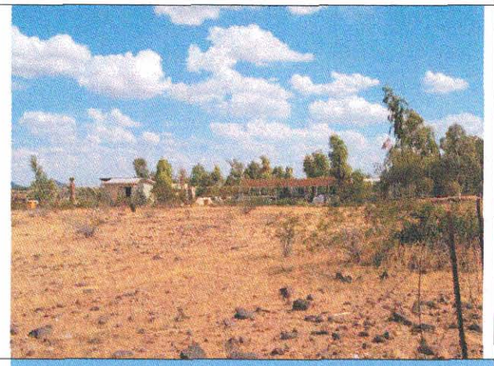
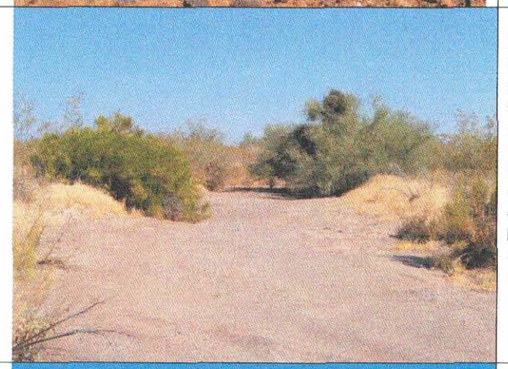
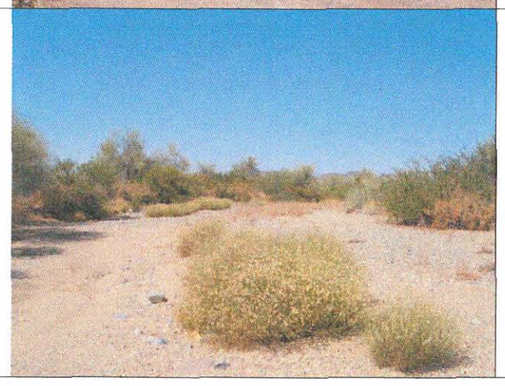
Phoenix North of CAP Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PNC3 – Rural Ranch Residential Development		Foreground • Single-family residence on large lot with ancillary buildings such as storage sheds and barn structures • Vegetation consisting of both native and exotic species • Chain link and barbed wire fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence Background • Not visible	Distinctiveness • Residence consists of one-story structure of a light-colored masonry block construction on local access road with no shoulders or curb and gutter • Sidewalks are not present • Vegetation does not create striking pattern but function is to visually obscure residence from I-17 • Terrain is flat Level of Intactness • Buildings create inconsistent and random pattern • Moderate level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting is moderately low Level of Scenic Quality: Moderately low	High
PNC3 – Xeroriparian with Distinct Channel Bed		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible such as Union Hills to the east Background • Not visible	Distinctiveness • Washes within this unit exhibit typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Drainages with their associated xeroriparian vegetation create a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
PNC3 – Xeroriparian with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominant feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible such as Union Hills to the east Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High

Table 4.4. PNC3 Landscape Character Units

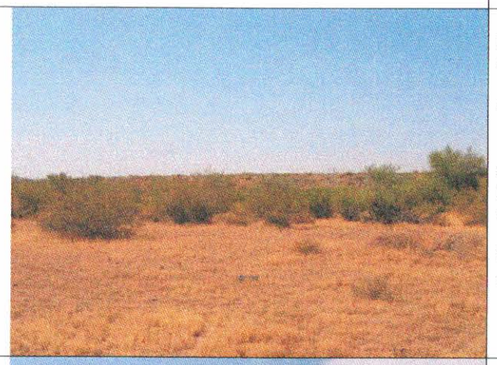
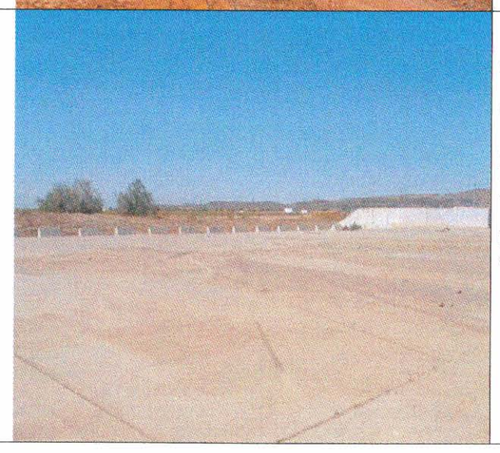
Phoenix North of CAP Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PNC3 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured creosote bush dominates vegetation with scattered mesquite, paloverde, and acacia trees also present • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • No notable features visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
PNC3 – Flood Control Structure – Flood Retarding Structure		Foreground • Earthened flood retarding structure visually contrasts in terms of line and form with setting • Reinforces linear form of the CAP Canal • Presence of vegetation on the embankment is compatible with setting • Top of structure provides unobstructed views to surrounding landscape Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • Distant views to Bradshaw and New River Mountains (north) and North Mountains (south)	Distinctiveness • Earthen flood retarding structure creates a distinct form and pattern because of its height and regular/uniform slope form in the landscape • Plant material on slope face is similar to adjacent vegetation • Structure artificially creates changes in relatively flat terrain Level of Intactness • Vegetation reduces the visual encroachment of the structure with setting • Earthened flood retarding structure does not conform to the setting because of the linear uniformity of the embankment • Moderate level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form and line in the landscape • Earthened flood retarding structure spatially dominates the setting Level of Scenic Quality: Low	Low
PNC3 – Flood Control Structure – Grade-control Structure		Foreground • Concrete grade-control structure and energy dissipaters channel dominate landscape and visually contrast in terms of line, form, and color with setting • Grade-control structure has modified the physical characteristics of natural drainages and the drainages do not resemble natural washes • Top of structure provides unobstructed views to surrounding landscape Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • No notable features visible	Distinctiveness • Concrete grade-control structure and associated features create distinct forms and patterns because of their mass, rectangular form, color, and spatial dominance in the landscape • Flood control features artificially lower the terrain at Skunk Creek and Sonoran Wash Level of Intactness • Grade-control structure does not conform to the setting because of its color, form, and texture, and creates a substantial visual encroachment on the setting • Low level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form, color, line, and texture in the landscape • Grade-control structure spatially dominates the setting and is not visually compatible with the surroundings Level of Scenic Quality: Very low	Low

Table 4.4. PNC3 Landscape Character Units - Continued

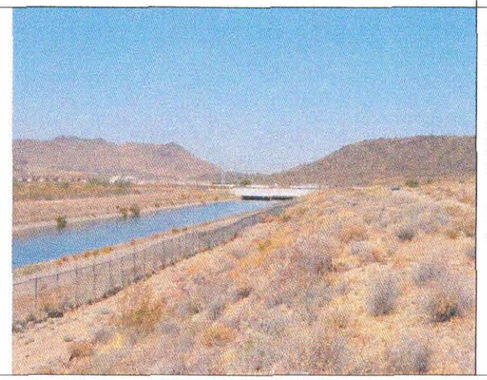
Phoenix North of CAP Subarea		Visual Character	Scenic Quality	Visual Sensitivity
PNC3 – CAP Canal		Foreground • CAP Canal creates a strong linear elevated form in a relatively flat area • Presence of water, fencing, service roads, and embankments are visible from the foreground of the canal • Unobstructed views to surrounding landscape from service roads Middleground • Unobstructed views of Union Hills (east), Middle Mountain (west), Pyramid Peak (west), and Deems Hills (southwest) Background • Distant views to North Mountains (south)	Distinctiveness • CAP Canal forms a striking visual pattern • Presence of permanent water is a scarce feature in the local area and region • Vegetation is limited to small shrubs and grasses on embankment slope face Level of Intactness • Long, uniform, linear man-made feature creates a notable form that detracts from the setting • Moderate level of intactness Unity • Man-made feature that creates a substantial contrast in terms of form and line in the landscape • Vegetation on embankment slope face helps reduce color contrast Level of Scenic Quality: Moderate	Moderate

Table 4.4. PNC3 Landscape Character Units - Continued

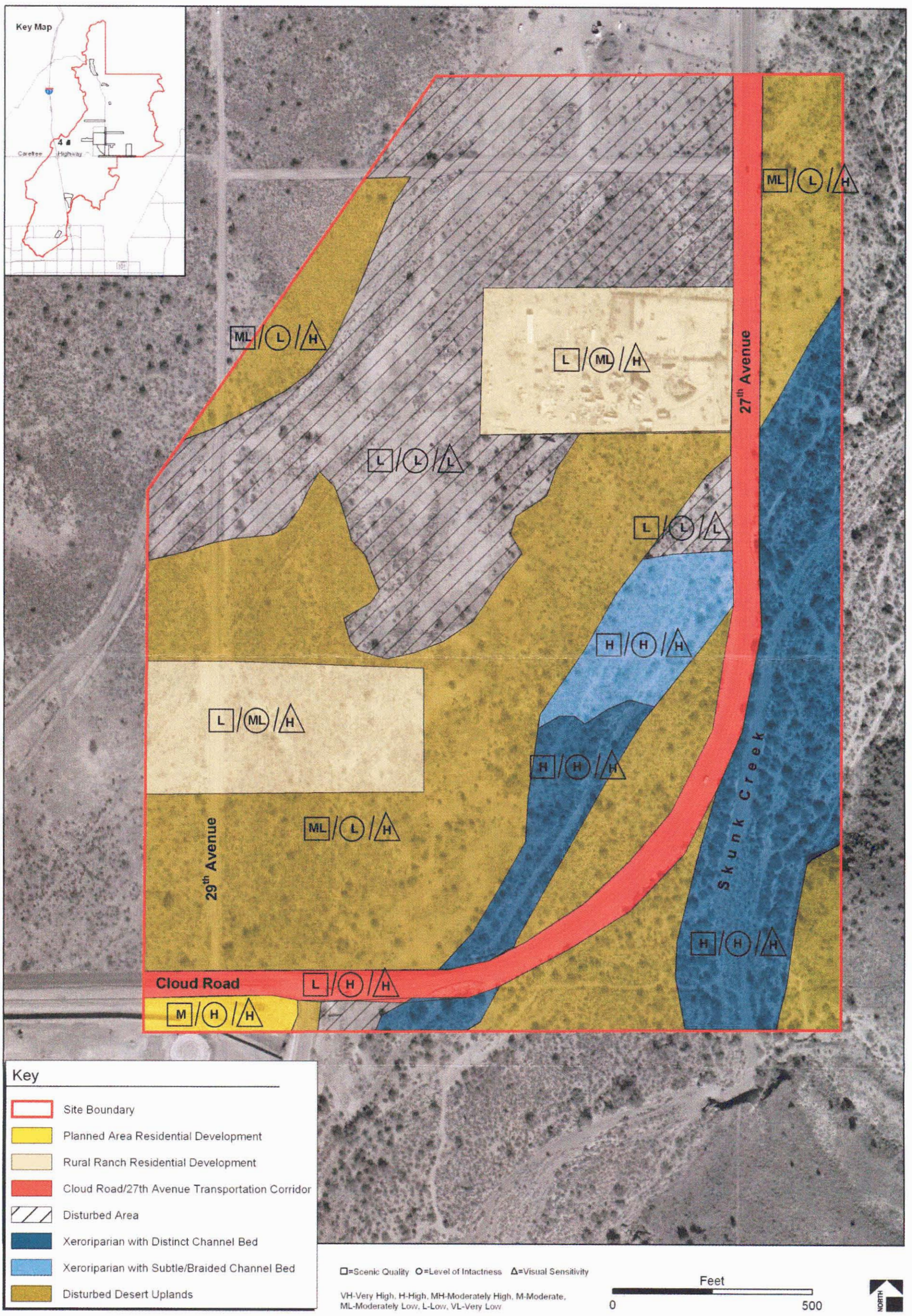


Figure 4.20 DH4 Landscape Character Units

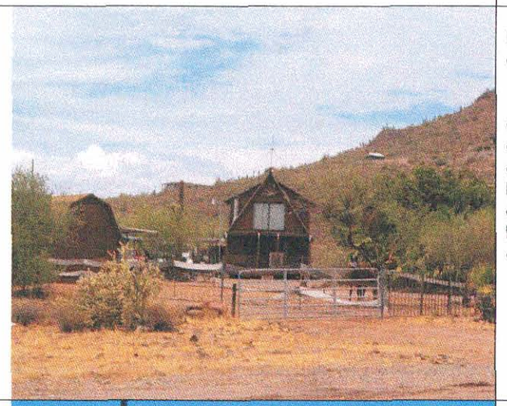
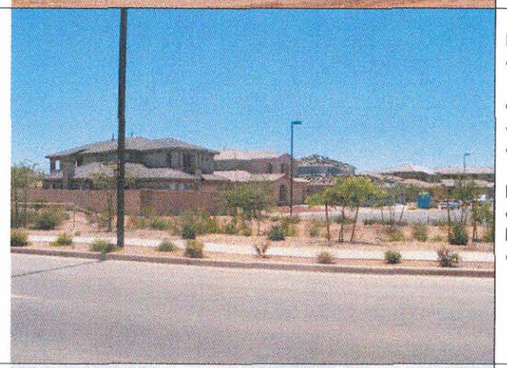
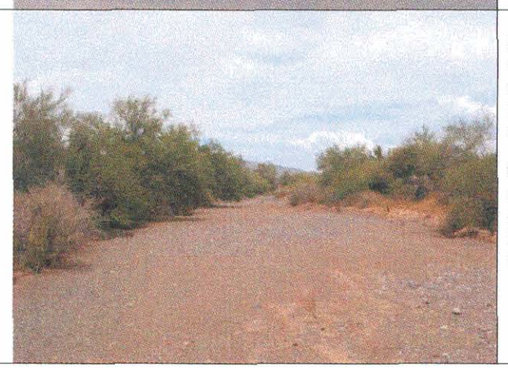
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH4 – Rural Ranch Residential Development		Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence Background • Not visible	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat to gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Moderately low	High
DH4 – Planned Area Residential Development		Foreground • Uniform-sized single family residential lots with repeated patterns of architectural styles, colors, and materials • Vegetation consisting of both native and exotic species • Buildings have same orientation to the street • Closeness of buildings and 6-foot high block walls around back and side yards limit views to foreground area except along street axis Middleground • Substantially obstructed Background • Not visible	Distinctiveness • Subdivision consists of both one- and two-story structures of muted colored stucco materials, masonry block walls, sidewalks attached to rolled curbs • Buildings are typical of planned area subdivision development • Streetscape enhances infrastructure • Terrain is flat • Infrastructure and buildings dominate setting Level of Intactness • Infrastructure and buildings create a visually consistent and uniform pattern • High level of intactness Unity • Harmonious architectural style • Void of visual encroachment from non-related man-made features Level of Scenic Quality: Moderate	High
DH4 – Xeroriparian with Distinct Channel Bed		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible Background • Not visible	Distinctiveness • Skunk Creek and smaller tributary within this unit exhibits typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Washes and their associated xeroriparian vegetation create a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High

Table 4.5. DH4 Landscape Character Units

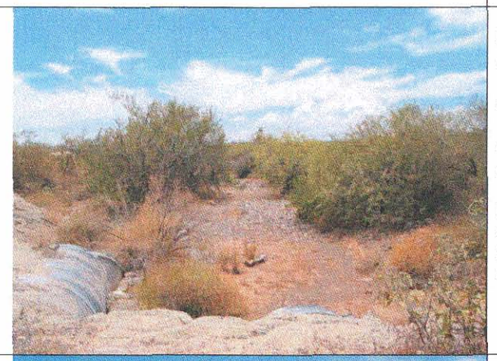
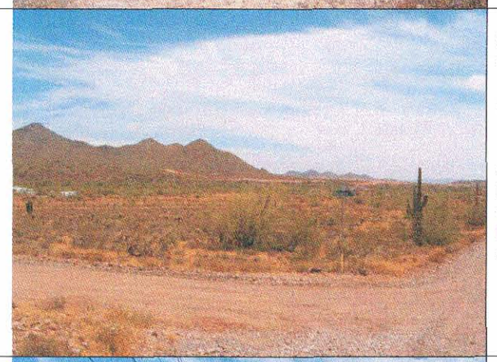
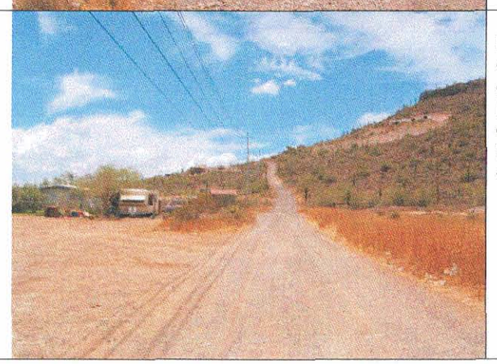
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH4 – Xeroriparian with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominant feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is a notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
DH4 – Disturbed Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cactus species including saguaro • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Rolling terrain creates a visually interesting landscape Level of Intactness • Presence of off-road vehicle use, notable areas void of vegetation, and dirt roads encroach on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Moderately low	High
DH4 – Disturbed Areas		Foreground • Cleared area dominates the unit • Bladed area does not blend with setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area creates a distinct pattern in the landscape • Cleared area has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrast in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.5. DH4 Landscape Character Units - Continued

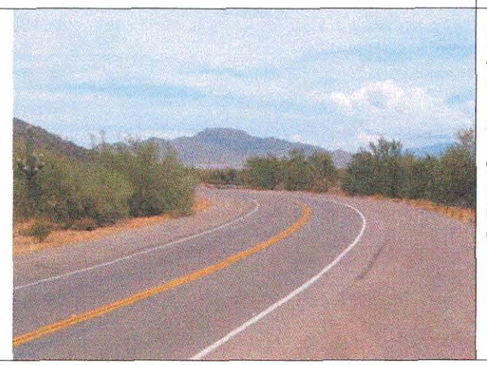
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH4 – Cloud Road/27th Avenue Transportation Corridor		Foreground • Two-lane roadway section with variable-width shoulders and guard rail • Vegetation limited to undeveloped areas adjacent to roadway and enhanced streetscape plant material limited to the planned area development • Roadway is at-grade and provides unobstructed views to areas of development and adjacent landforms Middleground • Views of unnamed landforms Background • No notable features visible	Distinctiveness • Notable expanse of asphalt creates strong linear form common to the area and region • Roadway features are not visually striking • No vegetation or streetscape enhancements are present except in planned area development • Roadway adheres to the flat terrain Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Roadway is compatible with the terrain of the landscape • Untreated guardrail detracts slightly from setting Level of Scenic Quality: Low	High

Table 4.5. DH4 Landscape Character Units - Continued

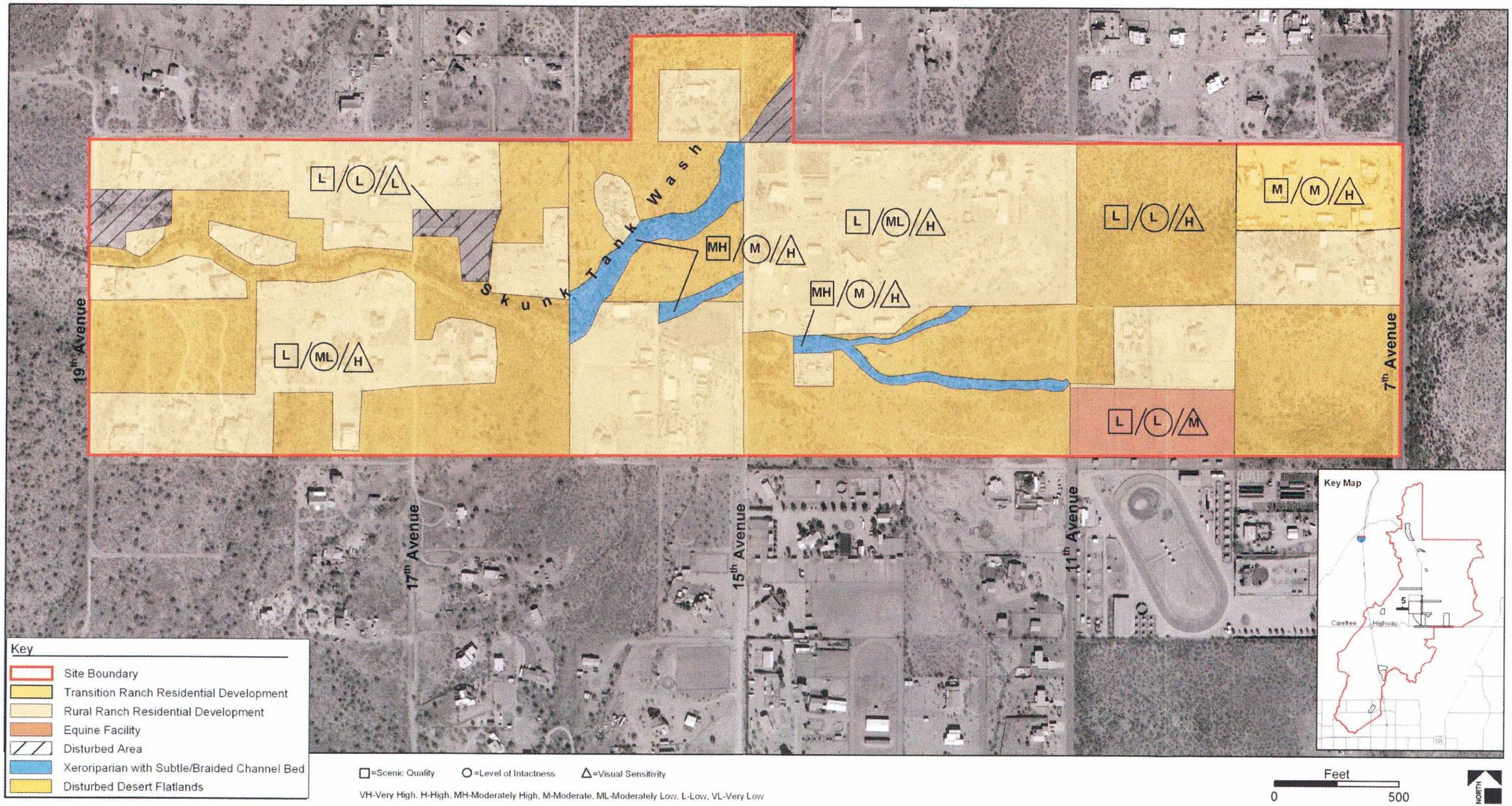


Figure 4.21 DH5 Landscape Character Units

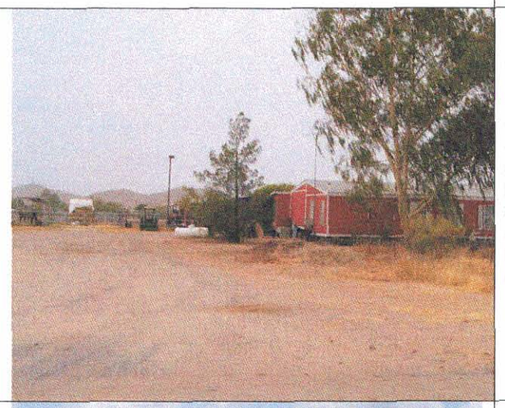
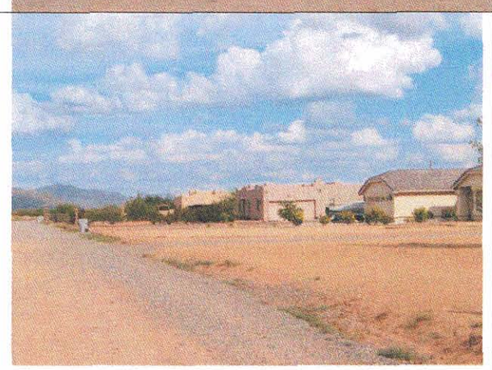
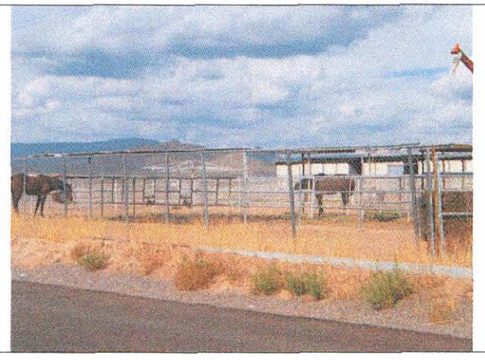
Desert Hills Subarea Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH5 – Rural Ranch Residential Development		Foreground • Single family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat to gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	High
DH5 – Transition Ranch Residential Development		Foreground • Single family residences with the same architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have similar orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains to the north and Black Mountain and Apache Peak to the east	Distinctiveness • Residences consist of both one- and two-story structures of the same colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat Level of Intactness • Infrastructure and buildings create consistent visual pattern • Moderate level of intactness Unity • Cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Moderate	High
DH5 – Equine Facility		Foreground • Large industrial style buildings and ancillary structures such as storage sheds, corrals, oval tracks, and barn structures • Minimal vegetation • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Unobstructed views to adjacent development and landforms Background • Bradshaw and New River Mountains to the north and Black Mountain and Apache Peak to the east	Distinctiveness • Buildings consist of both one- and two- story structures of a variety of colors, materials, and character • Vegetation does not create striking pattern • Terrain is flat Level of Intactness • Buildings create inconsistent and random pattern • Large expanses of unvegetated areas • Low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	Moderate

Table 4.6. DH5 Landscape Character Units

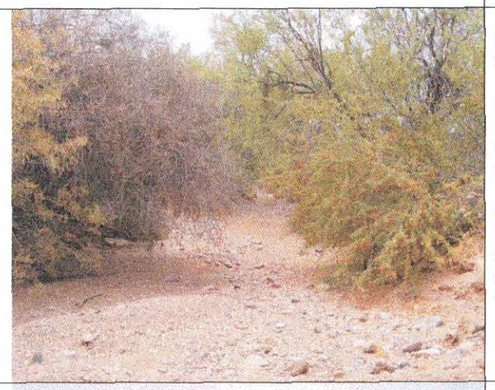
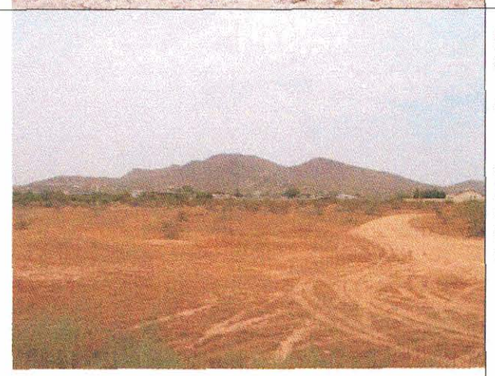
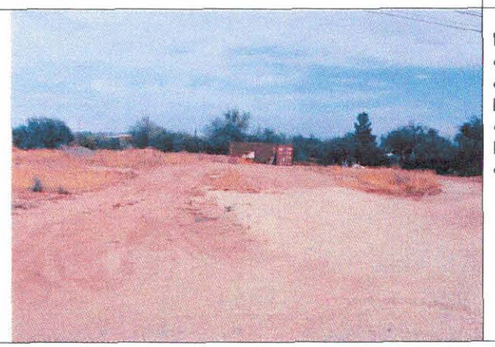
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH5 – Disjointed Xeroriparian Areas with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominant features in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks • Drainage areas commonly interrupted with dirt paths and roads Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel areas • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Relatively intact natural drainage interrupted by development and paths/roads • Moderate level of intactness Unity • Vegetation creates a notable visual pattern in the landscape • Paths, roads, and residential development visually and physically encroach upon integrity of natural drainages Level of Scenic Quality: Moderately high	High
DH5 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroach on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH5 – Disturbed Areas		Foreground • Cleared area dominates the unit • Bladed area does not blend with setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area creates a distinct pattern in the landscape • Cleared area has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrasting in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.6. DH5 Landscape Character Units - Continued

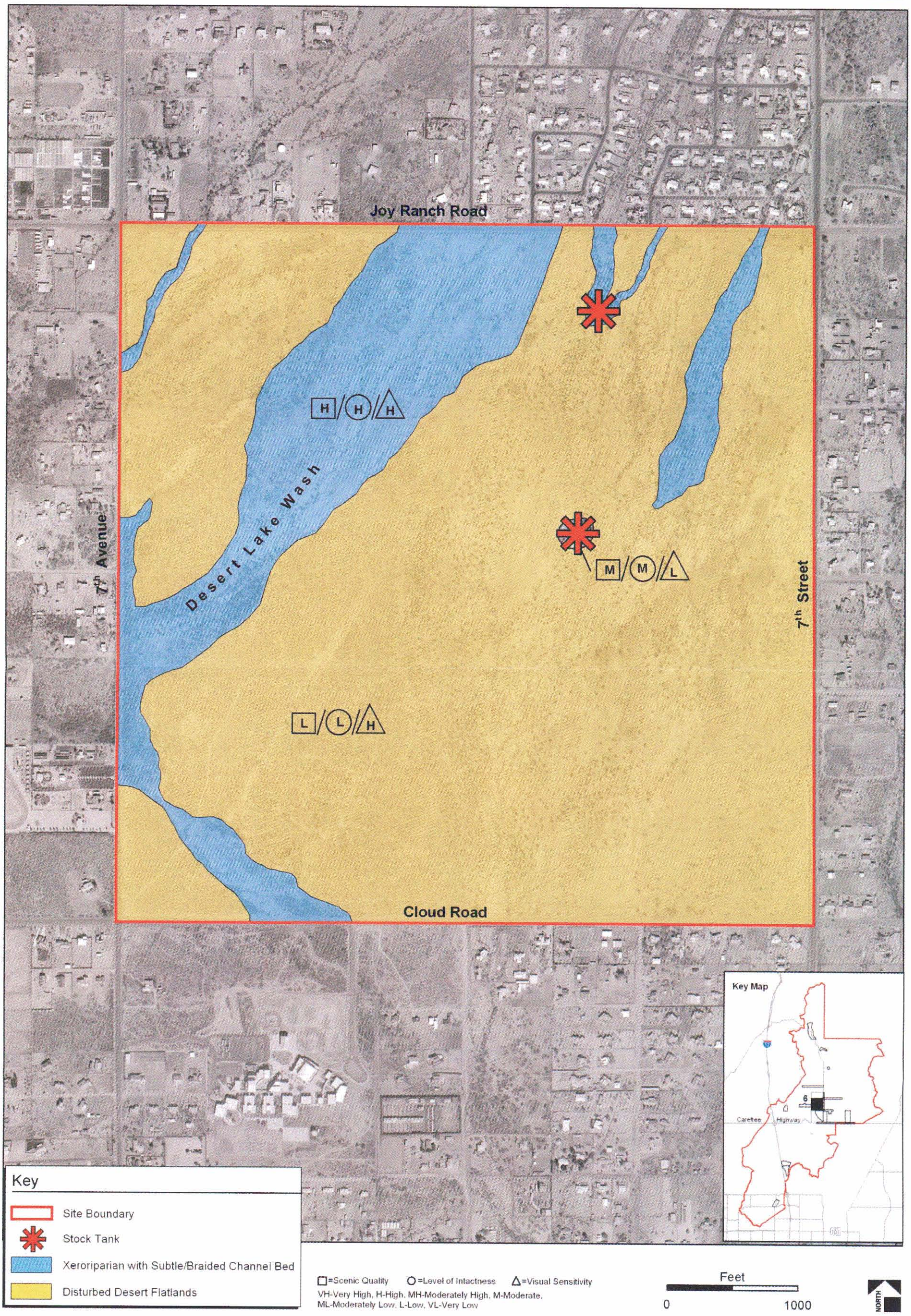


Figure 4.22 DH6 Landscape Character Units

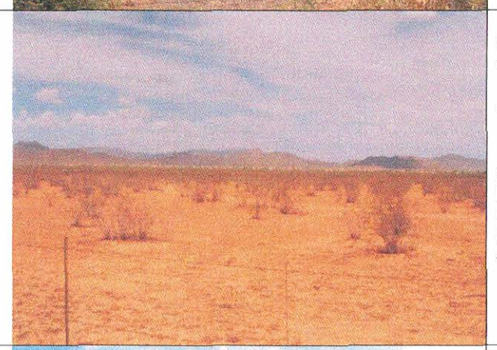
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH6 – Xeroriparian Areas with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominant features in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
DH6 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroach on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH6 – Stock Tank		Foreground • Shallow watering basins surrounded by mesquites • Basins resemble natural depressions Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area surrounded by a dense pocket of trees creates a distinct pattern in the landscape • Presence of intermittent water features adds visual interest to setting Level of Intactness • Cleared area for tank has modified the terrain • Associated vegetation helps tanks to blend in with setting • Moderate level of intactness Unity • Stock tank basin visually compatible, minimally contrasting in terms of form, line, and color Level of Scenic Quality: Moderate	Low

Table 4.7. DH6 Landscape Character Units

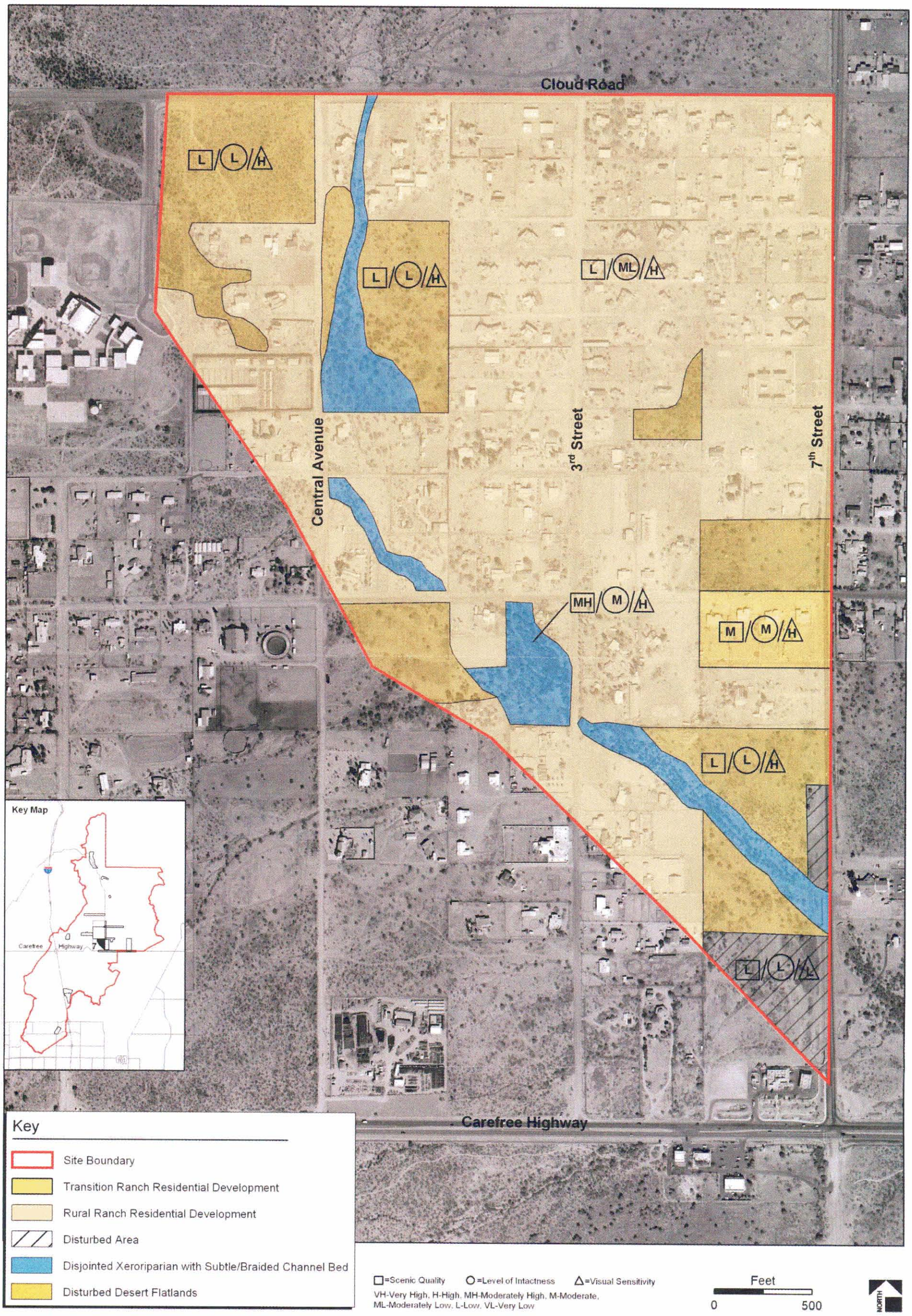


Figure 4.23 DH7 Landscape Character Units

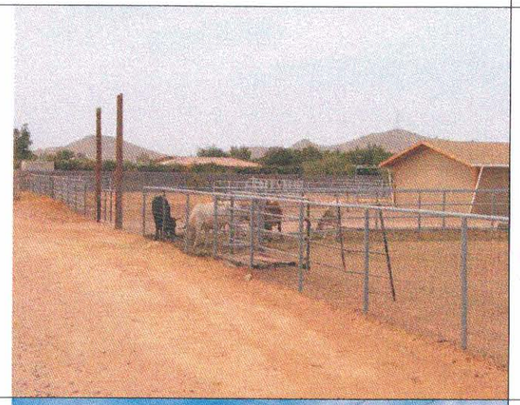
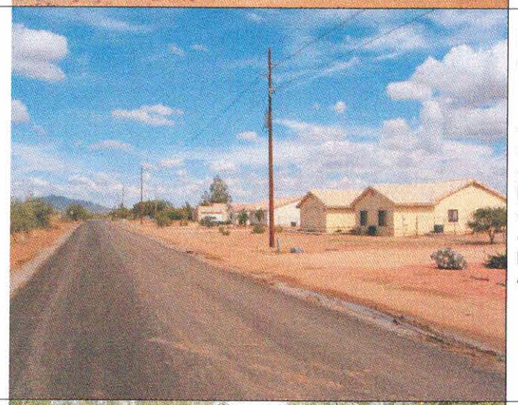
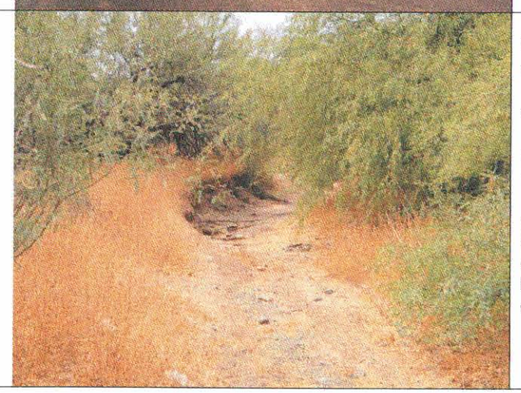
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH7 – Rural Ranch Residential Development		Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat to gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	High
DH7 – Transition Ranch Residential Development		Foreground • Single family residences with the same architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have similar orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of the same colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat Level of Intactness • Infrastructure and buildings create consistent visual pattern • Moderate level of intactness Unity • Cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Moderate	High
DH7 – Disjointed Xeroriparian Areas with Subtle/ Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominate feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks • Drainage areas commonly interrupted with dirt paths and roads Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Relatively intact natural drainage interrupted by development and paths/roads • Moderate level of intactness Unity • Vegetation creates a notable visual pattern in the landscape • Paths, roads, and residential development visually and physically encroach upon integrity of natural drainages Level of Scenic Quality: Moderately high	High

Table 4.8. Landscape Character Units: Desert Hills Subarea DH7

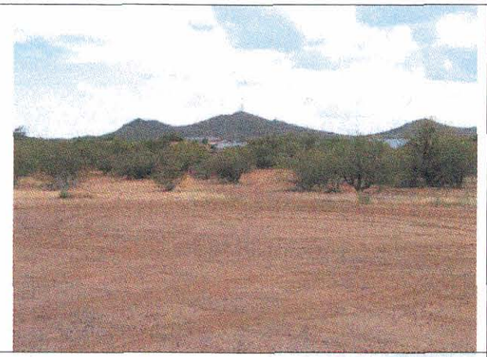
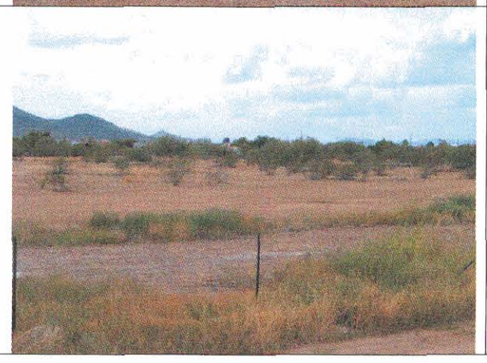
Desert Hills Subarea	Visual Character	Scenic Quality	Visual Sensitivity
DH7 – Disturbed Desert Flatlands 	Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, and other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH7 – Disturbed Area 	Foreground • Cleared area dominates the setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Cleared area creates a distinct pattern in the landscape and has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrasts in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.8. DH7 Landscape Character Units - Continued

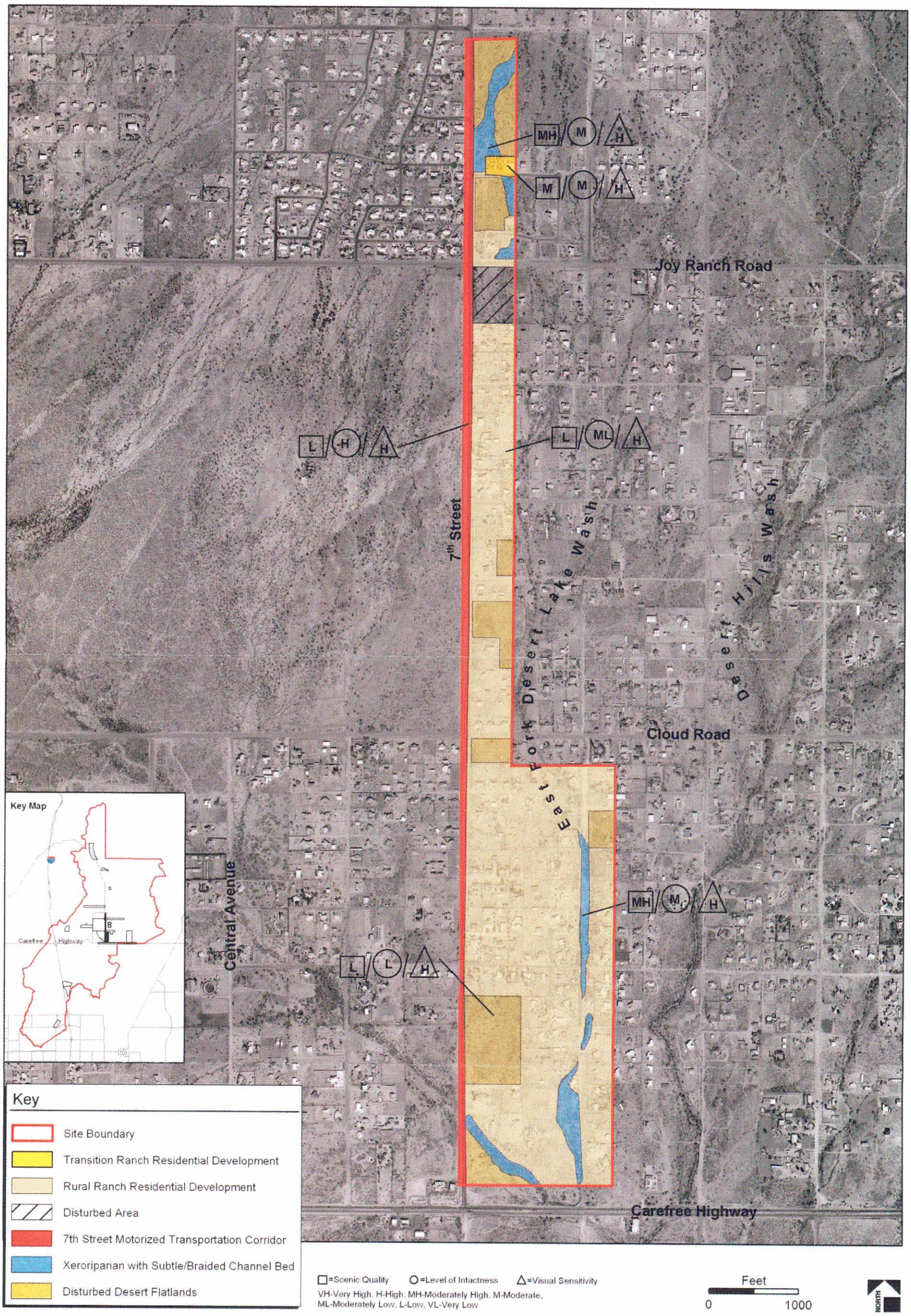


Figure 4.24 DH8 Landscape Character Units

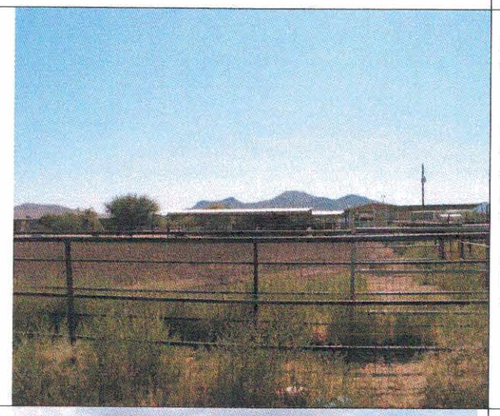
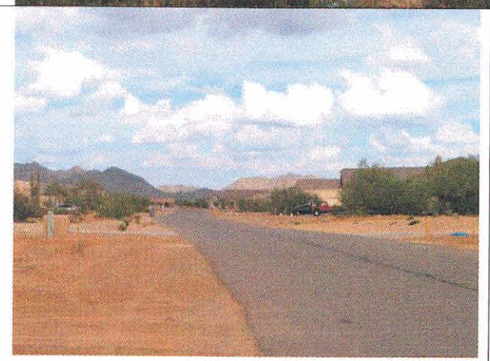
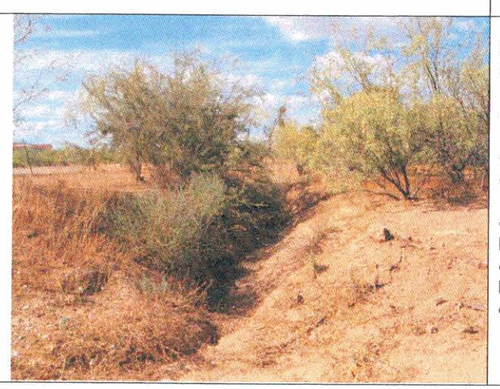
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH8 – Rural Ranch Residential Development		Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat to gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	High
DH8 – Transition Ranch Residential Development		Foreground • Single-family residences with the same architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have similar orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residences • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of the same colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat Level of Intactness • Infrastructure and buildings create consistent visual pattern • Moderate level of intactness Unity • Cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Moderate	High
DH8 – Disjointed Xeroriparian Areas with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominant feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks • Drainage areas commonly interrupted with dirt paths and roads Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Relatively intact natural drainage interrupted by development and paths/roads • Moderate level of intactness Unity • Vegetation creates a notable visual pattern in the landscape • Paths, roads, and residential development visually and physically encroach upon integrity of natural drainages Level of Scenic Quality: Moderately high	High

Table 4.9. DH8 Landscape Character Units

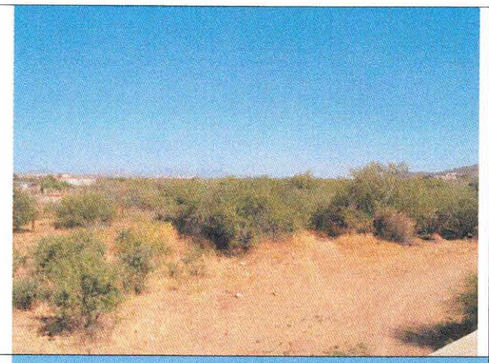
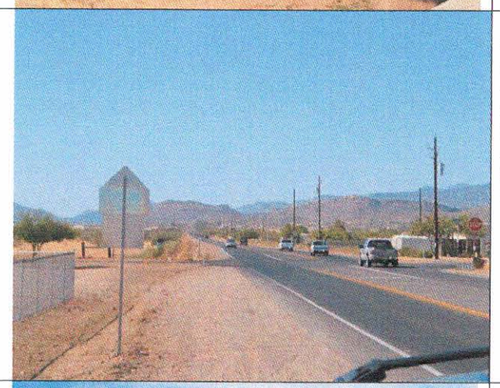
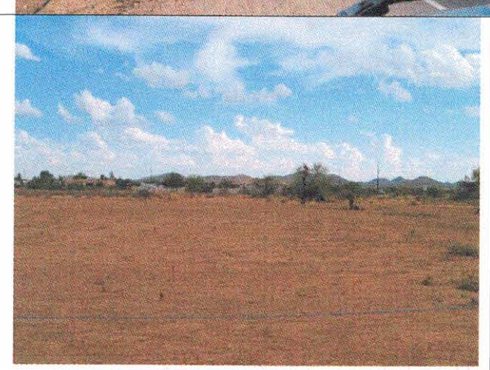
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH8 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominates vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH8 – 7th Street Motorized Transportation Corridor		Foreground • Two-lane roadway section with variable-width shoulders • Vegetation limited to undeveloped areas adjacent to roadway • Roadway is at-grade and provides unobstructed views to adjacent landforms Middleground • Views of unnamed landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Notable expanse of asphalt create strong linear form common to the area and region • Roadway features are not visually striking • No vegetation or streetscape enhancements are present • Roadway adheres to the flat terrain Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Roadway is compatible with the terrain of the landscape Level of Scenic Quality: Low	High
DH8 – Disturbed Area		Foreground • Cleared area dominates the setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Cleared area creates a distinct pattern in the landscape and has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrasts in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.9. DH8 Landscape Character Units - Continued

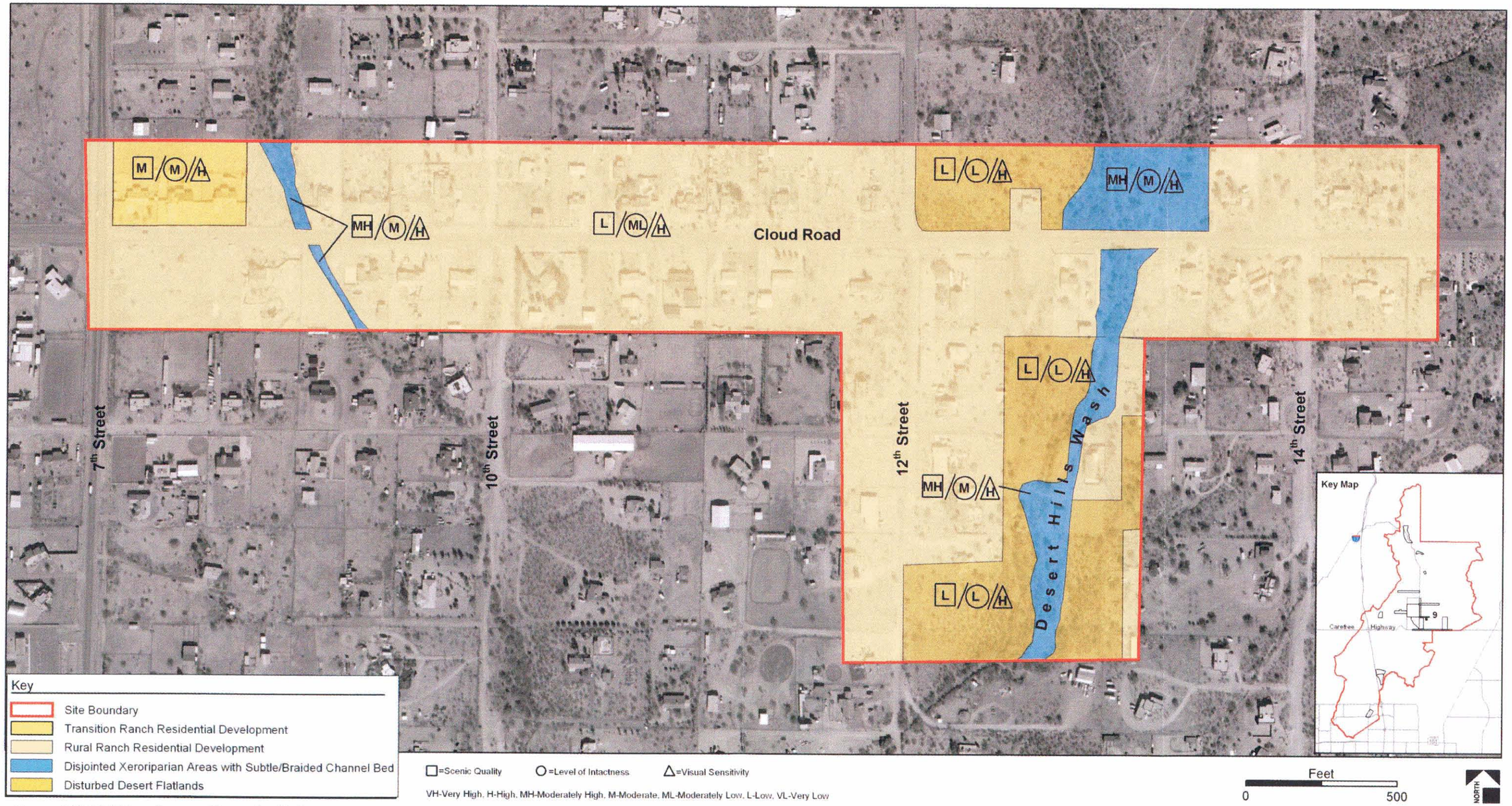


Figure 4.25 DH9 Landscape Character Units

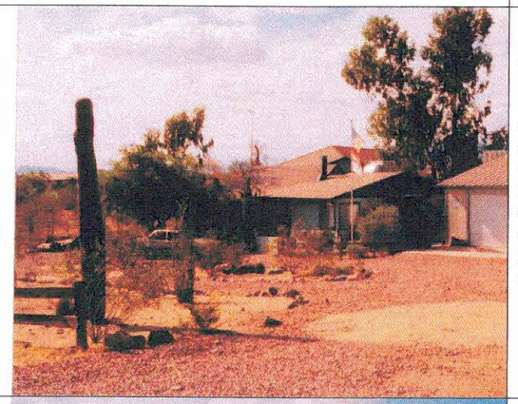
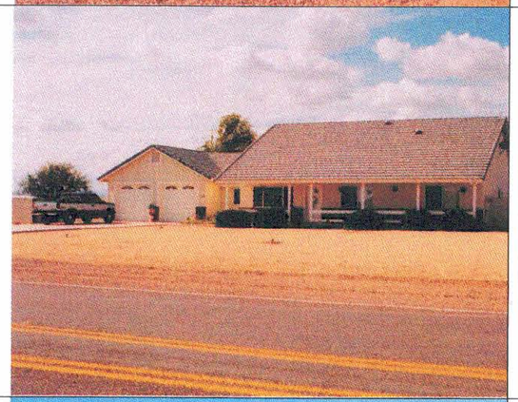
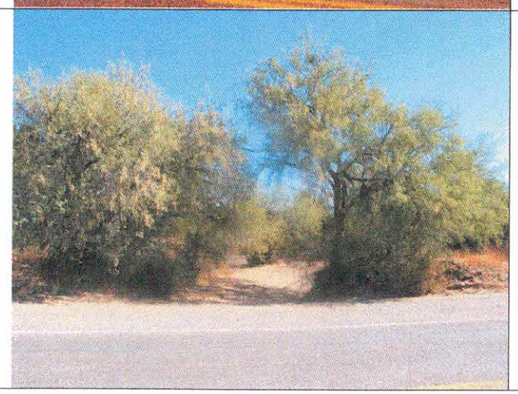
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH9 – Rural Ranch Residential Development		Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat to gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	High
DH9 – Transition Ranch Residential Development		Foreground • Single family residences with the same architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have similar orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residences • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of the same colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat Level of Intactness • Infrastructure and buildings create consistent visual pattern • Moderate level of intactness Unity • Cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Moderate	High
DH9 – Disjointed Xeroriparian Areas with Subtle/ Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominant feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks • Drainage areas commonly interrupted with dirt paths and roads Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Relatively intact natural drainage interrupted by development and paths/roads • Moderate level of intactness Unity • Vegetation creates a notable visual pattern in the landscape • Paths, roads, and residential development visually and physically encroach upon integrity of natural drainages Level of Scenic Quality: Moderately high	High

Table 4.10. DH9 Landscape Character Units

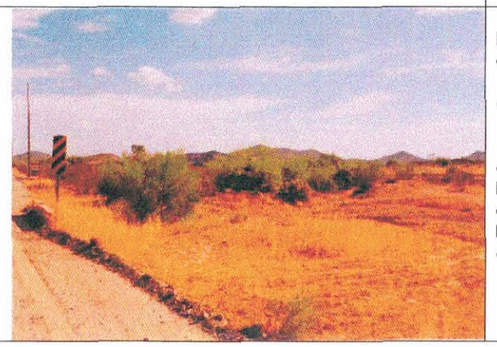
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH9 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High

Table 4.10. DH9 Landscape Character Units - Continued

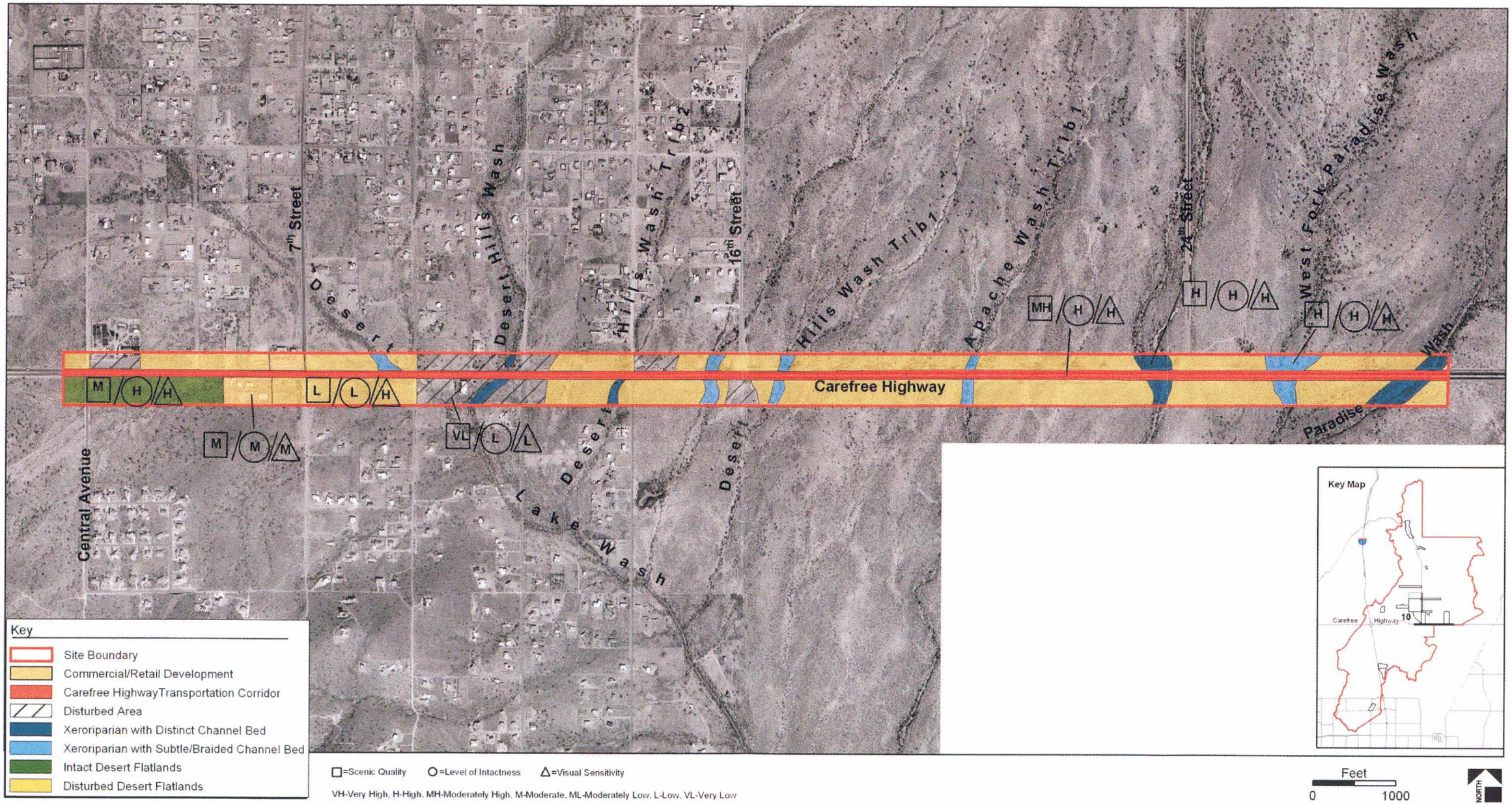


Figure 4.26 DH10 Landscape Character Units

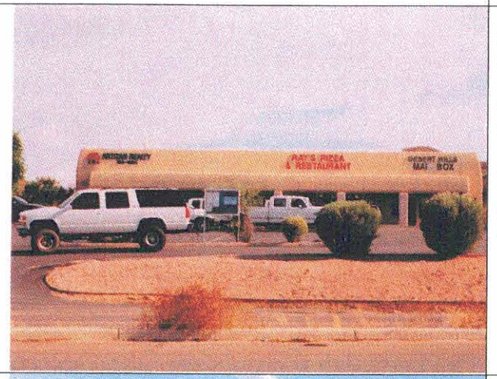
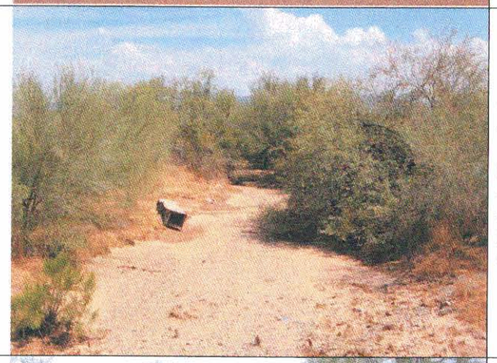
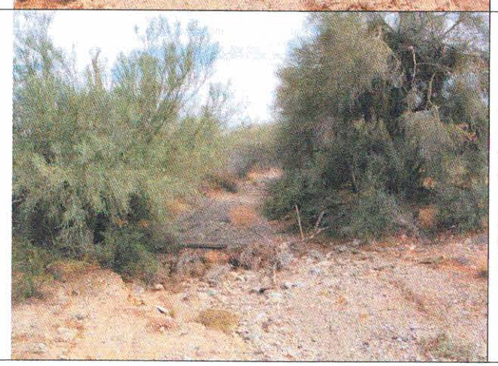
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH10 – Commercial/ Retail Development		Foreground • Single-story block buildings of a variety of material and color with parking areas and signs visible from street • Buildings have same orientation to the street • Vegetation consists of both native and exotic species and limited to front of buildings Middleground • Building size and mass partially obscure views to middleground area Background • No notable features visible	Distinctiveness • Commercial and retail area consists of one-story structures of a variety of materials, painted most commonly in earth tones • Buildings are typical of strip commercial development • Vegetation is minimal and does not create striking pattern • Terrain is flat • Infrastructure and buildings dominate setting Level of Intactness • Buildings and associated signs have a moderate degree of visual cohesion and harmony with the setting • Moderate level of intactness Unity • Varied architectural style • Void of visual encroachment from non-related man-made features Level of Scenic Quality: Moderate	Moderate
DH10 – Xeroriparian with Distinct Channel Bed		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible Background • Not visible	Distinctiveness • Washes within this unit exhibit typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Washes and their associated xeroriparian vegetation create a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
DH10 – Xeroriparian with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominate feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High

Table 4.11. DH10 Landscape Character Units

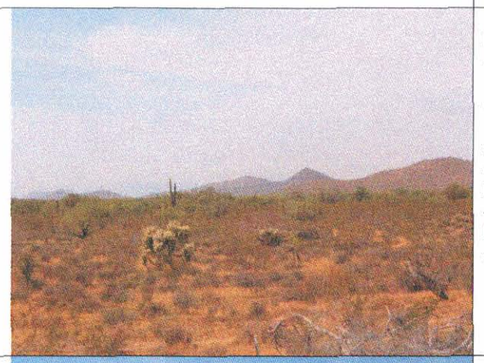
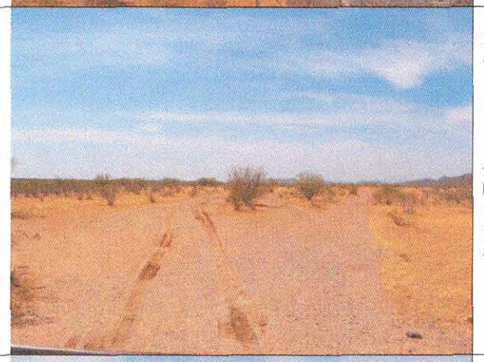
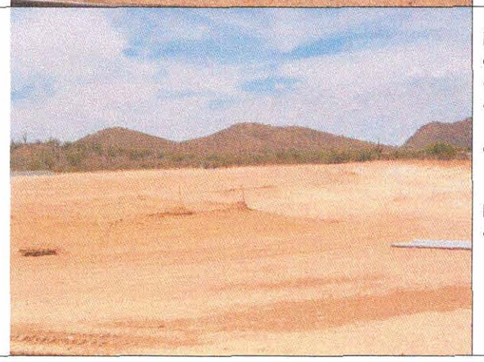
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH10 – Intact Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominates vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern is relatively free of dirt roads, evidence of off-road vehicle use, grazing, or other activities that eliminate vegetation • Drainages are delineated by dense areas of small trees • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Minimal evidence of visual encroachment • High level of intactness Unity • Vegetation pattern creates a cohesive landscape but with minimal visual interest Level of Scenic Quality: Moderate	High
DH10 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroach on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH10 – Disturbed Areas		Foreground • Expansive bladed and graded area dominates the unit • Configuration of cleared area does not blend with setting • Terrain is being graded for future development Middleground • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east) Background • No notable features visible	Distinctiveness • Stark cleared area creates a distinct pattern in the landscape • Cleared area has been graded to meet development needs and has notably changed the natural terrain • All vegetation has been removed Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Cleared area is not visually compatible, severely contrast in terms of scale, form, line, and color, and spatially dominates the setting. Level of Scenic Quality: Very low	Low

Table 4.11. DH10 Landscape Character Units - Continued

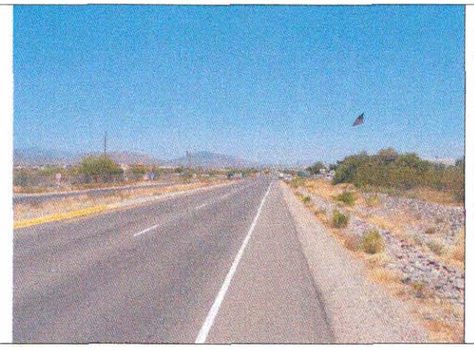
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH10 – Carefree Highway Transportation Corridor		Foreground • Four-lane divided roadway section with variable-width shoulders and guard rail • Vegetation limited to roadside and at-grade medians • Roadway is at-grade and provides unobstructed views to areas of development and adjacent landforms • Designated Scenic Road by local agencies Middleground • Views of unnamed landforms Background • No notable features visible	Distinctiveness • Notable expanse of asphalt creates strong linear form common to the area and region • Roadway features are not visually striking • At-grade median breaks up expanse of asphalt • Roadway adheres to the flat terrain Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Roadway is compatible with the terrain of the landscape Level of Scenic Quality: Moderately high	High

Table 4.11. DH10 Landscape Character Units - Continued

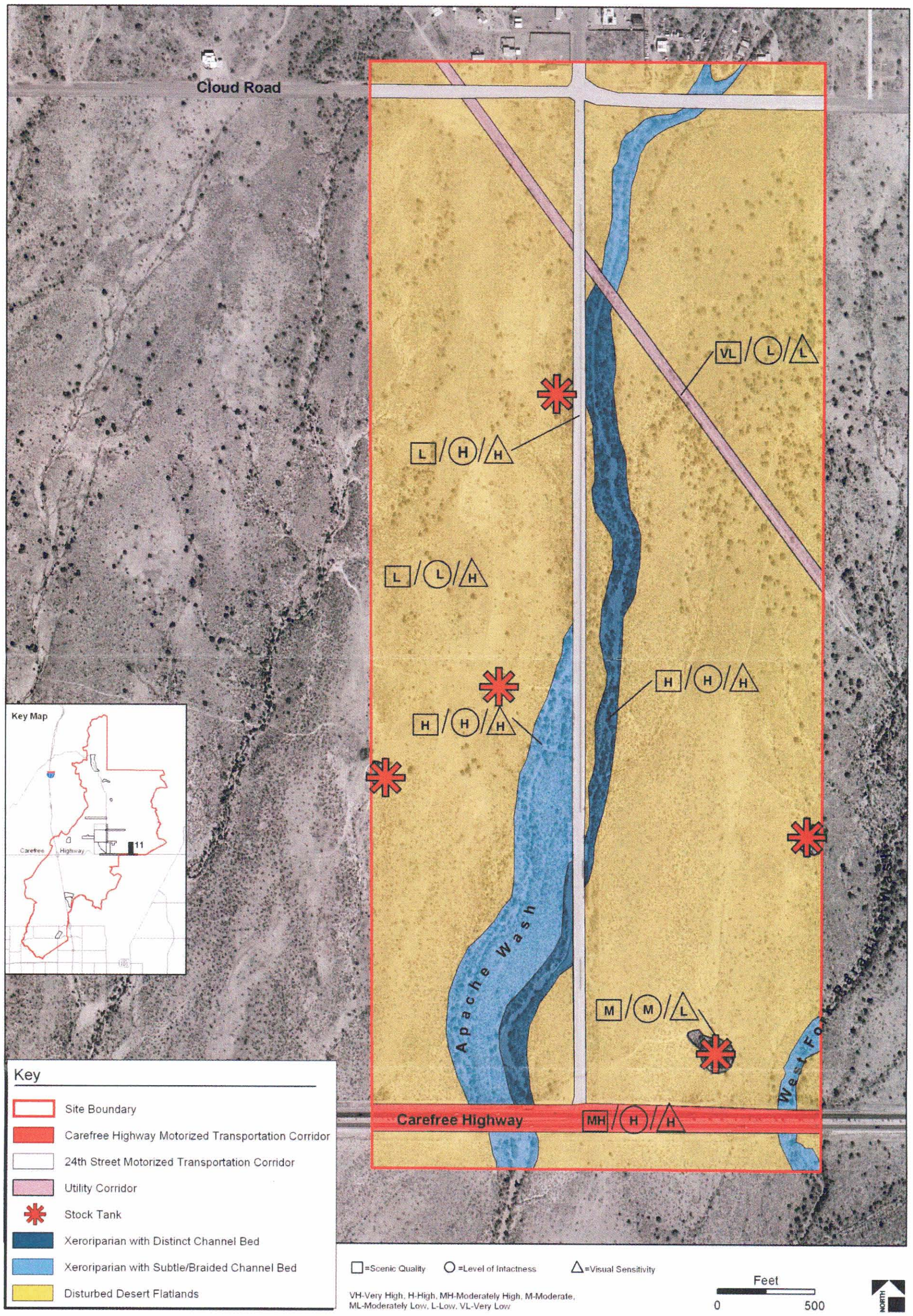


Figure 4.27 DH11 Landscape Character Units

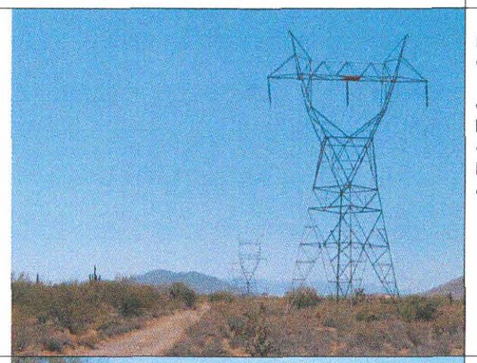
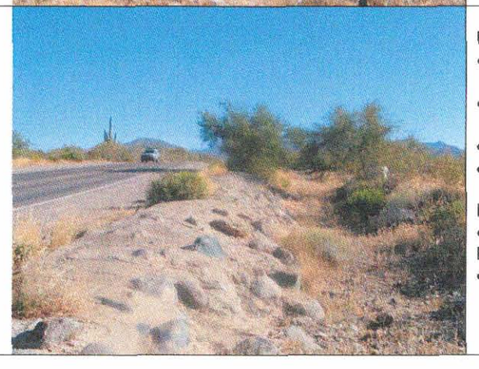
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH11 – Utility Corridor		Foreground • Towers for overhead transmission lines are open wire-frame gray structures, evenly spaced within the unit • Area beneath lines has minimal vegetation Middleground • Unobstructed views to areas of development and adjacent landforms Background • No notable features visible	Distinctiveness • Wire-frame towers combine to create a substantial vertical form in the landscape and dominate the skyline character of the unit • Cleared areas around and beneath lines and towers add to the dominance of the utility features Level of Intactness • Utility features do not conform to the scale and form of the landscape • Low level of intactness Unity • Transmission towers are not visually compatible with the setting • Utility features contrast in scale, color, and form, and spatially dominate the landscape Level of Scenic Quality: Very Low	Low
DH11 – Xeroriparian with Distinct Channel Bed		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible Background • Not visible	Distinctiveness • Apache Wash and smaller tributary within this unit exhibit typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Washes and their associated xeroriparian vegetation create a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
DH11 – Xeroriparian with Subtle/Braided Channel Bed		Foreground • Braided drainage channel delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominate feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel areas • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High

Table 4.12. DH11 Landscape Character Units

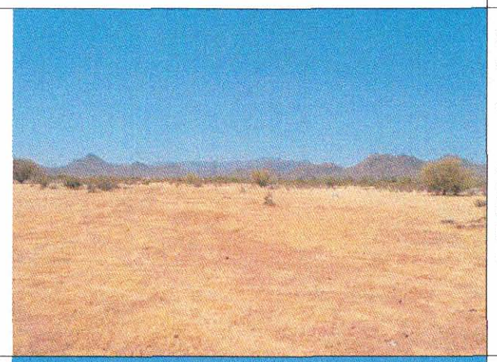
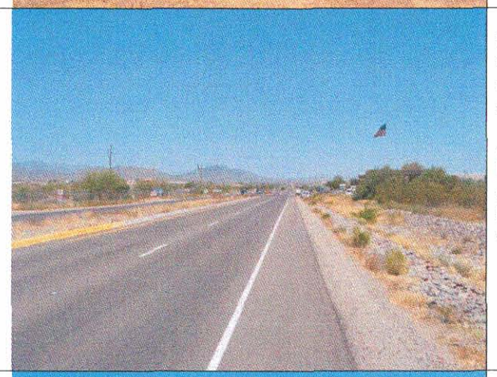
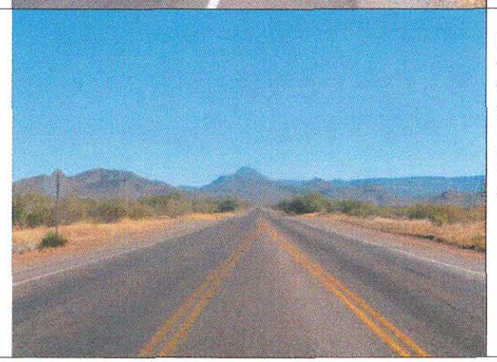
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH11 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH11 – Carefree Highway Transportation Corridor		Foreground • Four-lane divided roadway section with variable-width shoulders • Vegetation limited to roadside and at-grade medians • Roadway is at-grade and provides unobstructed views to areas of development and adjacent landforms • Designated Scenic Road by local agencies Middleground • Views of unnamed landforms Background • No notable features visible	Distinctiveness • Notable expanse of asphalt creates strong linear form common to the area and region • Roadway features are not visually striking • At-grade median breaks up expanse of asphalt • Roadway adheres to the flat terrain Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Roadway is compatible with the terrain of the landscape Level of Scenic Quality: Moderately high	High
DH11 – 24th Street Transportation Corridor		Foreground • Two-lane roadway section with variable width shoulders and guard rail • Vegetation limited to undeveloped areas adjacent to roadway • Roadway is at-grade and provides unobstructed views to adjacent landforms Middleground • Views of unnamed landforms Background • No notable features visible	Distinctiveness • Notable expanse of asphalt creates strong linear form common to the area and region • Roadway features are not visually striking • No vegetation or streetscape enhancements are present • Roadway adheres to the flat terrain Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Roadway is compatible with the terrain of the landscape Level of Scenic Quality: Low	High

Table 4.12. DH11 Landscape Character Units - Continued

Table X. Landscape Character Units - Desert Hills Subarea DH11 - Continued

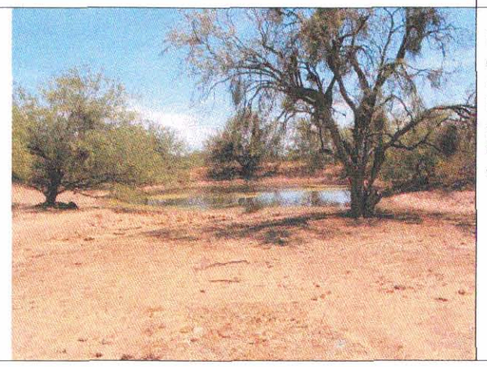
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH11 – Stock Tank		Foreground • Shallow watering basins surrounded by mesquites • Basins resemble natural depressions Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area surrounded by a dense pocket of trees creates a distinct pattern in the landscape • Presence of intermittent water features adds visual interest to setting Level of Intactness • Cleared area for tank has modified the terrain • Associated vegetation helps tanks to blend in with setting • Moderate level of intactness Unity • Stock tank basin visually compatible, minimal contrast in terms of form, line, and color Level of Scenic Quality: Moderate	Low

Table 4.12. DH11 Landscape Character Units - Continued

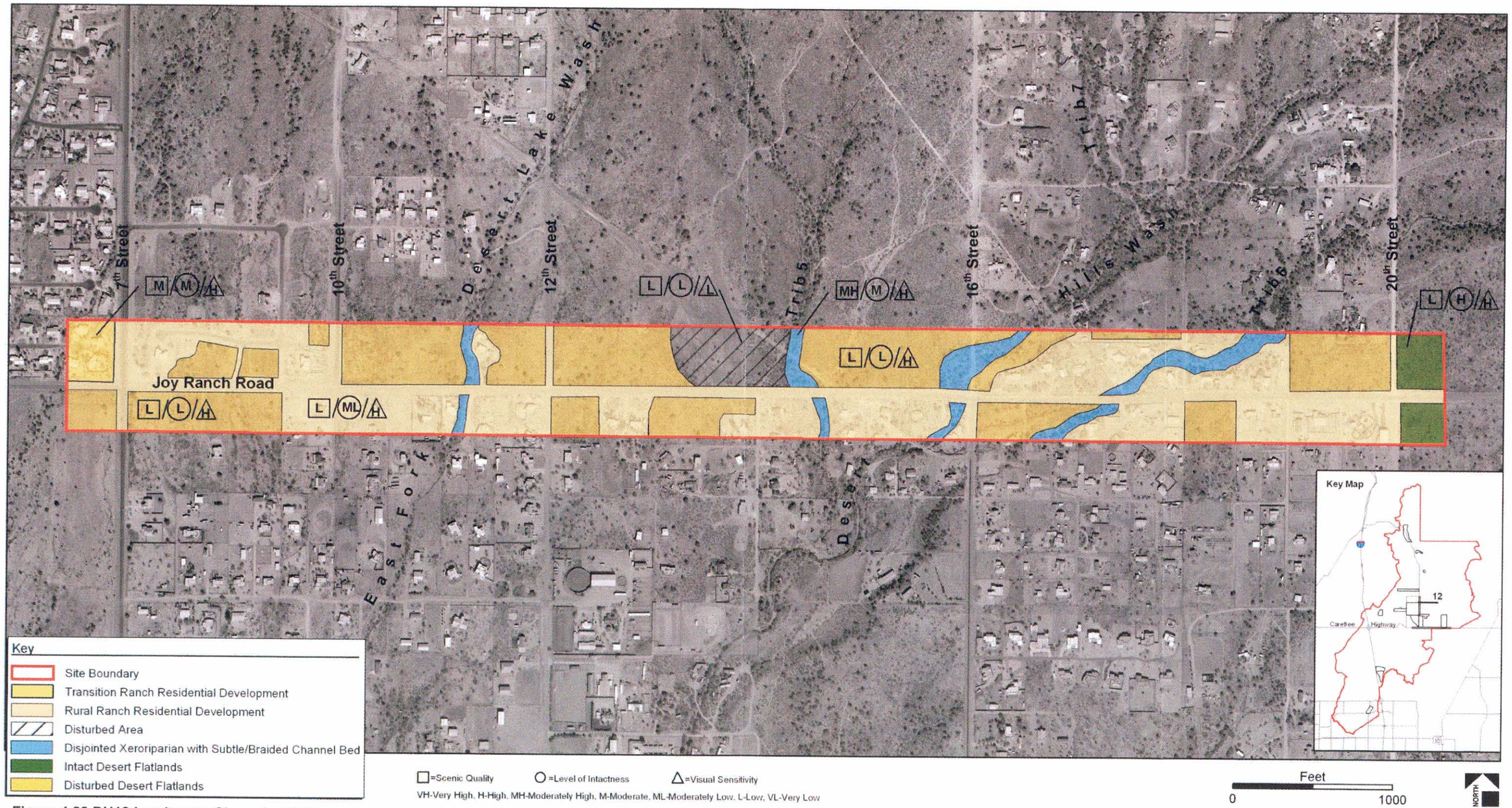


Figure 4.28 DH12 Landscape Character Units

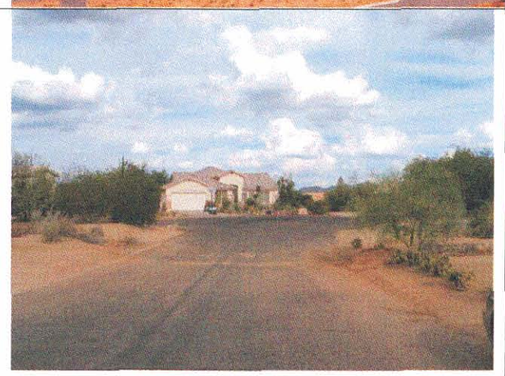
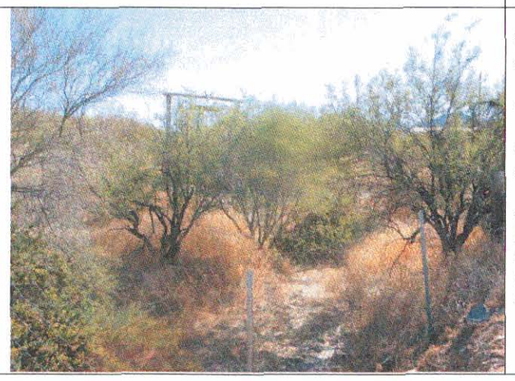
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH12 – Rural Ranch Residential Development		Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat to gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	High
DH12 – Transition Ranch Residential Development		Foreground • Single family residences with the same architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have similar orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of the same colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat Level of Intactness • Infrastructure and buildings create consistent visual pattern • Moderate level of intactness Unity • Cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Moderate	High
DH12 – Disjointed Xeroriparian with Subtle/ Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominant feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks • Drainage areas commonly interrupted with dirt paths and roads Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Relatively intact natural drainage interrupted by development and paths/roads • Moderate level of intactness Unity • Vegetation creates a notable visual pattern in the landscape • Paths, roads, and residential development visually and physically encroach upon integrity of natural drainages Level of Scenic Quality: Moderately high	High

Table 4.13. DH12 Landscape Character Units

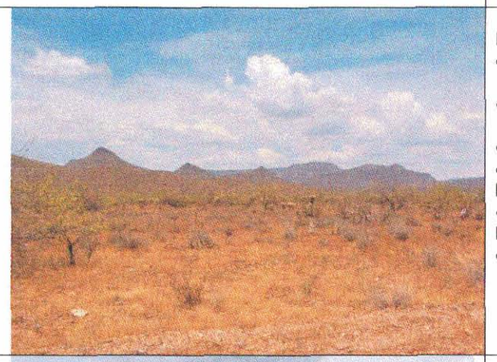
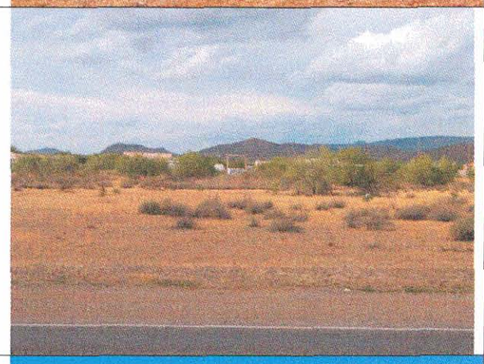
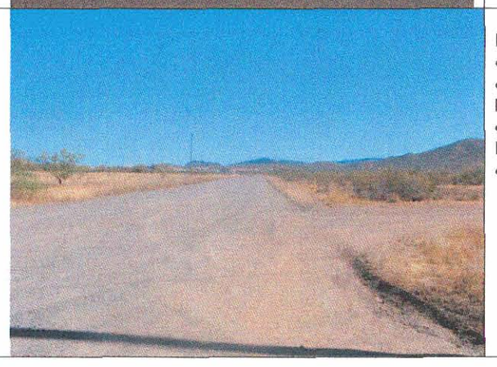
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH12– Intact Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern is relatively free of dirt roads, evidence of off-road vehicle use, grazing, or other activities that eliminate vegetation • Drainages are delineated by dense areas of small trees • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Minimal evidence of visual encroachment • High level of intactness Unity • Vegetation pattern creates a cohesive landscape Level of Scenic Quality: Low	High
DH12 – Disturbed Desert Flatlands		Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroach on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH12 – Disturbed Area		Foreground • Cleared area dominates the unit • Bladed area does not blend with setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area creates a distinct pattern in the landscape • Cleared area has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrasts in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.13. DH12 Landscape Character Units - Continued

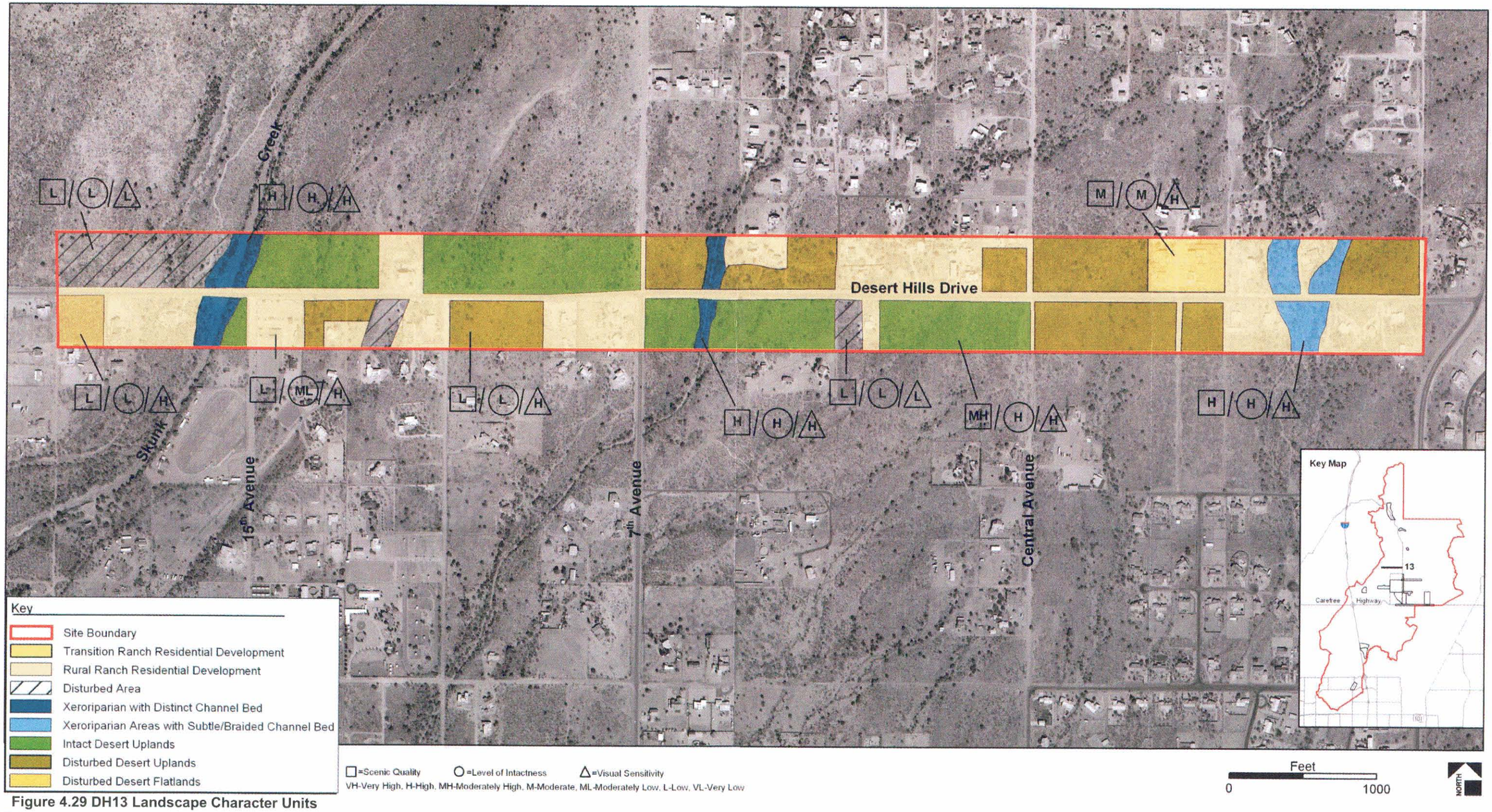


Figure 4.29 DH13 Landscape Character Units

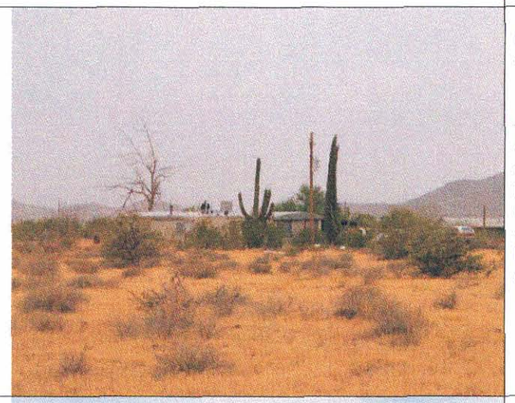
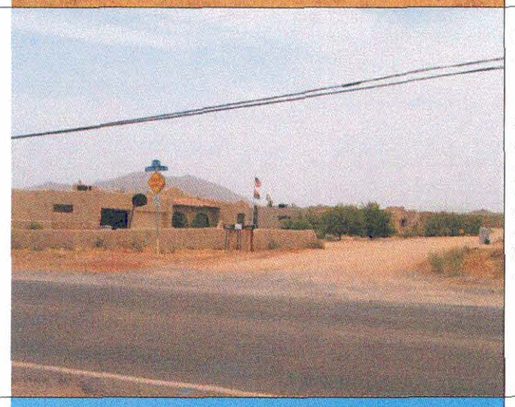
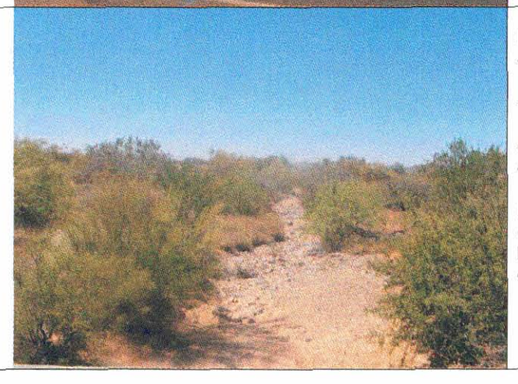
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH13 – Rural Ranch Residential Development		Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat to gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual Incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	High
DH13 – Transition Ranch Residential Development		Foreground • Single-family residences with the same architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have similar orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Unnamed hills/mountains Background • Bradshaw and New River Mountains (north)	Distinctiveness • Residences consist of both one- and two-story structures of the same colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is flat Level of Intactness • Infrastructure and buildings create consistent visual pattern • Moderate level of intactness Unity • Cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Moderate	High
DH13 – Xeroriparian with Subtle/ Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominate feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High

Table 4.14. DH13 Landscape Character Units

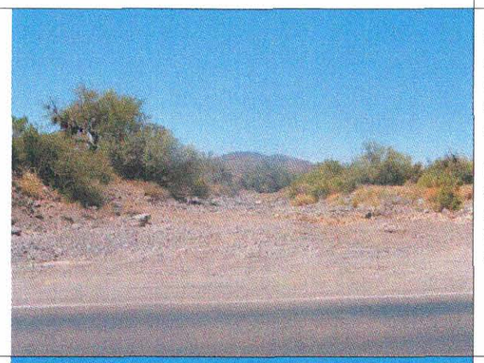
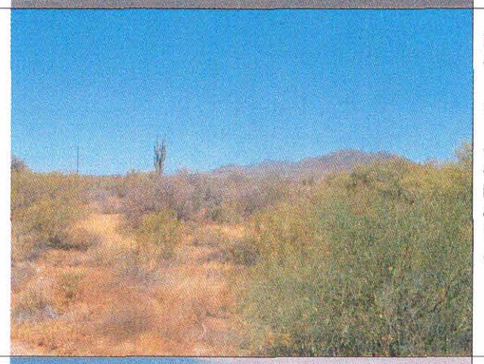
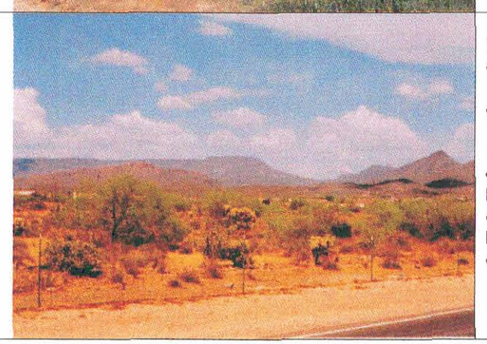
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
DH13 – Xeroriparian with Distinct Channel Bed		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible Background • Not visible	Distinctiveness • Skunk Creek and smaller tributary within this unit exhibit typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Washes and their associated xeroriparian vegetation create a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
DH13 – Intact Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cacti species including saguaro • Vegetation pattern is relatively free of dirt roads, evidence of off-road vehicle use, grazing, or other activities that eliminate vegetation • Drainages are delineated by dense areas of small trees • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms and Daisy Mountain Background • Not visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Hilly terrain creates a memorable landscape Level of Intactness • Minimal evidence of visual encroachment • High level of intactness Unity • Vegetation pattern creates a cohesive landscape Level of Scenic Quality: Moderately high	High
DH13 – Disturbed Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cactus species including saguaro • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Rolling terrain creates a visually interesting landscape Level of Intactness • Presence of off-road vehicle use, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Moderately low	High

Table 4.14. DH13 Landscape Character Units - Continued

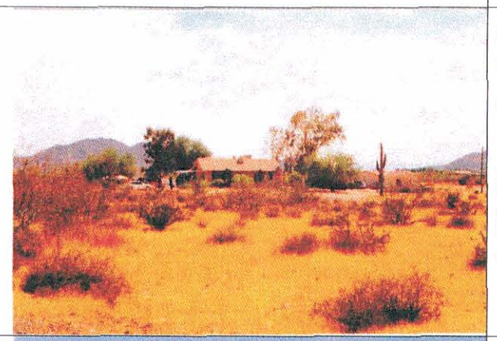
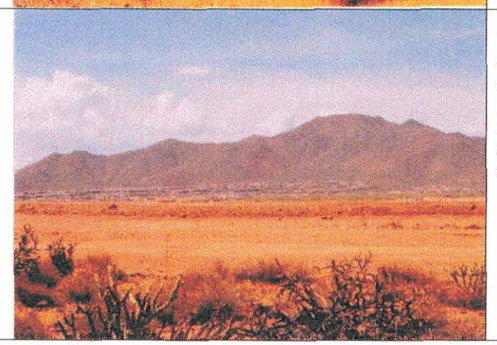
Desert Hills Subarea	Visual Character	Scenic Quality	Visual Sensitivity
DH13 – Disturbed Desert Flatlands 	Foreground • Open, coarse-textured, creosote bush and grasses dominate vegetation with scattered mesquite, paloverde, and acacia trees • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, grazing, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Relatively flat terrain does not create a memorable landscape Level of Intactness • Presence of off-road vehicle use, grazing, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, grazing, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Low	High
DH13 – Disturbed Area 	Foreground • Cleared area dominates the unit • Bladed area does not blend with setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area creates a distinct pattern in the landscape • Cleared area has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrasts in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.14. DH13 Landscape Character Units

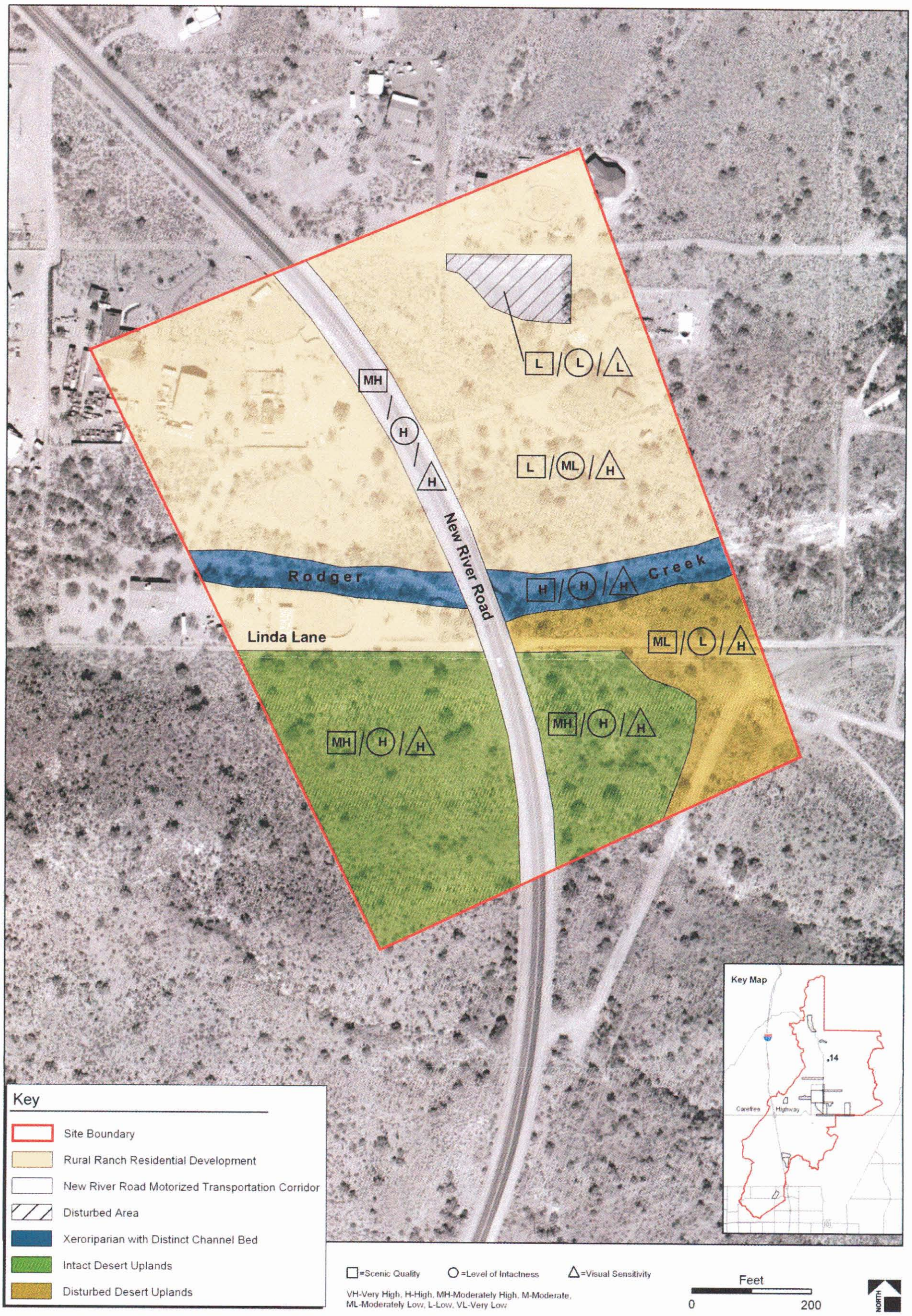


Figure 4.30 NR14 Landscape Character Units

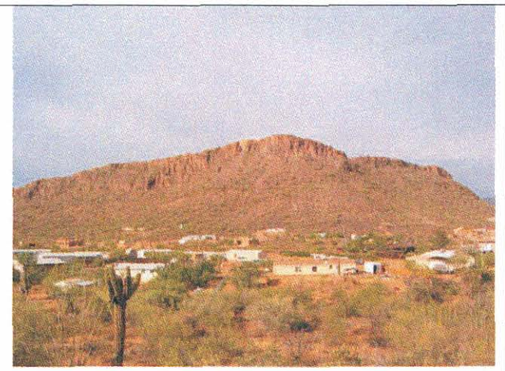
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
NR14 – Rural Ranch Residential Development		Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Daisy Mountains and Apache Peak prominent landforms Background • Not visible because of adjacent landforms	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic quality: Low	High
NR14 – Xeroriparian with Distinct Channel Bed		Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible Background • Not visible	Distinctiveness • Rodger Creek within this unit exhibits typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Wash and its associated xeroriparian vegetation create a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic quality: High	High
NR14 – Intact Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cacti species including saguaro • Vegetation pattern is relatively free of dirt roads, evidence of off-road vehicle use, grazing, or other activities that eliminate vegetation • Drainages are delineated by dense areas of small trees • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent landforms Background • Views of Apache Peak (north), Daisy Mountain (north), Pyramid Peak (north), Phoenix Mountains (south), Hieroglyphic Mountains (west), and Black Mountain (east)	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Hilly terrain creates a memorable landscape Level of Intactness • Minimal evidence of visual encroachment • High level of intactness Unity • Vegetation pattern creates a cohesive landscape Level of Scenic quality: Moderately high	High

Table 4.15. NR14 Landscape Character Units

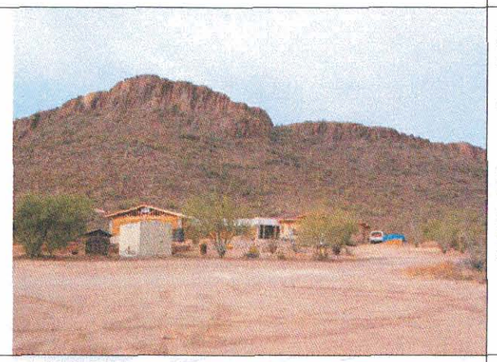
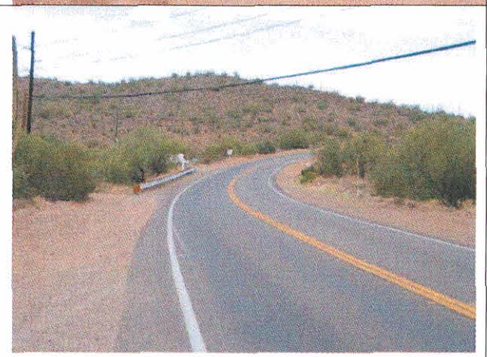
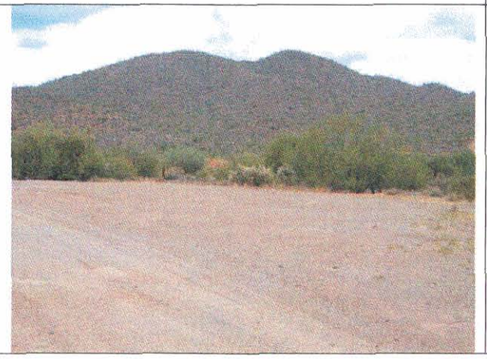
Desert Hills Subarea	Visual Character	Scenic Quality	Visual Sensitivity
NR14 – Disturbed Desert Uplands 	Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cactus species including saguaro • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape Middleground • Unobstructed views of adjacent unnamed landforms Background • Not visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Hilly terrain creates a visually interesting landscape Level of Intactness • Presence of off-road vehicle use, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Moderately low	High
NR14 – New River Road Transportation Corridor 	Foreground • Two-lane roadway section with variable width shoulders and guard rail • Vegetation limited to undeveloped areas adjacent to roadway • Roadway is at-grade and provides unobstructed views to areas of development, notable vegetation, and adjacent landforms Middleground • Views of Daisy Mountain, Apache Peak, and other prominent unnamed landforms Background • Not visible	Distinctiveness • Notable expanse of asphalt creates strong linear form common to the area and region • Surrounding landforms, notable vegetation, and rolling terrain enhance the visual interest along this portion of the roadway • No vegetation or streetscape enhancements are present • Roadway adheres to the rolling terrain Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Roadway is compatible with the terrain of the landscape • Untreated guardrail detracts slightly from setting • Visually interesting setting along roadway Level of Scenic Quality: Moderately High	High
NR14 – Disturbed Area 	Foreground • Cleared area dominates the setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Cleared area creates a distinct pattern in the landscape and has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrast in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.15. NR14 Landscape Character Units - Continued

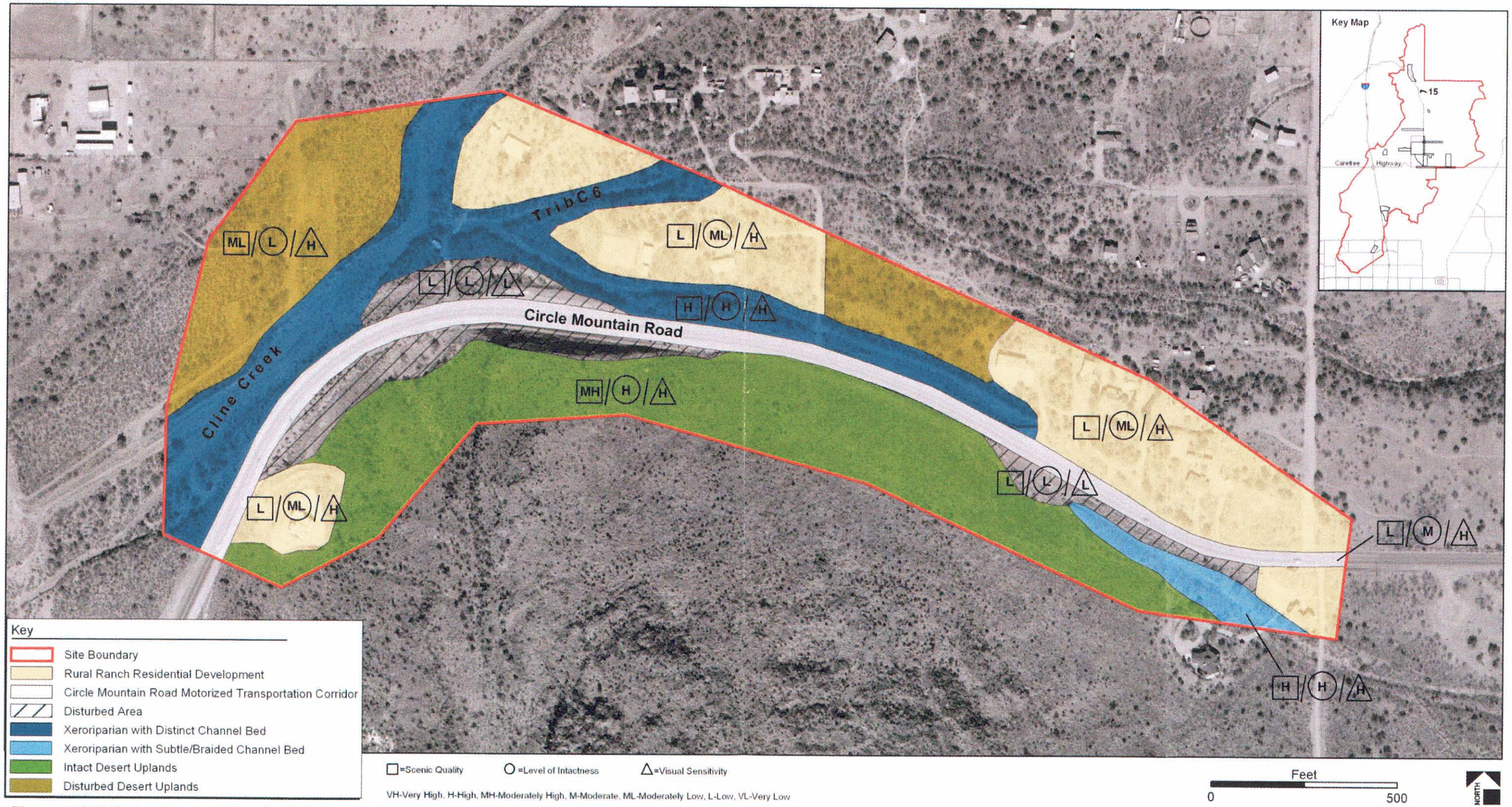


Figure 4.31 NR15 Landscape Character Units

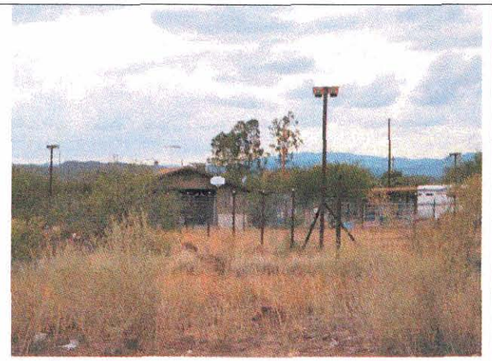
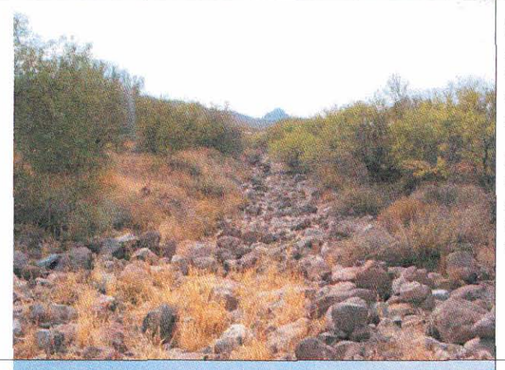
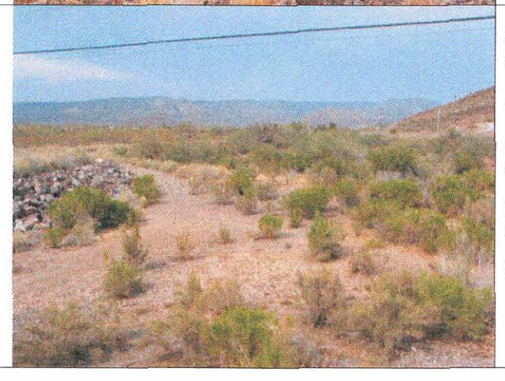
Desert Hills Subarea	Visual Character	Scenic Quality	Visual Sensitivity
NR15 – Rural Ranch Residential Development 	Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Daisy Mountains and Apache Peak prominent landforms Background • Not visible because of adjacent landforms	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial Level of Scenic Quality: Low	High
NR15 – Xeroriparian with Distinct Channel Bed 	Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible Background • Not visible	Distinctiveness • Cline Creek within this unit exhibits typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Wash and its associated xeroriparian vegetation create a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
NR15 – Xeroriparian with Subtle/ Braided Channel Bed 	Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominate feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High

Table 4.16 NR15 Landscape Character Units

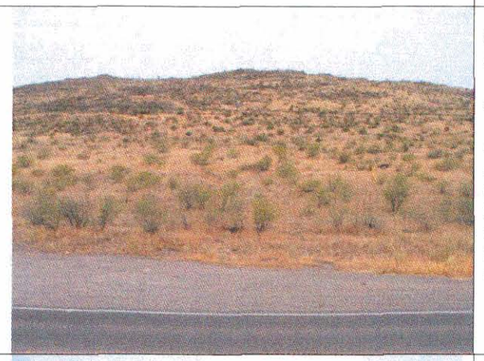
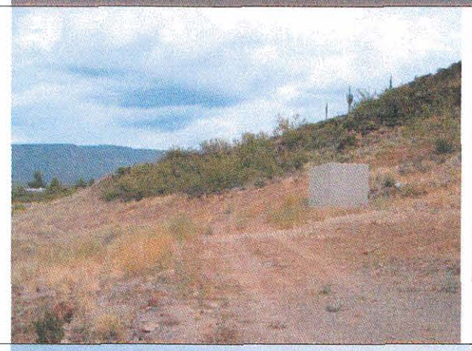
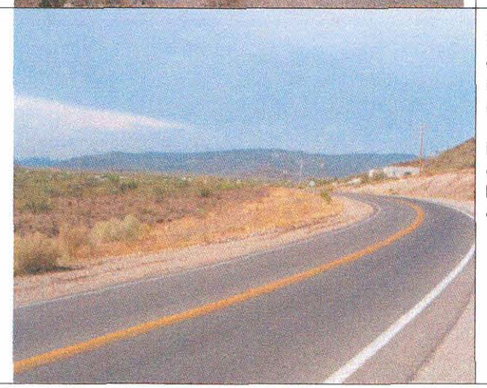
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
NR15 – Intact Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cacti species including saguaro • Vegetation pattern is relatively free of dirt roads, evidence of off-road vehicle use, grazing, or other activities that eliminate vegetation • Drainages are delineated by dense areas of small trees • Unobstructed views to surrounding landscape • Pyramid Peak dominant landform Middleground • Unobstructed views of adjacent landforms Background • Not visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Hilly terrain creates a memorable landscape Level of Intactness • Minimal evidence of visual encroachment • High level of intactness Unity • Vegetation pattern creates a cohesive landscape Level of Scenic Quality: Moderately High	High
NR15 – Disturbed Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cacti species including saguaro • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape and Pyramid Peak Middleground • Unobstructed views of adjacent unnamed landforms Background • Not visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Hilly terrain creates a visually interesting landscape Level of Intactness • Presence of off-road vehicle use, notable areas void of vegetation, and dirt roads encroaches on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Moderately low	High
NR15 – Circle Mountain Road Transportation Corridor		Foreground • Two-lane roadway section with variable width shoulders and guard rail • Vegetation limited to undeveloped areas adjacent to roadway • Roadway is at-grade and provides unobstructed views to areas of development and adjacent landforms Middleground • Views of Daisy Mountain and other prominent unnamed landforms Background • Not visible	Distinctiveness • Notable expanse of asphalt creates strong linear form common to the area and region • Roadway features are not visually striking • No vegetation or streetscape enhancements are present except in planned area development • Roadway creates modification to the existing landforms resulting in cut slopes exposing light colored soil Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • Moderate level of intactness Unity • Roadway interrupts the natural form of the terrain of the landscape • Untreated guardrail detracts slightly from setting Level of Scenic Quality: Low	High

Table 4.16 NR15 Landscape Character Units - Continued

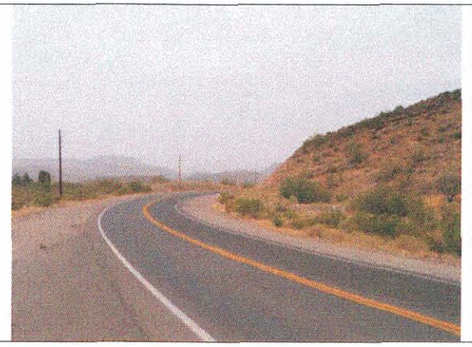
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
NR15 – Disturbed Area		Foreground • Cleared area dominates the unit • Bladed area does not blend with setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area creates a distinct pattern in the landscape • Cleared area has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrast in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.16 NR15 Landscape Character Units - Continued

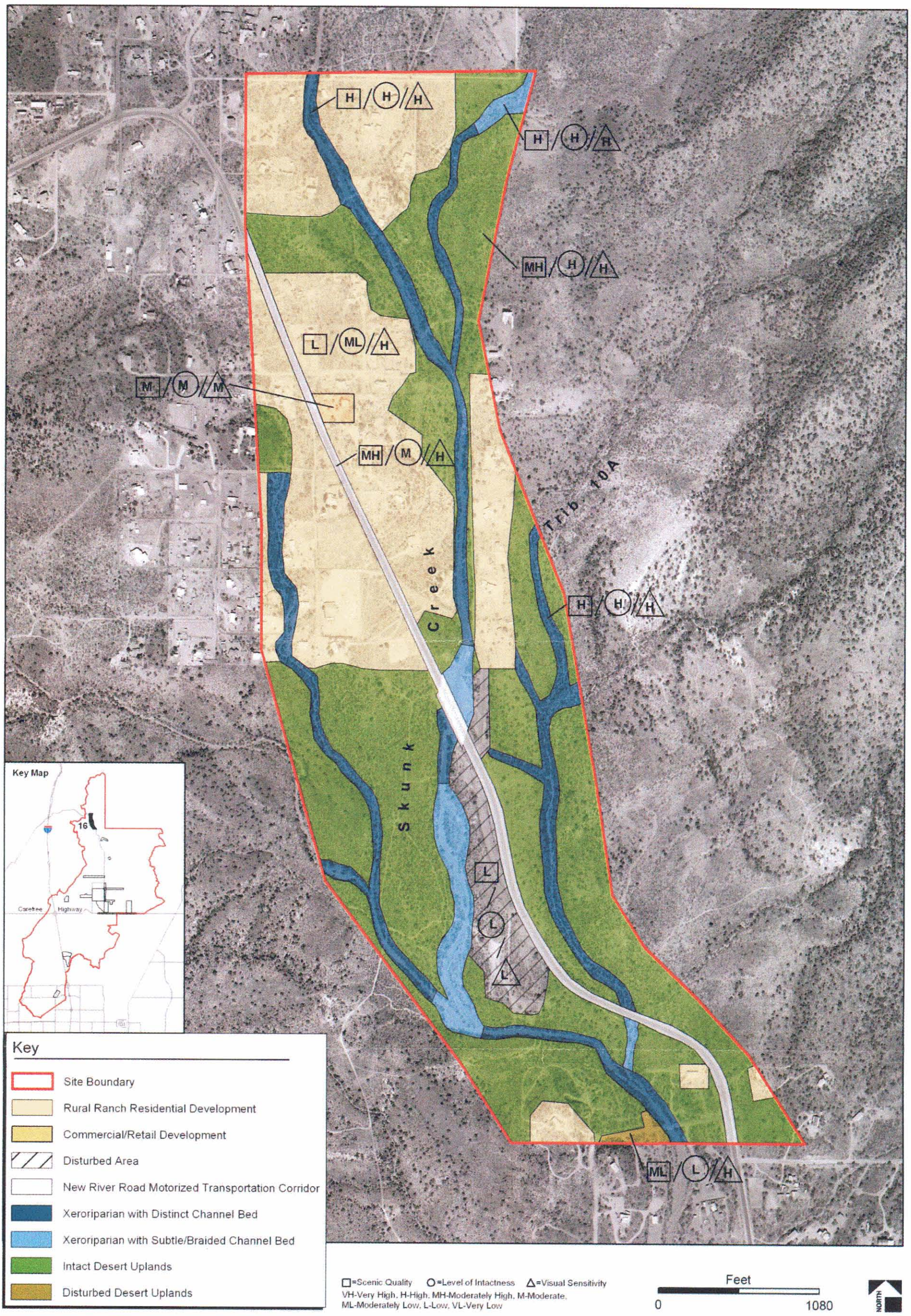


Figure 4.32 NR16 Landscape Character Units

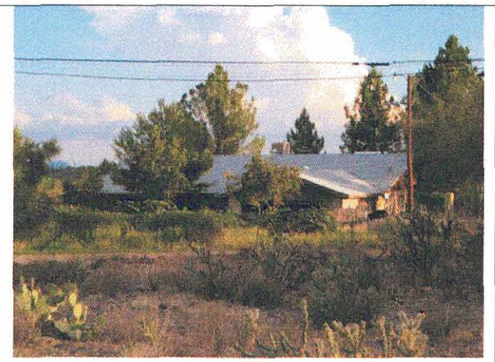
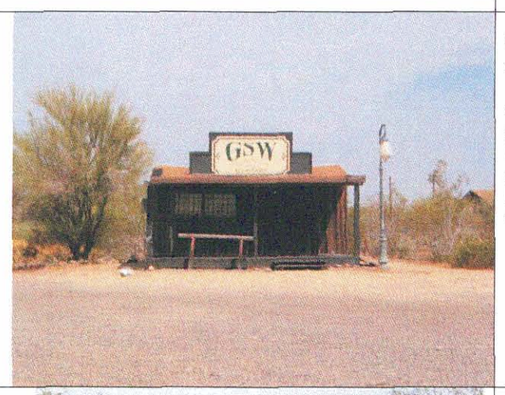
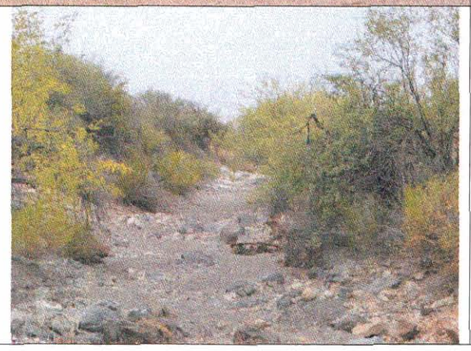
Desert Hills Subarea	Visual Character	Scenic Quality	Visual Sensitivity
NR16 – Rural Ranch Residential Development 	Foreground • Single-family residences with a variety of architectural styles, colors, and materials most often on large lots with ancillary buildings such as storage sheds, corrals, and barn structures • Vegetation consisting of both native and exotic species • Buildings have various orientations to the street • Fences most often chain link, barbed wire, or open corral fencing Middleground • Partially interrupted by proximity and maturity of vegetation adjacent to residence • Daisy Mountains and Apache Peak prominent landforms Background • Not visible because of adjacent landforms	Distinctiveness • Residences consist of both one- and two-story structures of a variety of colors, materials, and character • Sidewalks are not present • Streets can be unpaved or paved with no shoulders or curb and gutter • Street lighting is minimal • Vegetation does not create striking pattern • Terrain is gently rolling to hilly Level of Intactness • Infrastructure and buildings create inconsistent and random pattern • Moderately low level of intactness Unity • Lack of cohesion among built features • Visual incompatibility of built features with natural setting ranges from subtle to substantial • Overhead transmission lines and support poles disrupt setting Level of Scenic Quality: Moderately low	High
DH16 – Commercial/ Retail Development 	Foreground • Single-story block buildings of a variety of material and color with parking areas and signs visible from street • Buildings have same orientation to the street • Vegetation cleared from area Middleground • Building size and mass partially obscures views to middleground area Background • No notable features visible	Distinctiveness • Commercial and retail area consist of one story structures of a variety of materials, painted most commonly in earth tones • Buildings are typical of strip commercial development • Vegetation is minimal and does not create striking pattern • Terrain is flat • Infrastructure and buildings dominate setting Level of Intactness • Buildings and associated signs have a moderate degree of visual cohesion and harmony with the setting • Moderate level of intactness Unity • Varied architectural style • Void of visual encroachment from non-related man-made features Level of Scenic Quality: Moderate	Moderate
NR16 – Xeroriparian with Distinct Channel Bed 	Foreground • Incised drainage channel spatially defined by dense xeroriparian vegetation • Grey-green, coarse-textured trees on channel banks • Cobbled channel bed • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation • Upper portion of higher adjacent landforms visible Background • Not visible	Distinctiveness • Skunk Creek within this unit exhibits typical stream bed characteristics of incised sandy/cobble bottom with dense vegetation along channel banks • Wash and its associated xeroriparian vegetation creates a striking visual pattern Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High

Table 4.17. NR16 Landscape Character Units

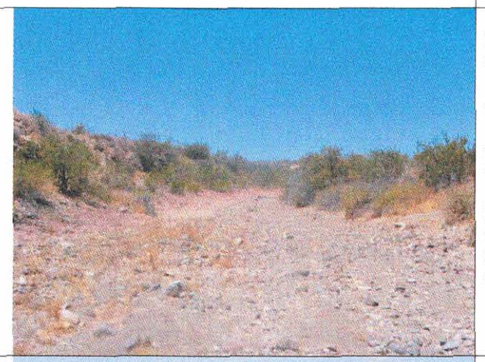
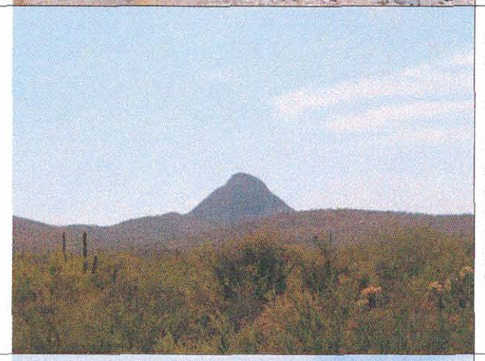
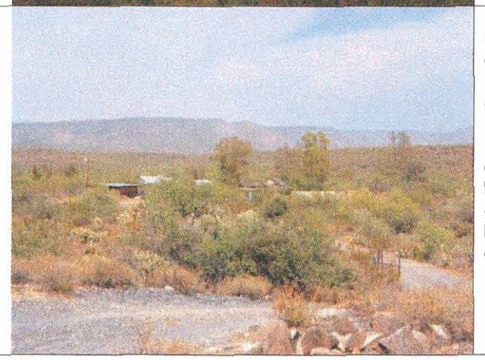
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
NR16 – Xeroriparian with Subtle/Braided Channel Bed		Foreground • Braided drainage channels delineated by presence of dense xeroriparian vegetation • Grey-green, coarse-textured trees across multiple channels are dominate feature in unit • Sandy or cobbled channel bed subordinate to xeroriparian vegetation • Views beyond drainage channel partially obscured by presence of native trees along banks Middleground • Middleground area partially obscured from view by xeroriparian vegetation Background • Not visible	Distinctiveness • Washes within this unit are characterized by dense vegetation along channel area • Xeroriparian vegetation creates a striking visual pattern • Drainage channel bed is notable feature providing visual interest in the landscape • Terrain is relatively flat with subtle change in grade Level of Intactness • Intact natural drainage • High level of intactness Unity • Vegetation creates a notable visual pattern in the landscape Level of Scenic Quality: High	High
NR16 – Intact Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cacti species including saguaro • Vegetation pattern is relatively free of dirt roads, evidence of off-road vehicle use, grazing, or other activities that eliminate vegetation • Drainages are delineated by dense areas of small trees • Unobstructed views to surrounding landscape • Pyramid Peak dominant landform Middleground • Unobstructed views of adjacent landforms and Daisy Mountain Background • Not visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Hilly terrain creates a memorable landscape Level of Intactness • Minimal evidence of visual encroachment • High level of intactness Unity • Vegetation pattern creates a cohesive landscape Level of Scenic Quality: Moderately high	High
NR16 – Disturbed Desert Uplands		Foreground • Open, coarse-textured vegetation with scattered mesquite, paloverde, and acacia trees and a variety of cactus species including saguaro • Vegetation pattern noticeably interrupted by areas of disturbance created by single/double track dirt roads, off-road vehicle use, or other activities that eliminate vegetation • Unobstructed views to surrounding landscape and Pyramid Peak Middleground • Unobstructed views of adjacent unnamed landforms Background • Not visible	Distinctiveness • Grey-green scrub vegetation is common to the area and region • Hilly terrain creates a visually interesting landscape Level of Intactness • Presence of off-road vehicle use, notable areas void of vegetation, and dirt roads encroach on the otherwise intact landscape • Low level of intactness Unity • Dirt roads, off-road vehicle use, and other uses create contrast in terms of color and line in the landscape and visually detract from the setting Level of Scenic Quality: Moderately low	High

Table 4.17. NR16 Landscape Character Units - Continued

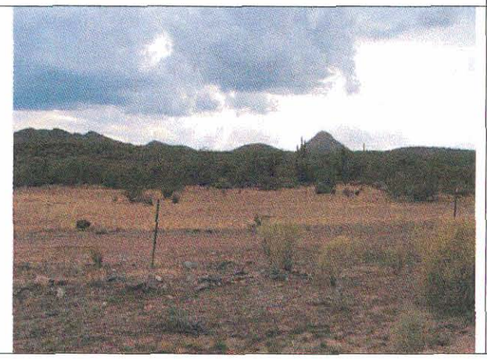
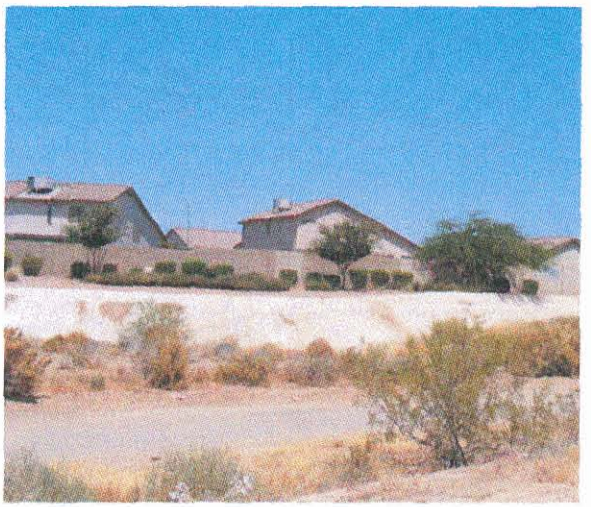
Desert Hills Subarea		Visual Character	Scenic Quality	Visual Sensitivity
NR16 – New River Road Transportation Corridor		Foreground • Two-lane roadway section with variable width shoulders and guard rail • Vegetation limited to undeveloped areas adjacent to roadway • Roadway is at-grade and provides unobstructed views to areas of development, notable vegetation, and adjacent landforms Middleground • Views of Daisy Mountain, Apache Peak, and other prominent unnamed landforms Background • Not visible	Distinctiveness • Notable expanse of asphalt creates strong linear form common to the area and region • Surrounding landforms, notable vegetation, and rolling terrain enhance the visual interest along this portion of the roadway • No vegetation or streetscape enhancements are present • Roadway adheres to the rolling terrain Level of Intactness • Infrastructure is visually consistent and provides a uniform pattern • High level of intactness Unity • Roadway is compatible with the terrain of the landscape • Untreated guardrail detracts slightly from setting • Visually interesting setting along roadway Level of Scenic Quality: Moderately High	High
NR16 – Disturbed Area		Foreground • Cleared area dominates the unit • Bladed area does not blend with setting Middleground • Unobstructed views of adjacent unnamed landforms Background • No notable features visible	Distinctiveness • Graded area creates a distinct pattern in the landscape • Cleared area has modified existing terrain • Minimal or weed vegetation is present Level of Intactness • Cleared area has substantially modified the terrain and does not conform to the surrounding landscape • Low level of intactness Unity • Disturbed area is not visually compatible, notably contrast in terms of form, line, and color Level of Scenic Quality: Low	Low

Table 4.17. NR16 Landscape Character Units - Continued

4.2.1 Visual Character

The visual character of the PCS1 is the most diverse in terms of land use and, therefore, has the greatest number of landscape character units, with 12 units. Several features in PCS1 compete to dominate this urban setting in terms of texture, color, and form. The regimented line of the towering 500 kV transmission structures, the barren and massive landfill, and the uniform organization of the residential subdivision create a diverse and disparate pattern character in the landscape. These elements contrast sharply with the remnants of the natural drainage pattern and xeroriparian vegetation associated with Skunk Creek. The random crisscrossing pattern of dirt roads littered with debris (including a burned vehicle and various parts of household appliances) contributes to the lack of continuity in the visual environment within the bounds of PCS1 and its foreground area.



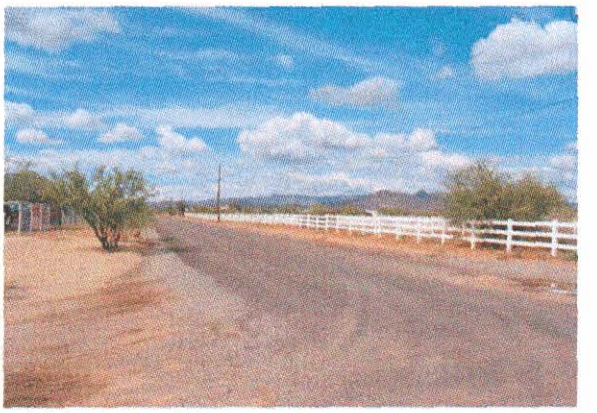
Residential development adjacent to channelized Skunk Creek

PCS2 and PNC3 have similar visual characteristics. These sites encompass the strong linear form of the CAP Canal and the rectangular-shaped, concrete, grade-control structures located where the canal crosses Skunk Creek and Sonoran Wash. In addition, the approximately 35-foot earthened flood-retarding structure that protects the CAP Canal mimics the alignment of the water channel and creates a distinct visual element because of its mass, trapezoid shape, and long, constant line. Fencing paralleling the CAP Canal reinforces the strong linear form of the canal. The grade-control and associated flood-retarding structures interrupt the ribbons of xeroriparian vegetation that trace the ephemeral drainages. Existing vegetation patterns consist of coarse-textured, gray-green creosote bush flatlands that blanket the majority of the two sites and are disrupted by random lines of dirt roads from off-road vehicle use and denuded areas created by grazing and man-induced activities.

Flood retarding structure and fencing protecting the CAP Canal

In the Desert Hills subarea, the visual characteristics of eight of the ten problem area sites are similar because of the individuality of the architectural styles, colors, materials, and orientation of the single-family residences found throughout the area, presence of natural drainages with dense vegetation flowing intermittently through residential areas, predominance of dirt and paved roads without curb, gutter, and

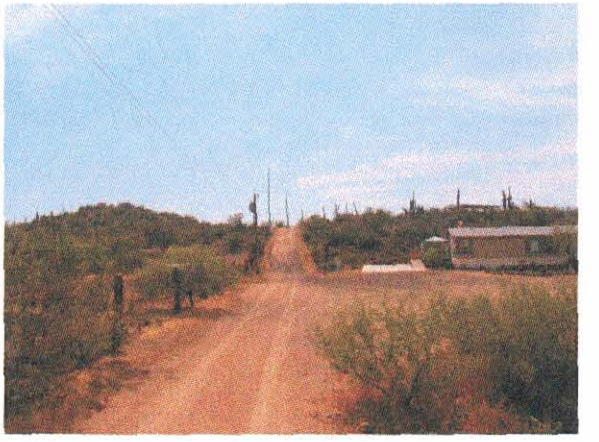
sidewalk, and the relatively flat terrain that provides expansive views of the distant mountain formations. The patterns created by the organic organization of the built features form a character more rural than urban or suburban in nature. The presence of the numerous equine facilities, corrals, and other ancillary buildings and elements such as barns, horses, cattle, other domesticated animals, and lack of masonry block property walls reinforce this rural character.



Typical street in Desert Hills subarea

The two remaining sites in the Desert Hills subarea, DH6 and DH11, are both vacant lands with ephemeral drainages flowing diagonally across relatively flat terrain that has been grazed heavily. They each have stock tanks that create an interesting visual pattern of elements with a slightly depressed earthen basin encircled by a stand of mature mesquite trees. DH6 is the one-mile square ASLD parcel within the heart of Desert Hills and is characterized by dense areas of vegetation along the south and southwestern edges. DH11 has a regimented line of the towering 500 kV transmission lines and structures cutting diagonally across the northeast portion of the site that contrast in terms of line, form, texture, and color with the natural flatlands covered by creosotebush. A large, notable stand of mature paloverde trees is found north of the transmission lines and is striking because it is the only known stand of its density within the site. These paloverde trees differ in form and color from the mesquite trees typically found along the drainages and at the stock tanks.

The developed areas within the New River and the Desert Hills subareas have similar rural characteristics; varying architectural styles, large lots with ancillary buildings such as storage sheds, corrals, and barn structures; and a predominance of unpaved roads. The most notable differences between the two subareas are in the terrain and the density and variety of vegetation. The New River subarea has greater topographic relief with large adjacent landforms that create greater spatial enclosure and restrict viewing distance. The vegetation consists of coarse-textured desert plant material with a variety of cactus species including saguaro, ocotillo, cholla, prickly pear, and hedgehog in addition to mesquite and paloverde trees. The varying terrain and vegetation creates a pattern that seems as notable as the built elements in the landscape.

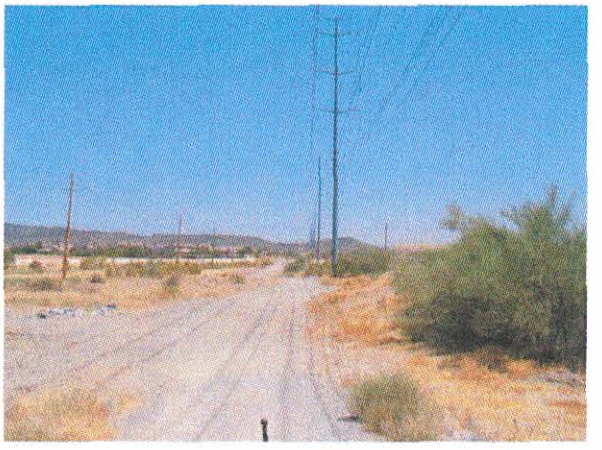


Typical street in New River subarea

The natural drainages throughout the Adobe Dam/Desert Hills ADMP study are generally identified by the characteristics of their channel beds. The drainages may have a distinct channel bed where the channel is incised with a cobbled and/or sandy bottom and a dense line of trees on it banks, multiple channels that create multiple areas of xeroriparian vegetation, or xeroriparian vegetation that spans and obscures the channel banks and bottom, making the channel bed visually subordinate to the vegetation.

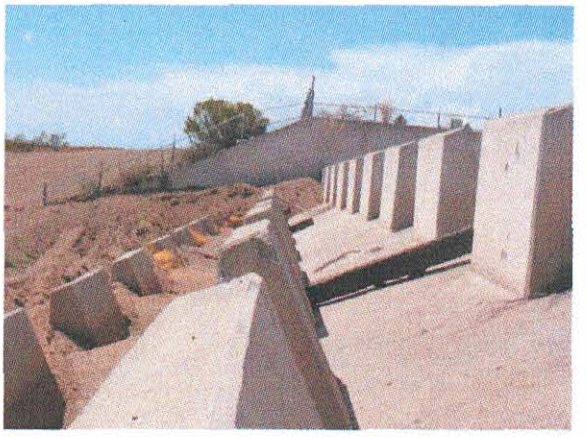
4.2.2 Scenic Quality

Phoenix South of the CAP Canal and Phoenix North of the CAP Canal Subareas. The scenic quality of the 12 landscape character units within PSC1 ranges from moderate to very low. The Planned Area Residential Development, Office/Light Industrial Development, Urban-impacted Skunk Creek, and Flood Control Structure – Rock Levee Structure Character Units are considered to have moderate scenic quality with varying levels of intactness. The materials and colors used in the built features, the scale, texture and form of the built structures, and the character of the architectural style in the Planned Area Residential and Office/Light Industrial Development Character Units create a visually consistent but not distinctive pattern in the setting with a high level of intactness typical of this type of suburban development. Skunk Creek, in the Urban-impacted Skunk Creek Character Unit, exhibits streambed characteristics typical of a natural watercourse with an incised sandy/cobble bottom and relatively dense xeroriparian vegetation along its banks. The presence of wildcat dumping (haphazard dumping of garbage) scattered throughout the wash and dirt roads randomly crossing the channel create a landscape character unit with a low level of intactness and a moderate level of scenic quality. In the Flood Control Structure – Rock Levee Structure Unit, the less than 6-foot high rock levee has vegetation growing over the rocks and is visually a subtle, unobtrusive feature in the landscape. This man-made feature creates a subtle contrast in terms of form and line in the landscape. The Flood Control Structure – Rock Levee Structure Unit therefore, has a high level of intactness and a moderate level of scenic quality.



Dirt road and overhead transmission lines and poles crossing Skunk Creek

The Channelized Skunk Creek Character Unit is rated as moderately low in terms of scenic quality and moderate in level of intactness because of the form, visual contrast, and line of the flood control structures adjacent to the channel; because of the lack of natural drainage feature characteristics; and because the existing elements do not create a striking visual pattern.



Energy dissipaters at grade-control

The Flood Control Structure – Grade-control Structure, Flood Control Structure – Earthen Embankment Structure, Pinnacle Peak Road Transportation Corridor, and Disturbed Desert Flatlands Character Units are rated as having low scenic quality with varying levels of intactness. The two flood control structure units create distinct patterns in the landscape because of their mass and regular or uniform form. These structures do not conform to the terrain and spatially dominate the setting. The Flood Control Structure – Grade-control Structure is a low level of intactness. The vegetation on the earthen channel embankment reduces the visual encroachment of the structure in the setting and has a moderate level of intactness.

The significant expanse of asphalt of Pinnacle Peak Road and the four-lane concrete bridge across Skunk Creek create a strong linear form; no streetscape enhancements or vegetated median is present to soften the four- and five-lane roadway. The Pinnacle Peak Road Transportation Corridor Unit has a high level of intactness because it adheres to the relatively flat terrain, but has a low level of scenic quality because it does not create a memorable pattern in this suburban area.

The presence of wildcat dumping (illegal dumping of trash), notable areas void of vegetation, and dirt roads that run randomly throughout the unit create a low level of intactness in the Disturbed Desert Flatlands Unit. The grey-green scrub vegetation is common to the area and region and does not create a memorable landscape. The unit therefore has a low level of scenic quality.

The Utility Corridor, Skunk Creek Landfill, and Flood Control Structure – Concrete Embankment Structure Units all have low levels of intactness and very low levels of scenic quality. Built features in each of these units spatially dominate the landscape, are visually incompatible with the existing development and natural terrain, and contrast significantly in scale, color, and form to the other elements in the setting.

PSC2 and PNC3 have landscape character units that range in scenic quality from high to very low with varying levels of intactness. The Xeroriparian with Distinct Channel Bed and Xeroriparian with Subtle/ Braided Channel Bed Units have high levels of scenic quality and intactness because the drainages are intact, their associated xeroriparian vegetation creates a striking visual pattern in the landscape, and these elements are considered scarce in the area and region.

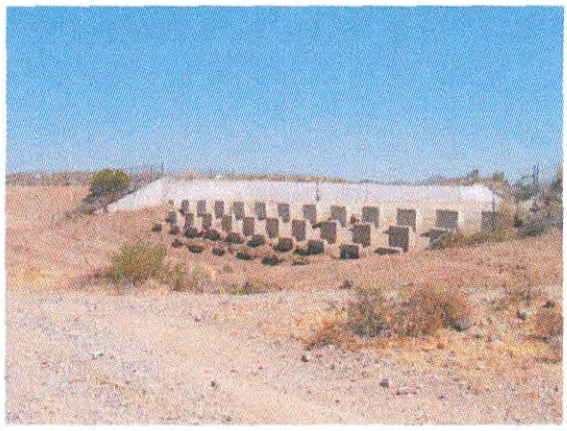
The CAP Canal forms a striking visual pattern and the presence of permanent water is a scarce feature in the local area and region. However, the long, uniform, linear man-made feature detracts from the natural setting and creates substantial contrast. The CAP Canal Unit is considered to have a moderate level of intactness and scenic quality.

CAP Canal and flood-retarding structure

The portion of Skunk Creek in PSC2 located downstream from the grade-control structure does not have the typical dense vegetation growing along its channel banks. Because of the lack of the xeroriparian vegetation and the presence of off-road vehicles crossing the channel in various locations, the Distinct Channel Bed with Minimal Vegetation has a low level of intactness and moderately low level of scenic quality.

The notable areas void of vegetation from grazing and other man-induced activities and dirt roads that run randomly throughout the Disturbed Desert Flatlands Unit create a low level of intactness. The grey-green scrub vegetation is common to the area and region and does not create a memorable landscape. The unit therefore has a low level of scenic quality. Similarly, the Flood Control Structure – Rock Levee Structure Unit has a low level of intactness and scenic quality because the long linear man-made feature with the two-lane roadway on top of the levee that detracts from the setting and contrasts in terms of form and line.

The Flood Control Structure – Grade-control Structure, Flood Control Structure – Earthen Embankment Structure, and Disturbed Area Character Units are rated as having very low scenic quality with either moderate or low levels of intactness. These two flood-control structure units create distinct patterns in the landscape because of their mass and regular or uniform form. These structures do not conform to the surrounding terrain and landscape and spatially dominates the setting. The grade-control structures create a substantial visual encroachment on the setting that results in a low level of intactness in the Flood Control Structure – Grade-control Structure Unit. The vegetation on the earthen channel embankment reduces the visual encroachment of the structure in the setting and has a moderate level of intactness. The Disturbed Area Unit has a low level of intactness and very low level of scenic quality because the area has been cleared and graded, the natural terrain has been substantially modified, and the vegetation removed.



Grade-control structure

In PNC3, the Rural Ranch Residential Development Unit has a moderate level of intactness and a moderately low level of scenic quality. The vegetation and structures within the unit do not form a striking pattern, the buildings lack cohesion, and there is little visual compatibility of the built features with the natural setting.

Desert Hills Subarea. In the Desert Hills subarea, there are ten landscape character units that are generally applicable to the various land uses and vegetation and the level of intactness and scenic quality do not significantly change. These landscape character units include: Rural Ranch Residential Development, Transition Ranch Residential Development, Commercial/Retail Development, Equine Facility, Xeroriparian with Subtle/Braided Channel Bed, Xeroriparian with Distinct Channel Bed, Disjointed Xeroriparian Areas with Subtle/Braided Channel Bed, Stock Tank, Intact Desert Flatlands, Disturbed Desert Flatlands, and Disturbed Area. The scenic quality and level of intactness for these ten units are briefly summarized below.

Transitional Ranch Residential Development in Desert Hills

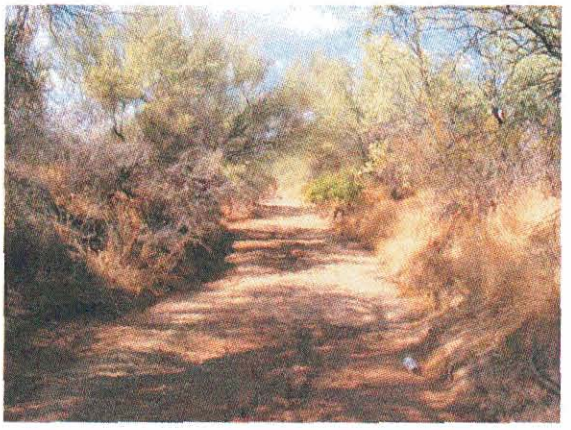
Rural Ranch Residential Development in Desert Hills

The Rural Ranch Residential and Transition Ranch Residential Development Units reflect the two main types of residential uses in the Desert Hills subarea. The Rural Ranch Residential Development Unit has a moderate level of intactness and a low level of scenic quality. The vegetation and structures within the unit do not form a striking pattern, the buildings lack cohesion, and there is little visual compatibility of the built features with the natural setting. The Transition Ranch Residential Development Unit has a moderate level of intactness and scenic quality because there is more consistency and more cohesion in the building organization in comparison to the Rural Ranch Residential Development Unit.

Typical corral feature In Desert Hills

The Commercial/Retail Development Unit has a moderate level of intactness and scenic quality because the buildings consist of one-story structures that have a moderate degree of visual cohesion and varied architecture styles that are compatible with the other structures in the landscape. The Equine Facility Unit consists of both one- and two-story structures of a variety of colors, materials, and character. The buildings and associated corrals and oval tracks create a memorable, but inconsistent pattern in this unit. There is generally little vegetation with large expansive areas of barren ground. The Equine Facility Unit has a low level of intactness and a low level of scenic quality because of the lack of cohesion and compatibility with the natural setting.

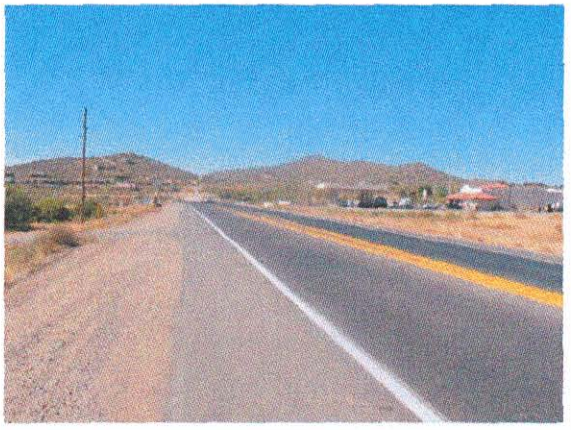
Xeroriparian with Subtle/Braided Channel Bed and Xeroriparian with Distinct Channel Bed Units have high levels of scenic quality and intactness because the drainages are intact, their associated xeroriparian vegetation create a striking visual pattern in the landscape, and these elements are considered scarce in the area and region. The Disjointed Xeroriparian Areas with Subtle/Braided Channel Bed Unit has slightly lower levels of intactness (moderate) and scenic quality (moderately high) since the drainages have been physically disrupted by development and the integrity of the system has been substantially modified.



Unnamed wash with distinct channel bed

The Stock Tank Unit relates to two sites, DH 6 and DH 11, and has a moderate level of intactness and scenic quality. The stock tank feature adds to the visual interest of the setting, specifically when it has water present in the shallow basin. However, the construction of the tank required the natural terrain to be modified and the area cleared of vegetation. Mature mesquite trees help to blend the tanks with their settings. The Stock Tank Unit is visually compatible to the setting and creates minimal contrast in terms of form, line, and color.

Disturbed area west of 7th Street

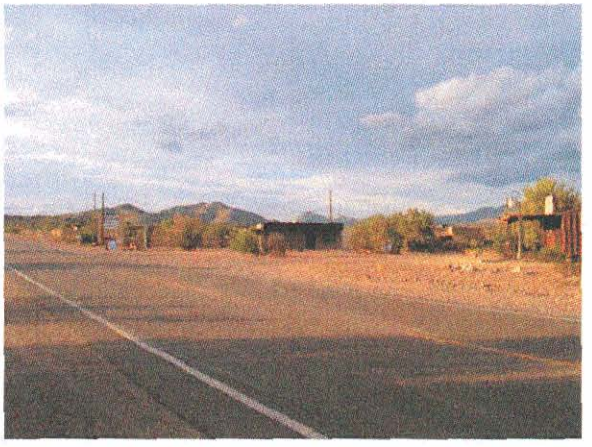


7th Street looking north

Intact and Disturbed Desert Flatlands Units make up a large portion of the Desert Hills subarea. Much of the vegetation in the subarea has notable areas void of native vegetation from grazing and other man-induced activities as well as dirt roads that run randomly throughout the area. This type of disruption to the natural vegetation pattern creates a low level of intactness and has been identified as the Disturbed Desert Flatlands Unit. The grey-green scrub vegetation is common to the area and region and does not create a memorable landscape. The Disturbed Desert Flatlands Unit therefore has a low level of scenic quality. Areas where the natural desert has been left relatively free of encroachment have a higher level of intactness (moderate), but the level of scenic quality does not substantially change in the Intact Desert Flatlands Unit.

Any area within the Desert Hills subarea delineated as a Disturbed Area Unit has a low level of intactness and low level of scenic quality. These areas have been cleared and graded, the natural terrain has been substantially modified, and the vegetation has been removed.

The remaining landscape character units in the Desert Hills subarea are characterized by the transportation and utility corridors. Carefree Highway Transportation Corridor Unit has a scenic quality rating of moderately high and a high level of intactness. This four-lane divided roadway with vegetated median creates a strong linear form that is common to the area and region. The at-grade median breaks up the expansiveness of the asphalt, and the roadway fits the terrain (meaning the footprint of the roadway did not create substantial cut or fill slopes) of the landscape. The other transportation corridors are along Cloud Road/27th Avenue, 7th Street, and 24th Street. These are all two-lane paved roads with variable-width shoulders that create strong linear features common to the area and region. There are no streetscape enhancements associated with these transportation corridors, and the roadways fit the terrain. These units have a high level of intactness and a low level of scenic quality because these roadways adhere to the terrain and create a strong linear form in the landscape.



Small commercial development in New River

The Utility Corridor Unit contains 500 kV overhead transmission lines and towers and has a very low level of scenic quality and a low level of intactness. These built features spatially dominant the setting, are visually

incompatible, and contrast significantly in scale, color, and form.

New River Subarea. The eight landscape character units that apply to the New River subarea are Rural Ranch Residential Development, Commercial/Retail Development, Xeroriparian with Subtle/Braided Channel Bed, Xeroriparian with Distinct Channel Bed, Intact Desert Uplands, Disturbed Desert Uplands, Disturbed Area Units, and New River Road Transportation Corridor Units. The relative level of intactness and scenic quality are described below.

The Rural Ranch Residential Development Unit has a moderate level of intactness and a moderately low level of scenic quality. The vegetation and structures within this unit do not form a striking pattern, the buildings lack cohesion, and there is little visual compatibility of the built features with the natural setting. The Commercial/Retail Development Unit has a moderate level of intactness and scenic quality because the buildings consist of one-story structures that have a moderate degree of visual cohesion and architecture styles that are compatible with the other structures in the landscape.

Desert uplands vegetation

Xeroriparian with Subtle/Braided Channel Bed and Xeroriparian with Distinct Channel Bed Units have high levels of scenic quality and intactness because the drainages are intact, their associated xeroriparian vegetation creates a striking visual pattern in the landscape, and these elements are considered scarce in the area and region.

Intact and Disturbed Desert Uplands Units make up a large portion of the New River subarea. The Disturbed Desert Uplands Unit has notable areas void of native vegetation from man-induced activities and dirt roads that run randomly throughout the area. This type of disruption to the natural vegetation pattern creates a low level of intactness and a moderately low level of scenic quality. Areas where the natural desert has been left relatively free of encroachment has a higher level of intactness (moderate) and a higher level of scenic quality (moderately high) in the Intact Desert Flatlands Unit.

Paseo Highland Park - high visual sensitivity

Any area within the New River subarea delineated as a Disturbed Area Unit has a low level of intactness and low level of scenic quality. These areas have been cleared

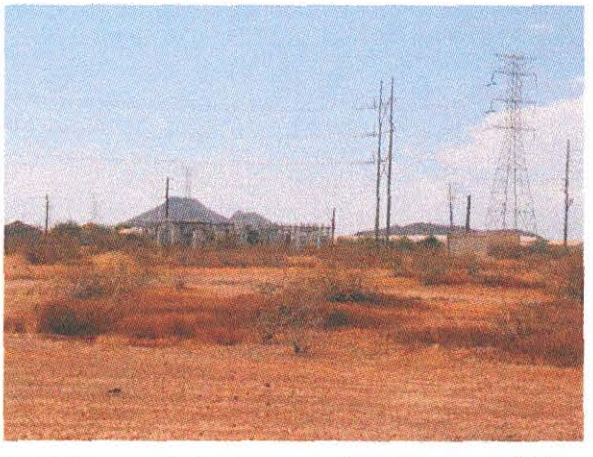
and graded, the natural terrain has been substantially modified, and the vegetation removed.

The remaining landscape character units in the New River subarea deal with the transportation corridors. The Circle Mountain Road and New River Transportation Corridor Units consist of two-lane paved roads with variable width shoulders that create strong linear features common to the area and region. There are no streetscape enhancements associated with these transportation corridors, and the roadways have some areas of cut and fill slopes. These units have a moderate level of intactness and low level of scenic quality because these roadways are visually striking, moderately adhere to the terrain, and create a strong linear form in the landscape.

4.2.3 Visual Sensitivity

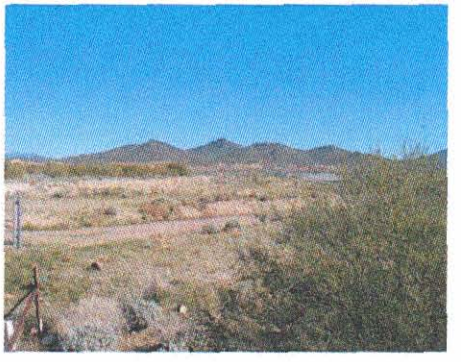
The visual sensitivity within the subareas is associated, as previously mentioned, with the land use. Visual sensitivity is rated as high for residential and recreation uses, vacant undisturbed areas of Sonoran desert, natural drainage areas, and transportation corridors; moderate for commercial, office, retail, light industrial, and equine uses; and low for utility corridors, flood control structures, and vacant disturbed area uses.

Paseo Highlands Park, Dynamite Mountain Subdivision, the landscape around Pyramid Peak in New River, and Skunk Creek have high visual sensitivity. Ray's Restaurant, 76 Service Station/Burger King, and Cave Creek Equine Surgical Center have moderate visual sensitive. Skunk Creek Landfill, 500 kV overhead transmission lines and towers, and the area recently grubbed and graded for Anthem north of Desert Hills Road have low sensitivity.



500 kV transmission towers – low visual sensitivity

5.0 Landscape Character Theme for the Recommended Alternative


View south to Union Hills from CAP Canal

The District's aesthetics and open space goal is to enhance the year round value of its flood protection facilities by incorporating features that will help preserve natural Sonoran Desert landscapes, protect and enhance local community character, enhance the aesthetic value of its properties and provide public opportunities for recreation open space activities. As previously stated, the purpose of the Landscape Character Analysis for the Adobe Dam/Desert Hills ADMP is to establish the existing scenery resources of the cultural and physical landscape within the study area to develop landscape character theme and aesthetic design guidelines for the Recommended Alternative. The landscape character theme and aesthetic design guidelines will be crafted to achieve the District's aesthetics and open space goal. As specific projects are implemented as a result of the recommendations made in the Adobe Dam/Desert Hills ADMP, a detailed assessment of scenery resources will be prepared by the District or its contracted consultant. The theme and design guidelines developed as part of this study will be brought forward into the implementation stage to help guide the final design.

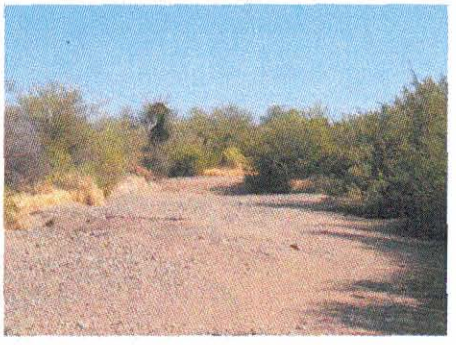
5.1 Landscape Aesthetic Goals and Objectives

The consultant team to the District developed the appropriate aesthetic and multi-use concepts to be incorporated into the final plans and construction documents for the future projects. Once the Recommended Alternative goes into the design phase of development, a Project Aesthetic Advisory Committee (PAAC) will be formed in accordance with the District's Landscaping and Aesthetics Policy. (A PAAC was not formed for the Adobe Dam/Desert Hills ADMP.) The role of the PAAC will be to review the project aesthetic and multi-use recreation objectives, data collection, site analysis, and project landscape themes. The PAAC should be made up of representatives from the City of Phoenix, developers representing planned residential developments, and the District.

The landscape aesthetic goals and objectives for the Recommended Alternative for the Adobe Dam/Desert Hills ADMP include:

1. Design the Recommended Alternative to protect, enhance, and complement the scenic character of the surrounding natural, rural, and suburban settings.
2. Minimize the visual impacts of proposed flood control facilities upon views of trail users within the project area and views from use areas located outside the study area.
3. Design the project to protect and enhance views of high quality landscape features and other positive focal points located within and outside the study area.
4. Design all landscaping and aesthetic treatments to fully accommodate and provide for the flood control functions of the project.

5. Preserve existing scenic features located within the study area to the extent practicable.



View of Skunk Creek north of CAP Canal

5.2 Landscape Theme

The overall landscape theme for the project is a natural Sonoran Desert Wash. The application of the landscape theme will include use of materials, forms, lines, colors, textures, vegetation, and compositions thereof that characterize the existing natural state of Skunk Creek and the adjacent upland areas found within the study area. Plant material specified should match existing native or indigenous species types and density to mimic the natural landscape. A preliminary plant list is provided in Table 5.1. Surface treatments for the levee should employ appropriate natural appearing materials and colors that are consistent with the project landscape theme to minimize the visual impact of the proposed level embankment on the channel side of the levee. The treatment of hardened embankment should be indicative of the specific types and colors of materials found in this area. Techniques to maintain a natural looking embankment that blends with the adjacent soil and rock material would provide continuity and visual intactness throughout the wash corridors.

5.3 Recommended Alternative –CAP Canal Levees

The Recommended Alternative includes the construction of new levees immediately up- and downstream of the CAP Canal. The downstream levees will be designed to keep all streamflow in the Skunk Creek channel and prevent flooding of residential and commercial areas downstream. The new levees constructed immediately upstream of the CAP Canal overchutes will keep all streamflow in the channel and prevent flooding of I-17 and allow it to flow along the upstream side of the canal embankment. The levees will range from 6 to 9 feet in height and include a 10-foot operations and maintenance road. The overall landscape theme for the CAP Canal Levees is a natural Sonora Desert landscape that protects, enhances, and complements the existing setting. Multi-use trails should be integrated as part of the operations and maintenance road along the top of the proposed levees. The top of the levees offer excellent views to Union Hills, Middle Mountain, Pyramid Peak, Deems Hills, Bradshaw, New River, and North Mountains, and CAP Canal. Viewing opportunities along the operations and maintenance road/multi-use path should be integrated into the overall project aesthetic and combined with path rest nodes, trailheads, and/or destination points where possible. In addition viewing opportunities should also take into consideration the adjacent residential land use/private property owners.

Table 5.1. Preliminary Plant List

Scientific Name	Common Name
Trees	
Cercidium floridum	Blue Paloverde
Cercidium microphyllum	Foothills Paloverde
Chilopsis linearis	Desert Willow
Olneya tesota	Ironwood
Prosopis glandulosa 'Maverick'	Texas Honey Mesquite
Prosopis velutina	Velvet Mesquite
Shrubs/Groundcovers	
Acacia greggii	Catclaw Acacia
Ambrosia ambrosioides	Giant Bursage
Ambrosia deltoidea	Triangle Bursage
Artiplex canescens	Four –winged Saltbush
Artiplex lentiformis	Quailbrush
Asclepias subulata	Desert Milkweed
Atriplex polycarpa	Desert Saltbush
Calliandra eriophylla	Fairy Duster
Celtis pallida	Desert Hackberry
Dyssodia pentachaeta	Dyssodia
Encelia farinosa	Brittle Bush
Eriogonum fasciculatum var. poliofolium	Arizona Buckwheat
Hyptis emoryii	Desert Lavender
Justicia californica	Chuparosa
Larrea tridentata	Creosote Bush
Lycium andersonii	Wolfberry
Lycium fremontii	Fremont Thornbush
Psilostrophe cooperi	Paperflower
Senna species	Senna
Trixis californica	Trixis
Zinnia acerosa	Desert Zinnia
Ziziphus obtusifolia	Graythorn

Scientific Name	Common Name
Cacti/Succulent Accents	
Agave species	Agave
Carnegiea gigantea	Saguaro
Fouquieria splendens	Ocotillo
Opuntia species	Prickly Pear
Yucca species	Yucca
Forbes/Wildflowers	
Abronia villosa	Sand Verbena
Baileya multiradiata	Desert Marigold
Eschscholtzia mexicana	Mexican Gold Poppy
Glandularia gooddingii	Desert verbena
Kallstroemeria grandiflora	Arizona Poppy
Lesquerella gordoni	Bladder Pod
Lupinus sparsiflorus	Desert Lupine
Lupinus succulentus	Arroyo Lupine
Melampodium leucanthum	Blackfoot Daisy
Oenothera caespitosa	Evening Primrose
Phacelia crenulata	Desert Phacelia
Penstemon eatoni	Firecracker Penstemon
Penstemon parryi	Parry Penstemon
Penstemon pseudospectabilis	Showy Penstemon
Plantago ovata (insularis)	Indian Wheat
Sphaeralcea ambigua	Globe Mallow
Viguiera deltoidea	Desert Sunflower
Grasses	
Aristida purpurea	Purple Three-Awn
Bouteloua aristidoides	Needle Grama
Bouteloua gracilis	Blue Grama
Bouteloua rothrockii	Rothrock Grama
Digitaria californica	Arizona cottontop
Distichlis spicata	Desert Saltgrass
Hilaria belangeri	Curly Mesquite
Hilaria rigida	Big Galleta
Panicum obtusum	Vine mesquite
Sporobolus airoides	Alkalai Sacaton
Sporobolus cryptandus	Sand Dropseed

5.4 Recommended Alternative –New River Road Bridge Levees

The Recommended Alternative includes the construction of new levees immediately up- and downstream of the New River bridge at Skunk Creek. The new levees along Skunk Creek upstream of the New River Road bridge will prevent flow breakouts, flooding of residences, and interrupted access on New River Road. The levees will range from 6 to 9 feet in height and include a 10-foot operations and maintenance road. Similar to the CAP Canal levees, multi-use paths should be integrated as part of the operations and maintenance road along the top of the proposed levees. The paths should be integrated into the overall project aesthetic. In addition, channel improvements in Skunk Creek will be constructed in the vicinity of the New River Road bridge to keep all streamflow in the channel passing through the bridge opening. The overall landscape theme for the CAP Canal Levees is a natural Sonoran Desert landscape that protects, enhances, and complements the existing setting.

6.0 Aesthetic Design Guidelines

The intent of the aesthetic design guidelines is to incorporate aesthetic features into flood control facilities to enhance the visual appearance, help preserve the visual character of the natural Sonoran Desert landscape, and create aesthetic value in the community. The implementation of these guidelines may be constrained where available rights of way or funding is limited.

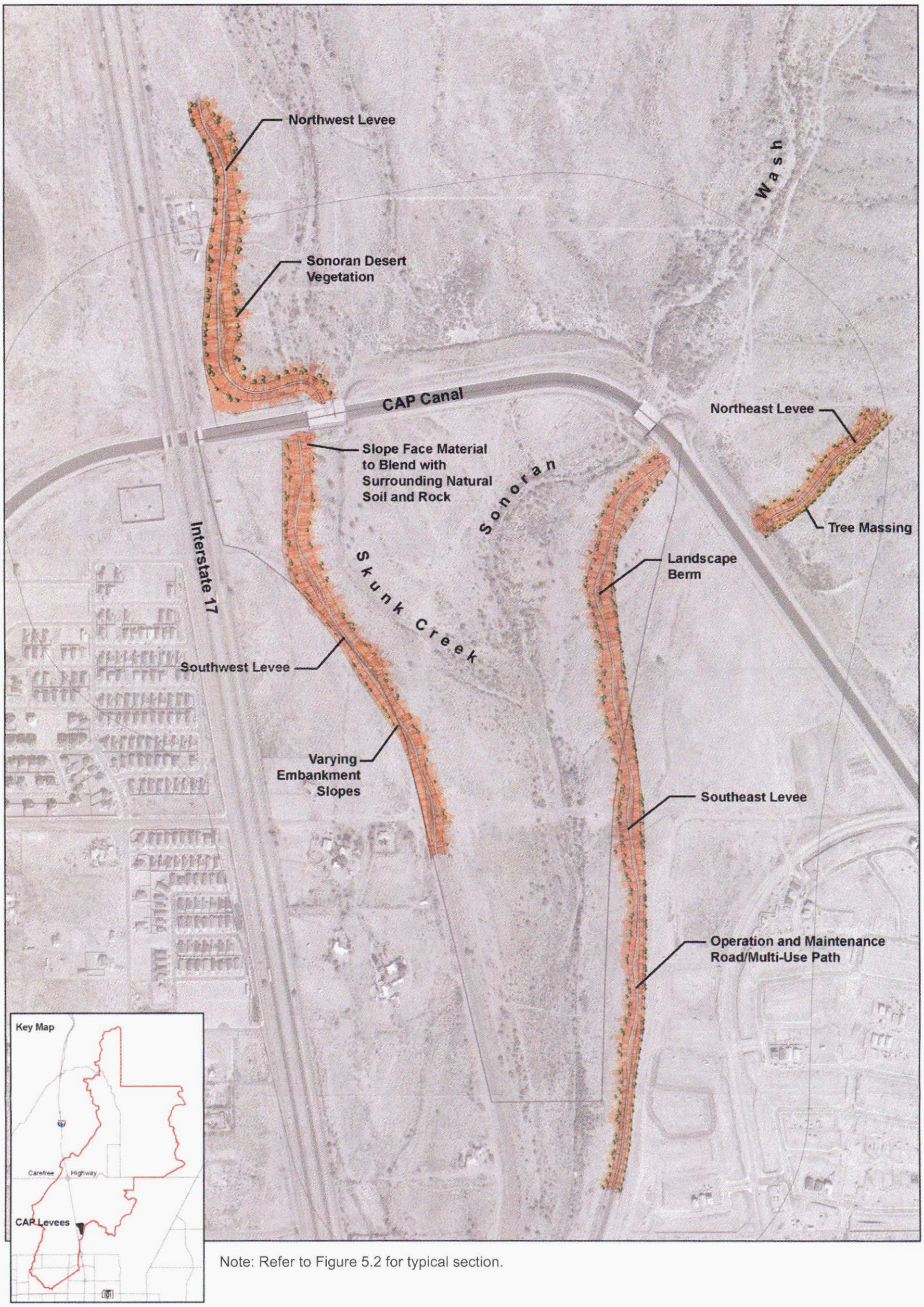
6.1 Recommended Alternative –CAP Canal Levees

Aesthetic Concept: to incorporate the levee into a more natural appearing feature by using landscape berms that mimic on a smaller scale the distant mountain forms and incorporating plant material associated with the Sonoran Desertscrub. Figures 5.1 and 5.2 illustrate the aesthetic concept for the CAP Canal levees.

Landscape Berm and Levee Criteria:

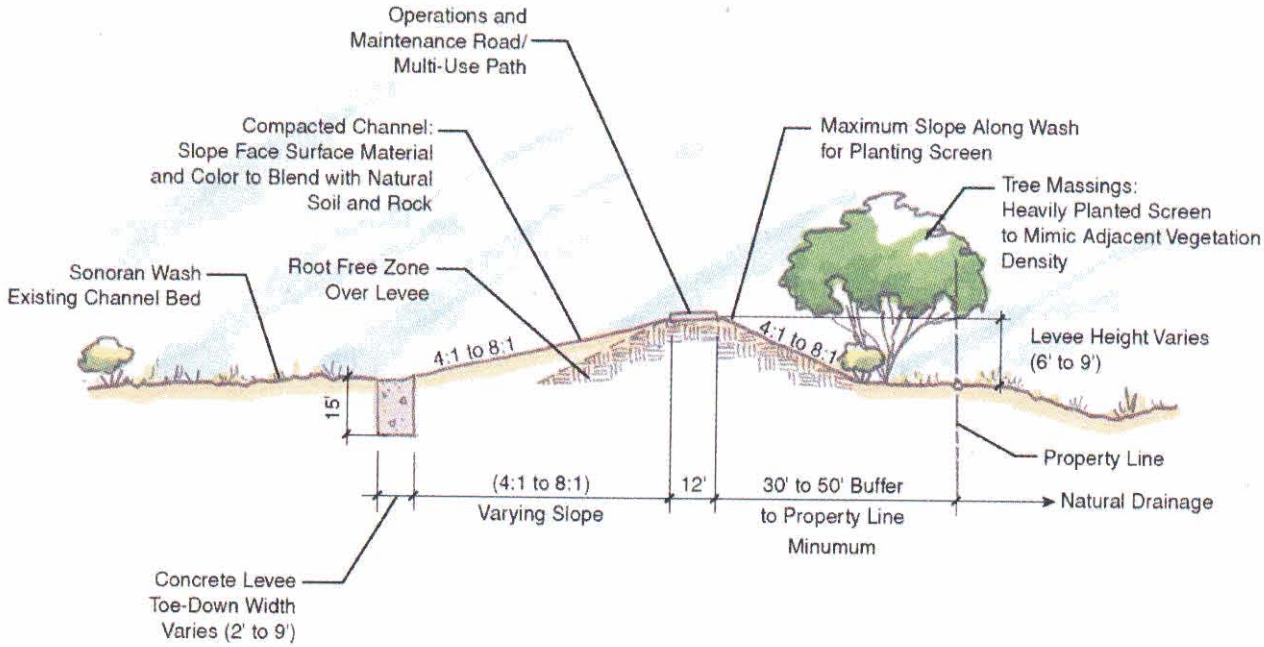
1. Configuration
   - Vary height of the landscape berm 3 to 5 feet above the top of the levee.
   - Vary the slope of the landscape berm and levee from 4:1 to 8:1. Levee slope covered by the landscape berm can be 4:1.
   - Round the top of the landscape berm.
   - Setback levee minimally from 30 to 50 feet from property line.
   - Use operation and maintenance road as multi-use path where feasible and in compliance with adopted city and county trails plans.

2. Vegetation
   - Select native plant material or material indigenous to the area.
   - Place trees, shrubs, ground covers, and rocks in an irregular pattern along the sides and top of the landscape berm to break-up the linear form of the landscape berm.

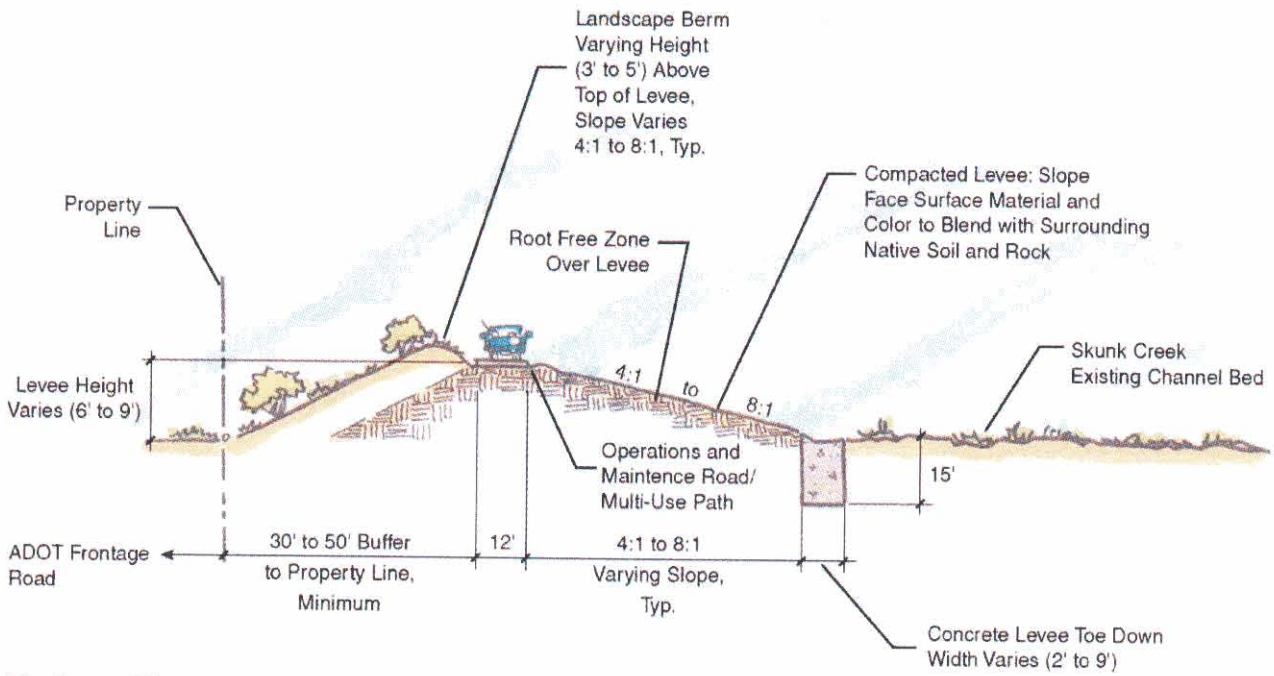


Note: Refer to Figure 5.2 for typical section.

Figure 5.1: Recommended Alternative – Cap Canal Levees Aesthetic Treatments Plan View

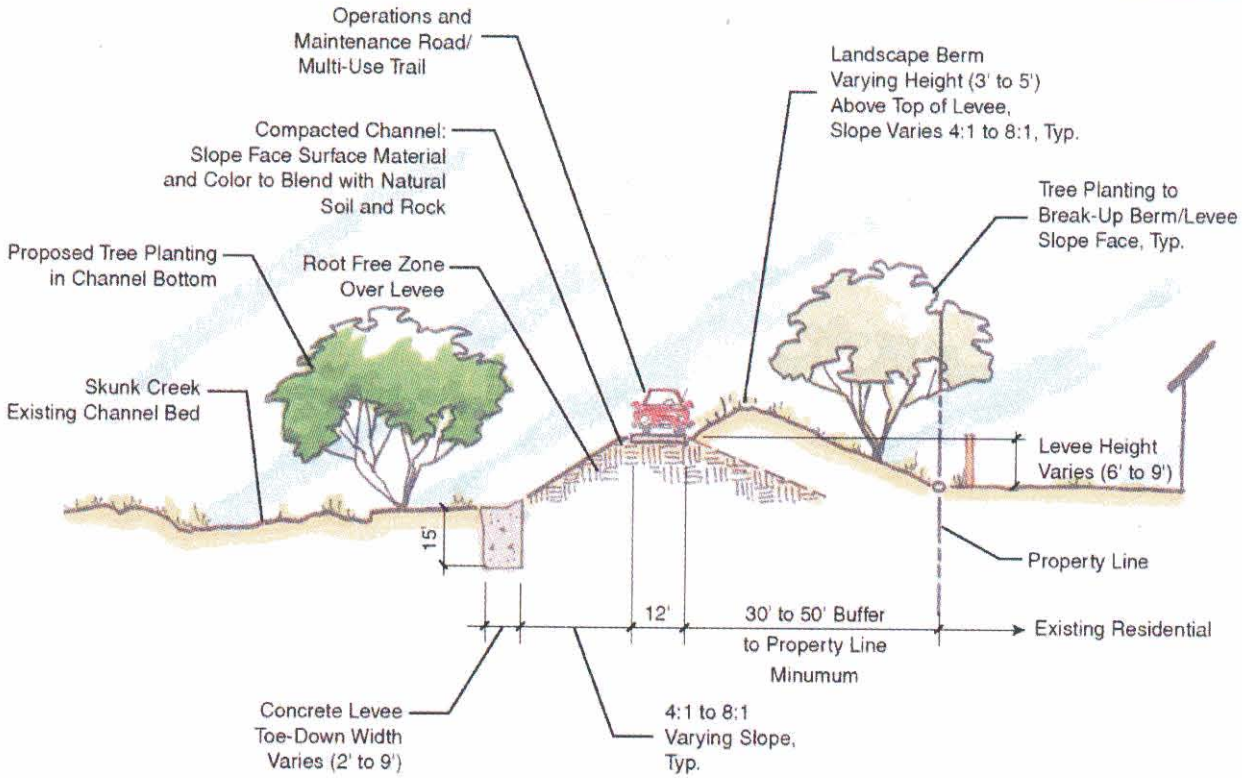


Northeast Levee

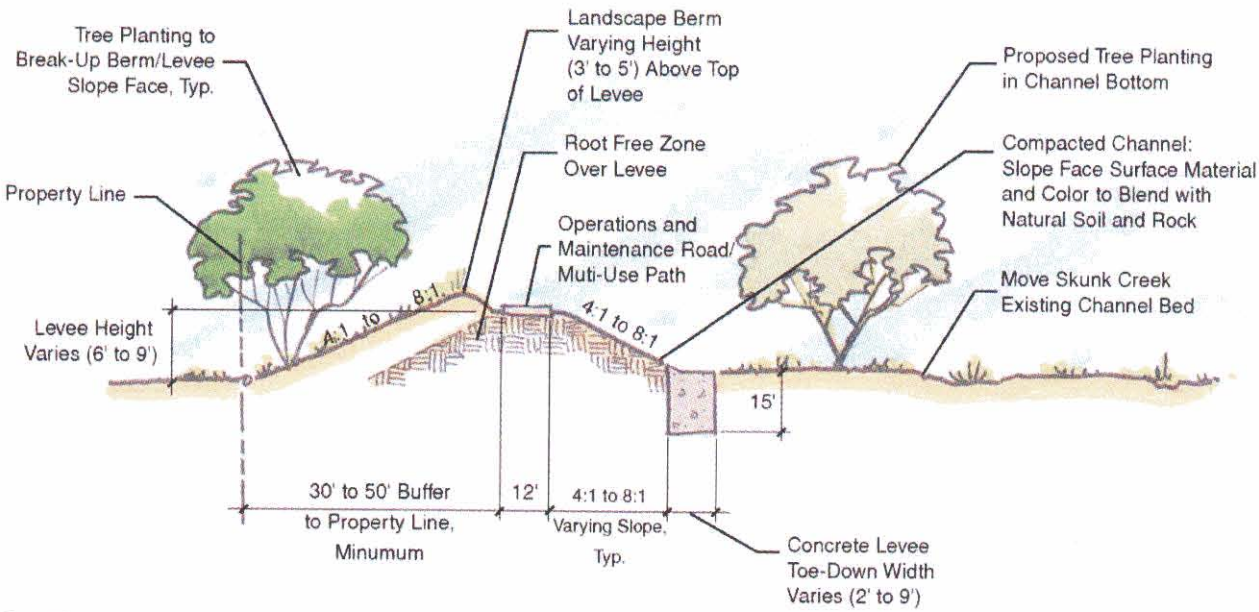


Northwest Levee

Figure 5.2: Recommended Alternative – Cap Canal Levees Aesthetic Treatments Sections and Sketch



Southeast Levee



Southwest Levee

Figure 5.2: Recommended Alternative – Cap Canal Levees Aesthetic Treatments Sections and Sketch (continued)

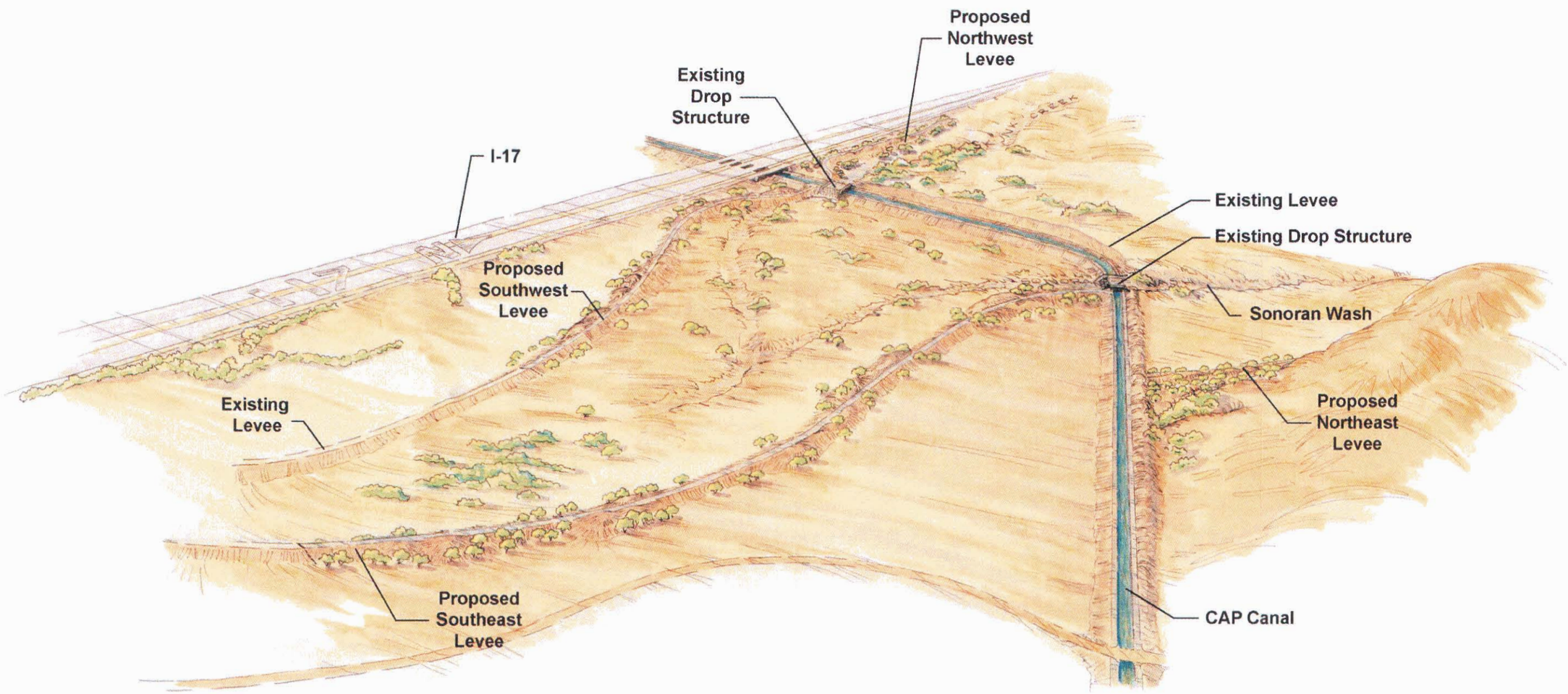


Figure 5.3: Recommended Alternative – Cap Canal Levees Aesthetic Treatments Sketch

Preserve mature trees where possible.

- Place plant material in densities similar to existing conditions.

3. Materials
   - Use material for exposed levee surface that blends the color of the material with the surrounding native surface material to minimize visual contrast.

6.2 Recommended Alternative –New River Bridge Levees

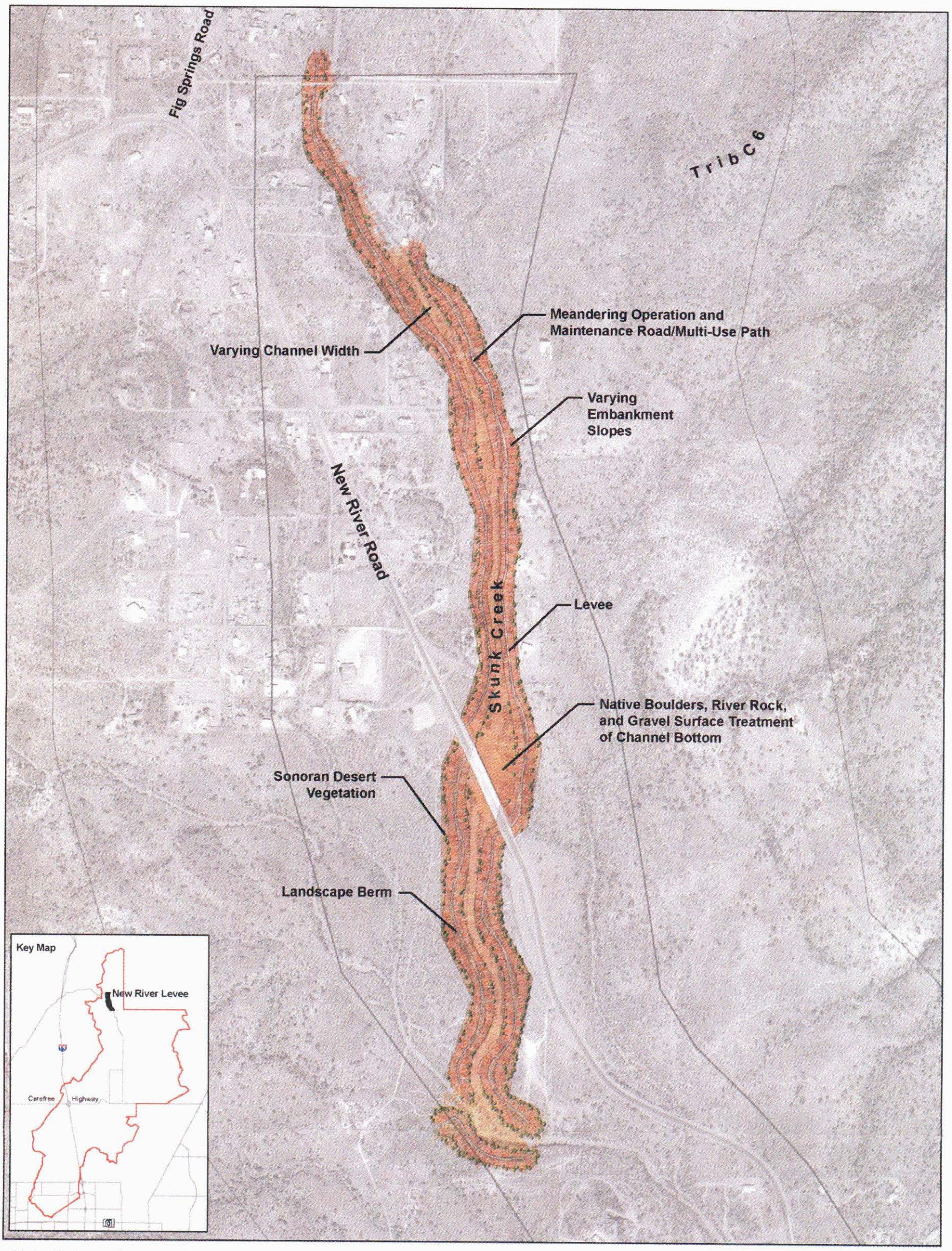
Aesthetic Concept: to incorporate the levee into a more natural appearing feature by using landscape berms that mimic the existing rolling terrain, to vary the width of Skunk Creek and maintain the natural curvilinear characteristics of the channel, and to incorporate plant material associated with a natural Sonoran Desert wash (Skunk Creek). Figures 5.3 and 5.4 illustrate the aesthetic concept for the New River Bridge levees.

Landscape Berm and Levee Criteria:

1. Configuration
   - Vary height of the landscape berm 3 to 5 feet above the top of the levee.
   - Vary the slope of the landscape berm and levee from 4:1 to 8:1. Levee slope covered by the landscape berm can be 4:1.
   - Round the top of the landscape berm.
   - Setback levee minimally from 30 to 50 feet from property line.
   - Use operation and maintenance road as multi-use path where feasible and in compliance with adopted city and county trails plans.

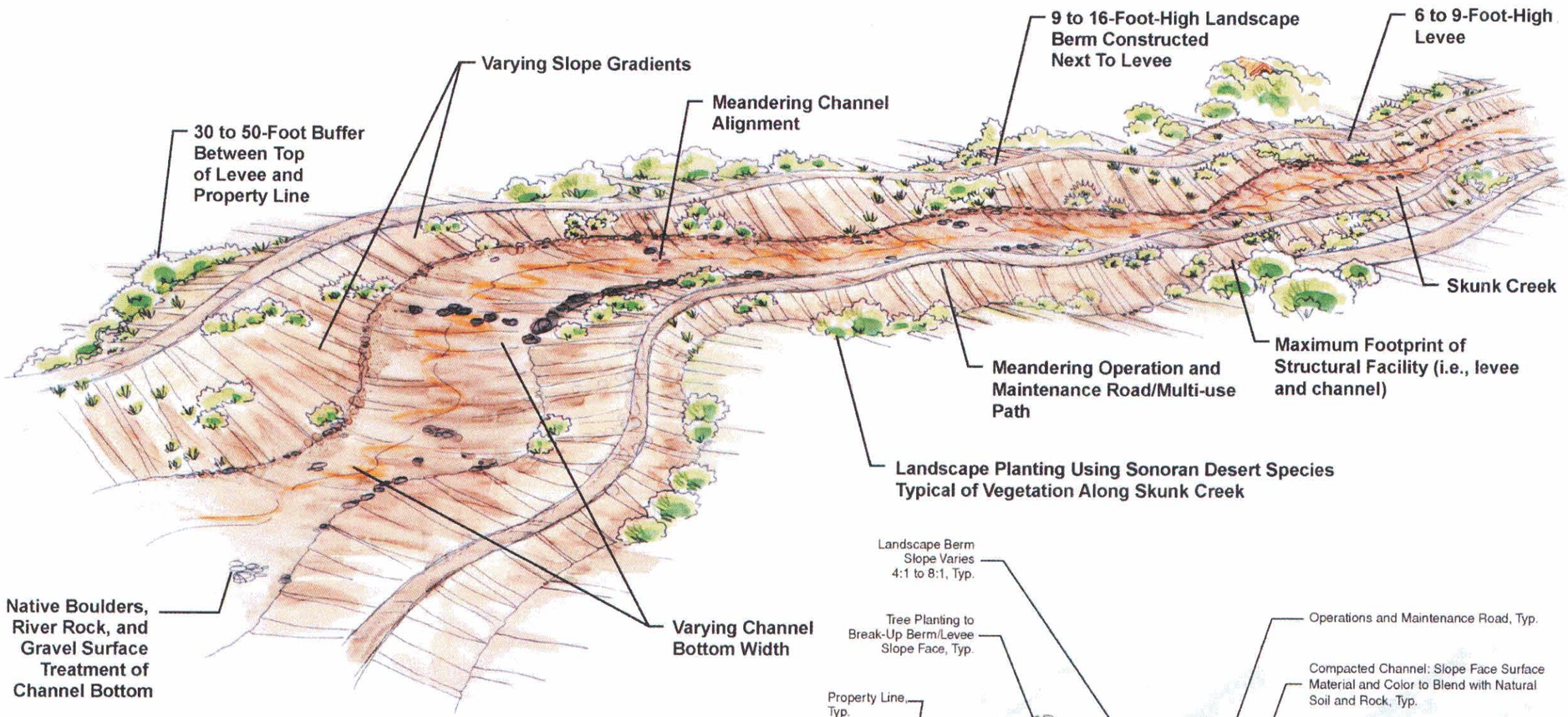
2. Vegetation
   - Select native plant material or material indigenous to the area.
   - Place trees, shrubs, ground covers, and rocks in an irregular pattern along the sides and top of the landscape berm to break-up the linear form of the landscape berm.
   - Preserve mature trees where possible.
   - Place plant material in densities similar to existing conditions.

3. Materials
   - Use material for exposed levee surface that blends the color of the material with the surrounding native surface material to minimize visual contrast.



Note: Refer to Figure 5.4 for typical section.

Figure 5.4: Recommended Alternative – New River Road Bridge Levees Aesthetic Treatments Plan View



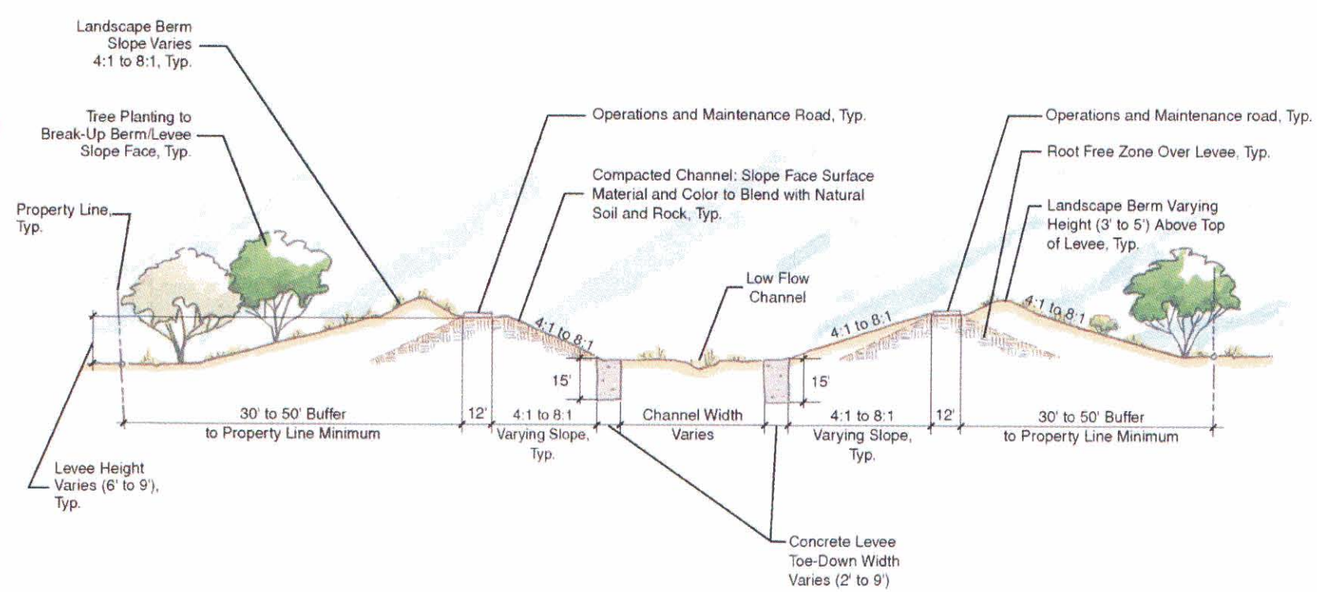


Figure 5.5 Recommended Alternative – New River Road Bridge Levees Aesthetic Treatments Section and Sketch

Channel Criteria

- Construct irregular channel bottom slope. Accentuate the changes in grade by the placed of rocks, similar to a natural wash bottom.
- Create an overall channel form that is more organic and not geometric, vary channel width bottom.
- Meander channel alignment in an irregular pattern to mimic natural form of Skunk Creek.
- Scatter bottom surface of channel with cobbles and rocks, similar to adjacent areas of Skunk Creek.
- Blend bottom surface material with the surrounding native surface material to minimize visual contrast.

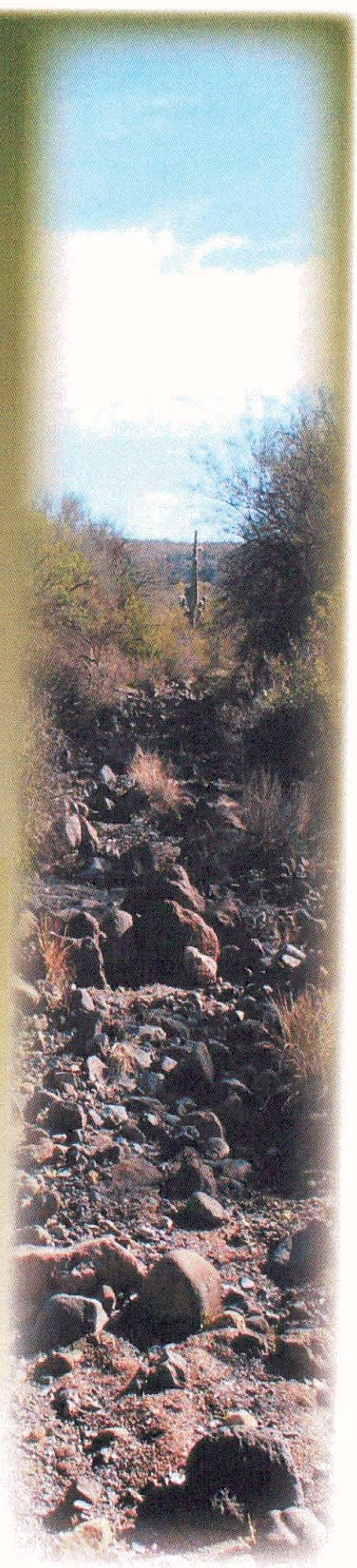
7.0 References

US Department of Agriculture, Forest Service. *Landscape Aesthetics: A Handbook for Scenery Management*. 1995.

National Forest Landscape Management Volumes 1 and 2. 1974.

ADOBE DAM/DESERT HILLS

AREA DRAINAGE MASTER PLAN



Part 6

Multiple-Use Opportunities Assessment

Flood Control District of Maricopa County

December 2004

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1.0 Introduction

This is the Multiple-Use Opportunities Assessment documentation of the Adobe Dam/Desert Hills Area Drainage Master Plan (ADMP) prepared for the Flood Control District of Maricopa County (District). The District's aesthetics and open space goal is to "enhance the year round value of its flood protection facilities by incorporating features that will help preserve natural Sonoran Desert landscapes, protect and enhance local community character, enhance the aesthetic value of its properties and provide public opportunities for recreation activities. This Multiple-Use Opportunities Assessment for the Adobe Dam/Desert Hills ADMP has been prepared to meet this goal and the specific objectives of this study. The intent of the Adobe Dam/Desert Hills ADMP is to create a plan to maintain the physical characteristics and manage the flow of Skunk Creek. The study will analyze current watershed conditions and identify drainage and flooding issues. The study area is approximately 100 square miles including 7 square miles within the watershed in the Town of Cave Creek and 47 square miles in the City of Phoenix (Figure 1.1). The remaining area is unincorporated Maricopa County.

The Adobe Dam/Desert Hills ADMP study area has been divided into four geographic subareas as described below going from south to north:

- Phoenix South of the Central Arizona Project (CAP) Canal (PCS) – Buchanan Wash from the Skunk Creek confluence to the CAP Canal and Skunk Creek from Adobe Dam to the CAP Canal

- Phoenix North of the CAP Canal (PNC)– Sonoran Wash, upper Buchanan Wash, and Skunk Creek from the CAP Canal to the Cloud Road crossing

- Desert Hills (DH) – Desert Hills Wash and tributaries, upper Apache Wash, upper Paradise Wash, Skunk Tank Wash, and Skunk Creek from the Cloud Road crossing to the Rodger Creek confluence

- New River/Skunk Creek (NR) – Cline Creek and tributaries, Rodger Creek, and upper Skunk Creek from the Rodger Creek confluence to the Tonto National Forest boundary

Within each subarea, FCD, its consultant, other agencies, and local residents have identified 16 specific problem sites. These sites have been numbered sequentially from south to north. The four subareas and 16 sites are shown in Figure 1.2.

2.0 Purpose of the Multiple-Use Opportunities Assessment

The purpose of this Multiple-Use Opportunities Assessment is to identify recreation opportunities, constraints, and possible facilities within the Adobe Dam/Desert Hills ADMP study area. The inventory and analysis of recreation facilities and opportunities and the District's planning and design requirements will be

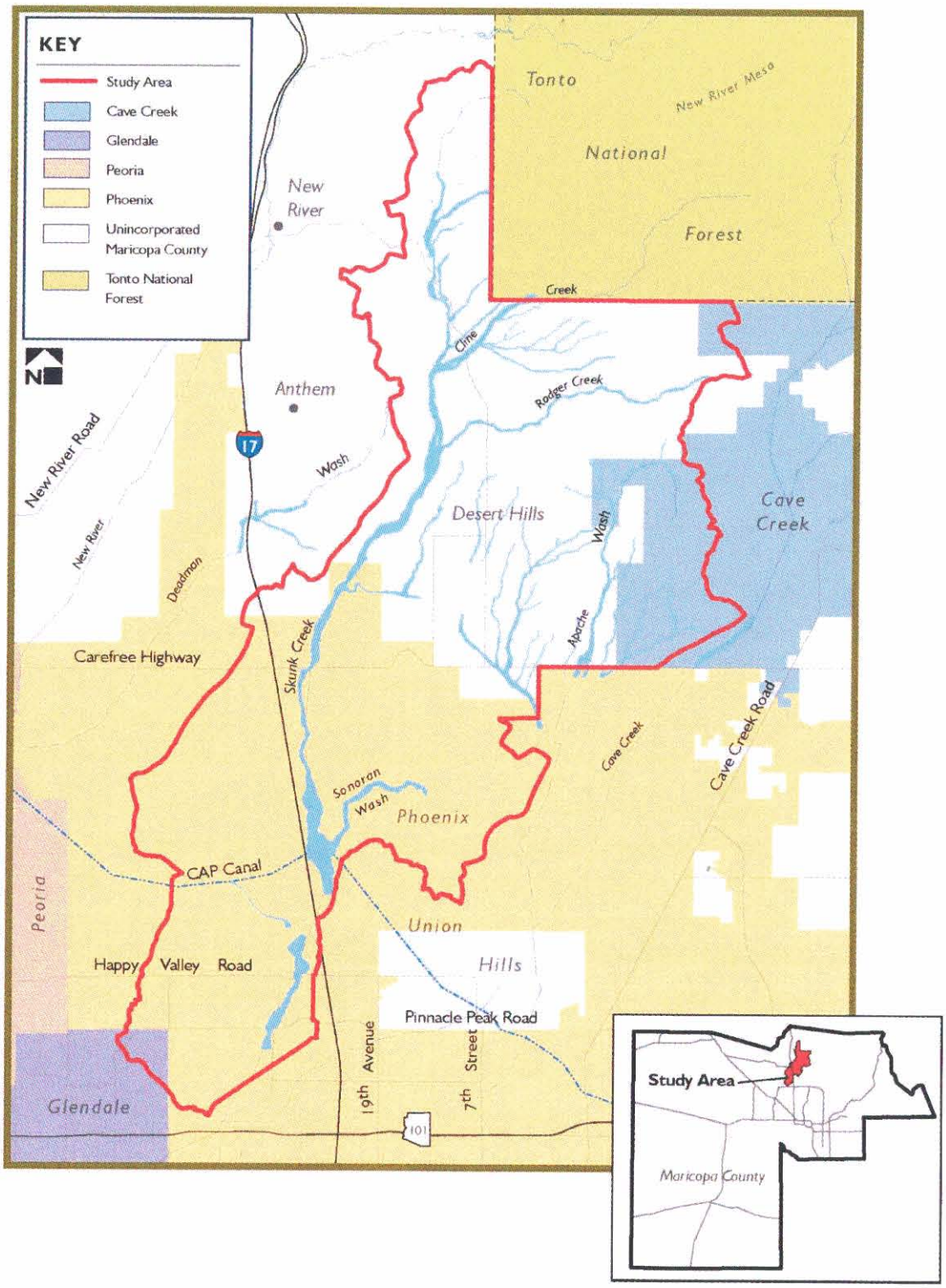


Figure 1.1: Location Map

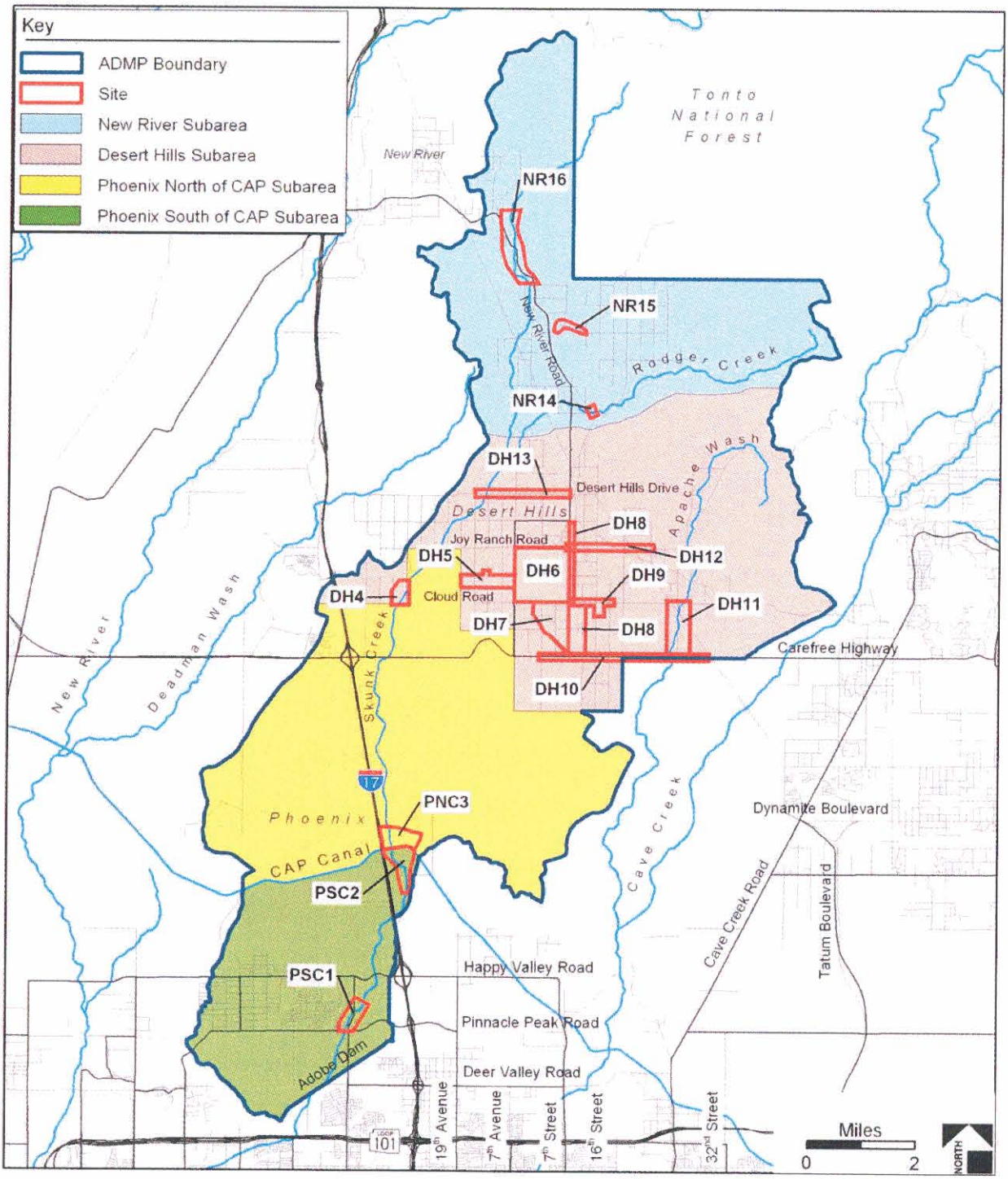


Figure 1.2: Subarea and Site Map

used to identify and describe the types of multiple uses that might be appropriately incorporated into the proposed alternatives. This assessment will serve as a basis for evaluating flood control alternatives to maximize opportunities to meet local community needs for recreation, open space, protection and enhancement of the natural landscape and local community character, and/or alternative forms of transportation. The Multiple-Use Opportunities Assessment will be used to identify and describe the recreation multi-use impact potential and degree of flexibility that would exist with regard to modifying the location, type, size, depth, configuration, and other design aspects of the various components and features of the recommended flood protection alternative. In addition, conceptual level design standards for the integration of multiple-use opportunities with recommended flood control features will be developed.

3.0 Methodology Description

To identify recreational opportunities and constraints, a regional inventory and analysis of existing and planned land uses was conducted within 1 mile of the ADMP study area. The regional study area was described according to the four geographic subareas, and local inventories and analyses were also conducted for each of the 16 site-specific problem areas. Inventory methods included a review of city and county existing land use maps and planning documents, aerial photographs, and field verification conducted in July 2003. City and county organizations were also contacted for new and updated information within the study area. Sources used to identify the existing and planned multiple-use facilities included:

- City of Phoenix General Plan (2001)
- City of Phoenix General Plan (Revised 2003)
- Sonoran Preserve Master Plan (2001)
- Maricopa County GIS Database (2002)
- Bicycle Transportation System Plan (1999)
- Maricopa County Regional Trail System Master Plan (2001)
- MAG Regional Bicycle Plan (2000)
- MAG Off-Street System Plan (2000)
- New River Area Plan (1998)
- Skunk Creek Watercourse Master Plan (2001)

Analyses were then conducted of the regional study area and of site-specific locations for opportunities to protect or restore natural and/or cultural features of the area, the types of multiple uses that might be appropriately incorporated into the project, possible partners and funding sources for implementation of multiple-use opportunities for the recommended alternative, and conceptual-level design standards for integration of multiple-use opportunities with recommended flood control facilities.

The Multiple-Use Opportunities Assessment is divided into the following five major components to document surface land uses and corresponding recreational activities within the ADMP on both a regional and local scale:

- Existing Conditions and Planned Land Uses
- Planning Influences and Opportunities for Protection or Restoration
- Appropriate Multiple-Use Opportunities
- Possible Partners and Funding Sources
- Conceptual-Level Design Standards

4.0 Existing Conditions and Planned Land Uses

The study area lies within the jurisdictions of the City of Phoenix, Town of Cave Creek, Maricopa County, and the Arizona State Land Department (ASLD). Lands within the study area have a combination of public and private ownership, though a substantial amount is publicly owned. Existing conditions and planned land uses were identified within the ADMP on regional and local scales, and include recreation and transportation systems.

As part of this study, planned and existing land uses analyzed on a regional scale are identified in the following categories: residential, commercial, public/quasi public, and industrial. Transportation and recreational systems were categorized and analyzed as freeways/interstates, parkways, and roads; bikeways; trails; recreation sites and parks; open space; and public transportation.

4.1 Regional Residential, Commercial, Public/Quasi-Public, and Industrial Land Uses

4.1.1 Residential – This category refers to all low-, medium-, and high-density residential development as well as dispersed rural residences. According to the *City of Phoenix General Plan* (2001), the residential planned land uses within the study area include low-, medium-, and high-density residential development. The majority of medium- and high-density development within the study area is planned west of 19th Avenue, with lower density housing planned northeast, further away from the Interstate 17 (I-17) corridor. City of Phoenix-approved planned community developments located south of Carefree Highway include Amber Hills, Carefree Crossing, and Sonoran Foothills. According to Maricopa County's 1998 *New River Area Plan*, rural residential development is planned for northeastern portions of the study area. On a regional scale, the majority of the ADMP study area consists of low-density or rural residential development, with higher residential housing densities located near the I-17 corridor and within newly developed master planned communities (Figure 4.1: Planned Land Use and Figure 4.2: Existing Land Use).

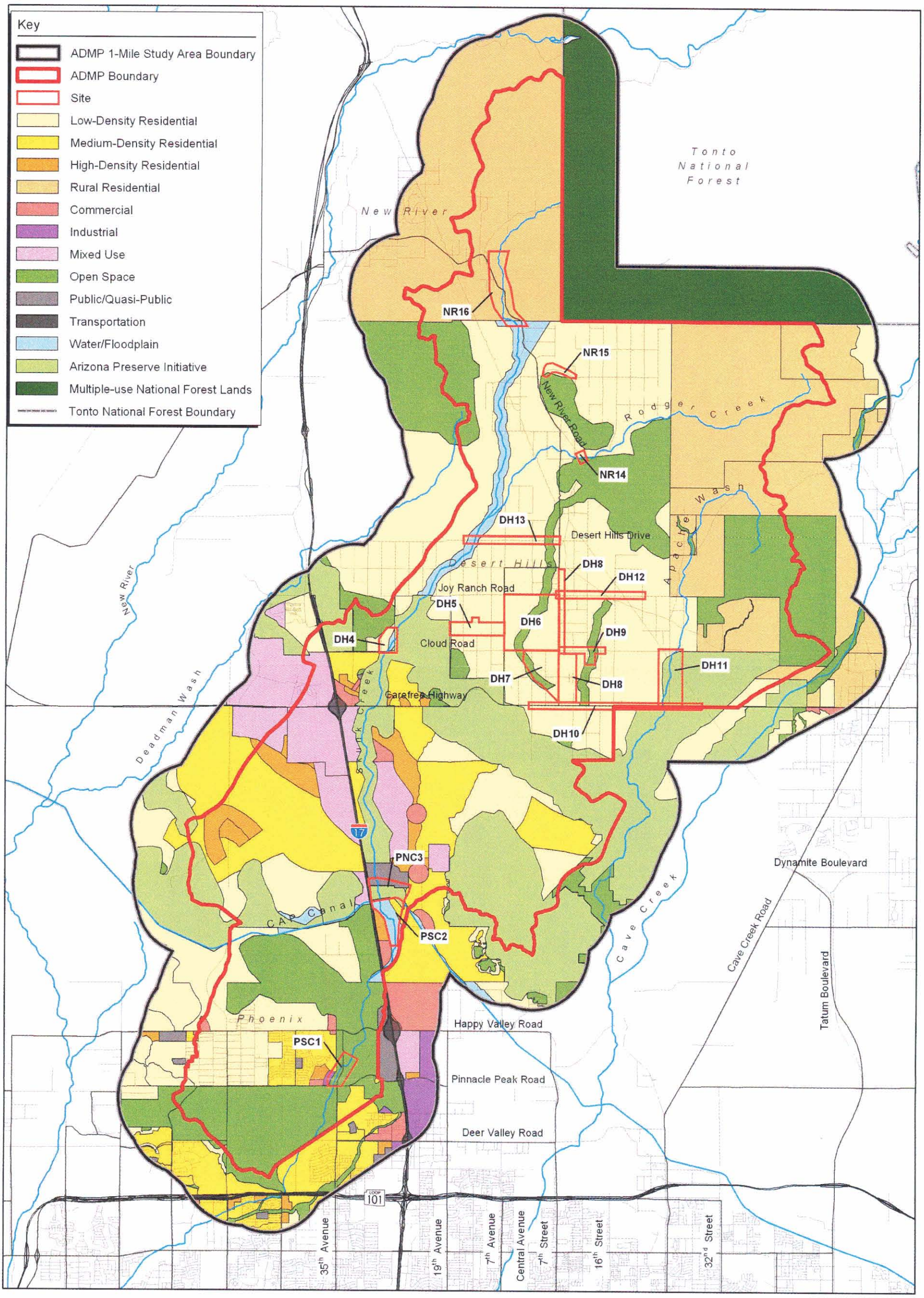
Recent residential developments include the master planned community of Anthem Parkside, which is a large-scale development (approximately 6,000 acres) located west of the ADMP study area. The Tramonto development is another large-scale residential community located northeast of the I-17 and Carefree Highway interchange. These communities have a regional park and trails components, including a non-motorized multi-use (equestrian) trail along Skunk Creek.

Recreation facilities are typically located within or immediately adjacent to residential land uses. Flood control facilities can be used to link existing and planned multi-use paths and trails and can also provide open space for passive and/or active recreation. As part of the evaluation of alternatives, these types of opportunities will be evaluated.

4.1.2 Commercial – According to the *City of Phoenix General Plan* (2001), commercial planned land uses within the ADMP study area include areas east of the I-17 and Carefree Highway interchange and areas east of I-17, between Carefree Highway and Dove Valley Road. Pockets of commercial development are also planned south of Carefree Highway along the 23rd Avenue alignment. The majority of existing commercial land use within the ADMP study area is located within the I-17 corridor and along Carefree Highway. These developments include gas station/convenience stores, grocery stores, retail stores, and restaurants. Located in more rural portions of the study area, landscape nurseries, horse facilities, and small convenience stores are scattered in commercially isolated locations. Commercial land uses provide opportunities for multi-use path connections to destination points and can serve as rest nodes or staging areas.

4.1.3 Public/Quasi-Public – This category includes schools, churches, cemeteries, government offices, and undesignated publicly owned land. According to the *City of Phoenix General Plan* (2001), large tracts of public/quasi-public lands are existing and planned west of I-17, southwest of the Happy Valley Road interchange. Public/quasi-public land uses area also planned in areas east of I-17, located just north of the CAP Canal. These tracts will be incorporated into parks, open space or other public uses as the area is developed. Located south of Cloud Road and east of 7th Avenue, the Desert Mountain Middle School is the only school within the northern portion of the study area. Paseo Hills Elementary, Desert Sage Elementary, Deer Valley Middle, and Barry Goldwater High School are located in the southern-most portion of the study area. Several churches and two fire stations are also located within the ADMP study area. Because public/quasi-public land uses include school facilities that are commonly available for public recreational use in addition to public parks and open spaces, there are usually numerous opportunities for flood control facilities to link and enhance these land uses.

4.1.4 Industrial – Several small areas of industrial land uses are located throughout the ADMP study area, including transmission line substations, quarries, and warehouse sites. Generally there is limited need for recreational facilities near industrial areas. However, multi-use paths used for nonmotorized transportation may be beneficial to the community in these areas.



Source: MAG General Plan 2001

Miles
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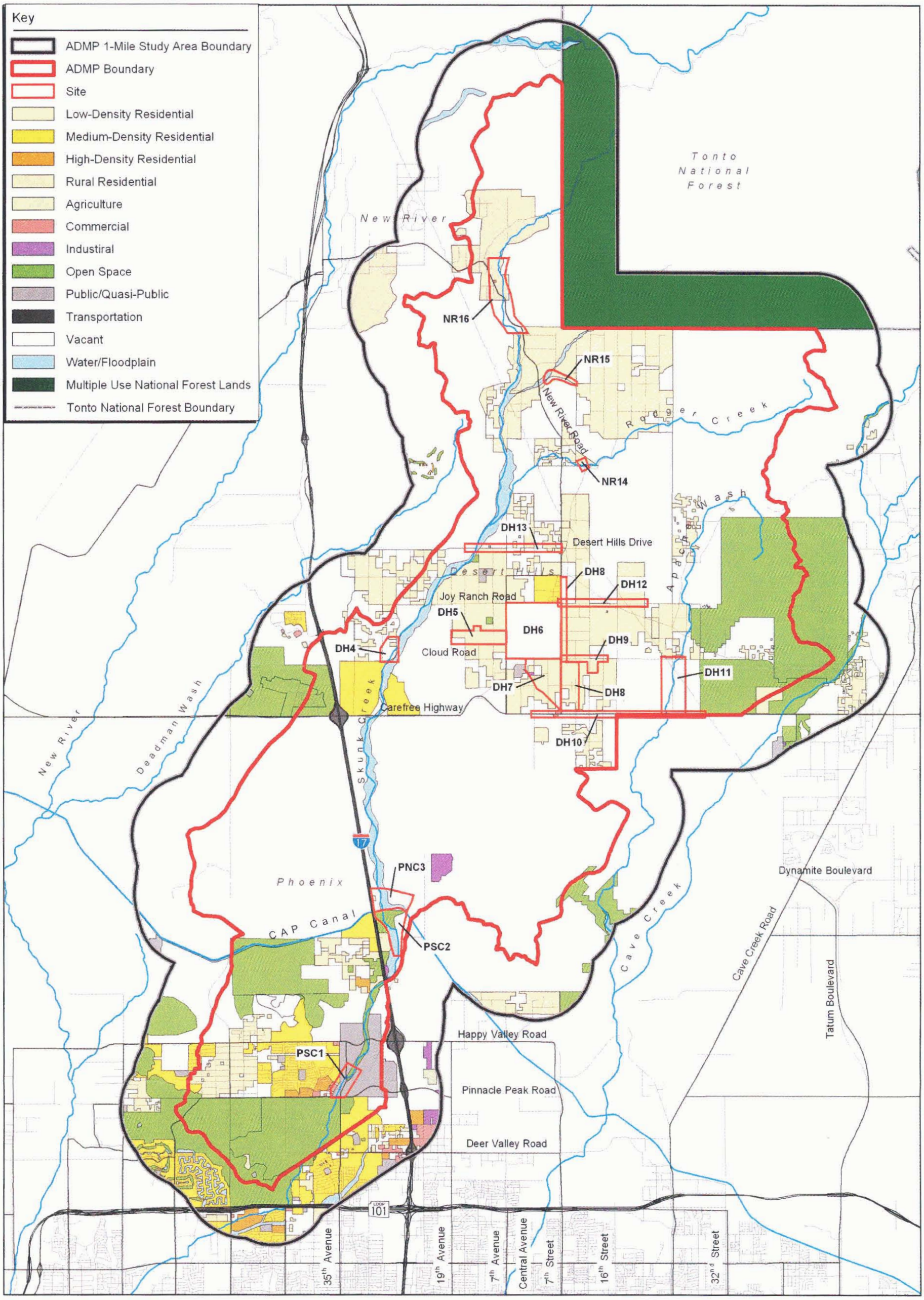
Figure 4.1: Planned Land Use



Sources: MAG General Land Use, 2001; Aerial Photography, 2002

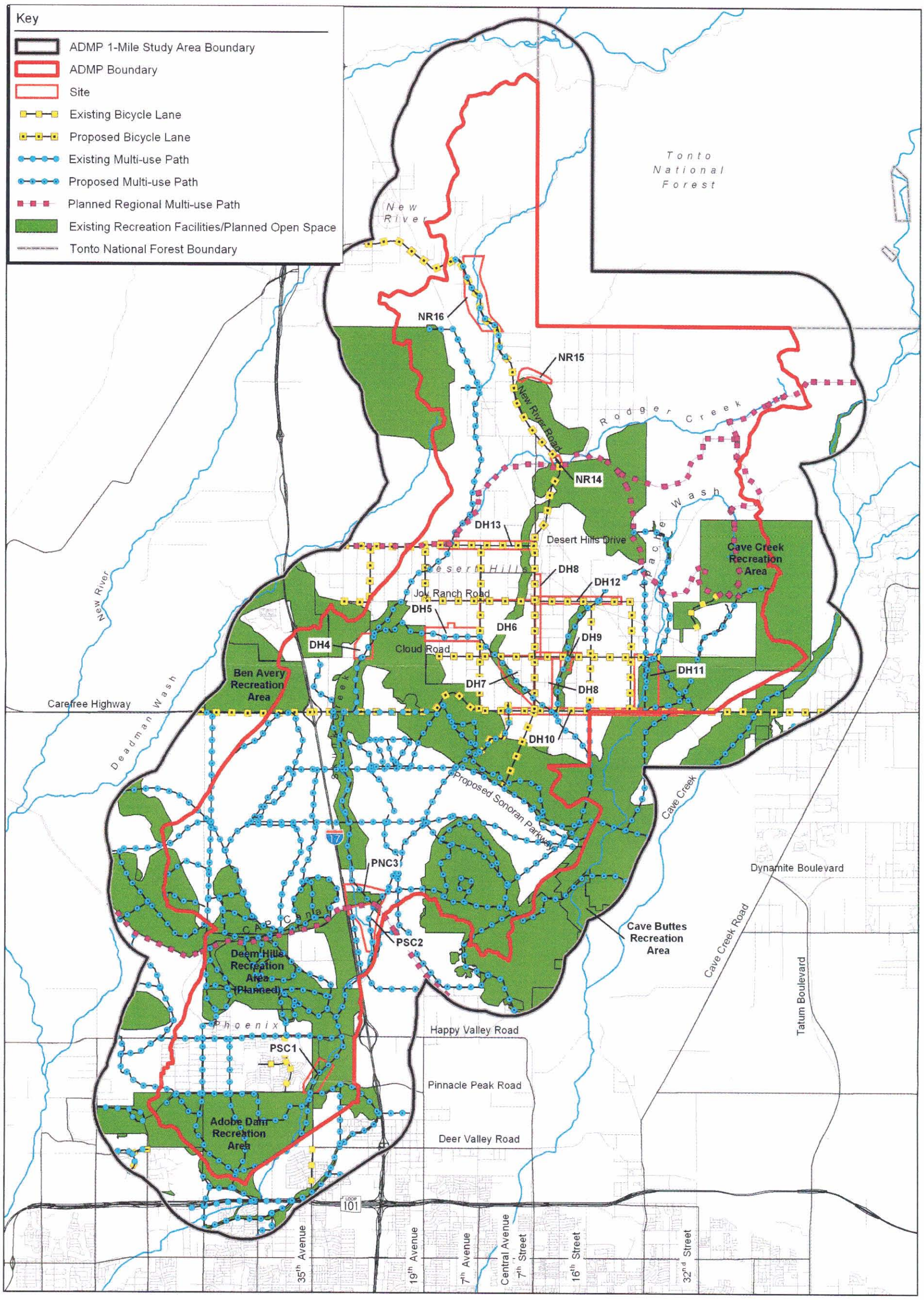
Figure 4.2: Existing Land Use

4.2 Regional Transportation and Recreational Systems

4.2.1 Freeways/Interstates, Parkways, and Roads – The major regional transportation system along the western edge of the ADMP study area is I-17, which is on a north-south alignment. State Route 101Loop is located outside the southern boundary of the ADMP. Located in the middle of the ADMP, Carefree Highway is a four-lane roadway that crosses I-17 on an east-west alignment. Surface (local) streets include arterial collectors located along section lines. Major streets include Happy Valley Road, Pinnacle Peak Road, Desert Hills Drive, 7th Street, 7th Avenue, and New River Road, all of which have two travel lanes. These transportation facilities are noted on the Transportation and Recreation Systems map (Figure 4.3). Regional transportation nodes occur at these major street interchanges, forming, in some areas, commercial districts. Within the ADMP study area, Carefree Highway is identified as a Road of Regional Significance, according to the Maricopa Association of Governments (MAG). Roads of Regional Significance consist of planned roadway improvements that have typical cross sections, which include six travel lanes, bicycle lanes, and raised medians. Additionally, the Sonoran Parkway is a major planned transportation element within the study area, located south of Carefree Highway between Cave Creek Road and I-17 (Figure 4.3: Transportation and Recreation Systems). As this portion of Maricopa County is developed, the desire for non-motorized facilities on existing roadways will most likely increase. There is no known existing need for bike use on these roadways.

4.2.2 Bikeways – MAG *Regional Bicycle Plan* (January 1999) routes were designed as a system of long, interconnected routes for use by commuting, touring, recreational, or training users for travel within or through the Phoenix Metropolitan Area. The regional system forms a skeleton from which each jurisdiction can provide localized service to important destinations. The bikeways identified in the City of Phoenix *Bicycle Facilities Plan* overlap those identified in the MAG *Regional Bicycle Plan*. The City of Phoenix also recognizes bicycling as an effective means of transportation for short trips. Bicycling and other multimodal means of transportation play an important role in reducing congestion of surface streets. By providing convenient access to a safe route, the City of Phoenix hopes to encourage use of nonmotorized transportation for local trips. Phoenix's goals, as stated in the *Revised General Plan*, include increasing bicycle access, increasing bicycle ridership, and improving bicycle safety. The Transportation and Recreation Systems map (Figure 4.3) identifies existing and proposed paved bicycle routes within the ADMP study area.

Carefree Highway has an existing paved multi-use path between 19th Avenue and Skunk Creek and bike lanes are planned by the County along this roadway in accordance with the Road of Regional Significance designation. Many of the arterial and collector streets, as well as some drainage features within the study area, are proposed as trails to connect the various recreational destinations according to the local jurisdictions. These trails may also serve as bikeways. Figure 4.3: Transportation and Recreation Systems illustrates the existing and proposed trail/bikeway system within the study area. There are two planned facilities within the ADMP study area that are designated by the Maricopa County Parks and Recreation



Sources: MAG General Plan, 2001; MAG General Land Use, 2001; *Skunk Creek Watercourse Master Plan*, 2001; *Maricopa County Regional Trail System Master Plan*, 2001; *Bicycle Transportation System Plan*, 1999.

Figure 4.3: Transportation and Recreation Systems

Department (MPRD) as part of the regional trail system: the planned trail corridors along the Maricopa County Regional Trail, Lake Pleasant to Cave Creek alignment, and the CAP Canal. These paved regional multi-use trails would also serve as bikeways.

4.2.3 Trails – In the city of Phoenix, many of the arterial and collector streets, as well as some drainage features within the ADMP study area, have proposed trails alignments to connect various neighborhood parks and recreation areas. These trails are unpaved and are awaiting official designation in a General Plan Amendment for the city of Phoenix. In the *New River Area Plan*, Maricopa County identified several conservation trails and several proposed trails in the study areas as part of the aforementioned transportation plan. These trails provide public access that will accommodate nonmotorized travel modes along roadways. The Skunk Creek channel and New River Road are identified as alignments for proposed trails within the study area by Maricopa County. Several other arterial and collector streets, as well as additional ephemeral drainage features within the study area, are proposed as trails to connect recreational destinations. Several proposed conservation trails are located along alignments west of Circle Mountain Road, west of the study area, for hiker and equestrian use. Additionally, the New River Area Plan

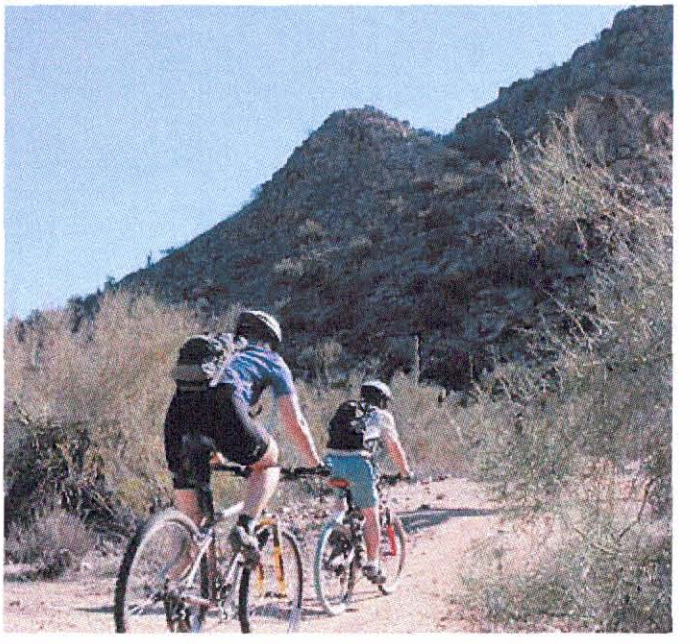


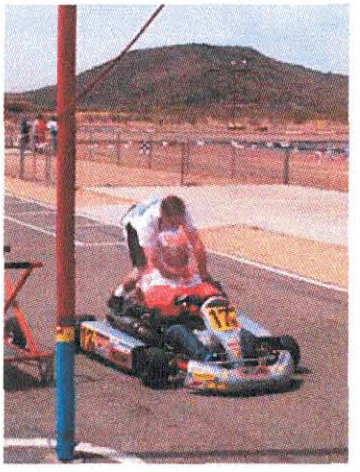
Photo by: Paul Beakley

Deems Hills Recreation Area (Planned)

calls for a nonmotorized trailway system between Lake Pleasant and Cave Creek Park. This would include two planned regional trails within the study area that are designated by the County as part of the regional trail system: the previously mentioned trail corridors along the Maricopa County Regional Trail, Lake Pleasant to Cave Creek alignment, and the CAP Canal. The ADMP has an existing paved multi-use path

along Carefree Highway between 19th Avenue and Skunk Creek and a small section of unpaved trail adjacent to Skunk Creek within the Tramonto development (Figure 4.3: Transportation and Recreation Systems). Other paved trails are limited to Thunderbird Park.

4.2.4 Recreation Sites – Located in the southwest portion of the study area, the Adobe Dam Recreation Area (also known as Adobe Mountain Park) contains 1,526 acres of mixed recreational use serving a variety of interest groups including go-kart racing, remote-controlled airplane activities with landing strips, model railroads, a sports complex, a water park, and a golf course. The Adobe Dam Recreation Area is managed by MPRD. Located on the western edge of the study area, the Ben Avery Shooting Facility (Ben Avery Recreation Area) is the largest public shooting facility (1,650 acres) in the country. It is publicly owned and operated by the Arizona Game and Fish Department in cooperation with the Arizona State Rifle and



Adobe Dam Recreation Area

Pistol Association. Additionally, Cave Creek and Cave Buttes Recreation Areas are located within the eastern and southeastern portions of the ADMP study area, offering open space, trails, and additional recreational amenities. There are two elementary schools and two middle schools within the ADMP study area's 1-mile buffer, which provide a variety of recreation facilities that can be used by the public. The ADMP study area also has several public golf courses. The planned Deem Hills Recreation Area will be located north of the Adobe Dam Recreation Area and will offer un-programmed open space in addition to a proposed dog park. These recreational sites are shown on the Recreation and Transportation Systems map (Figure 4.3).

4.2.5 Parks – Several parks are located within the ADMP study area. The purpose of these recreational parks is to provide primary recreation services and facilities that are easily accessible and available to local residents. City of Phoenix parks include Paseo Highland Park, Adobe Mountain Park, and several

neighborhood parks. There is a limited number of neighborhood parks located in the more rural portions of unincorporated Maricopa County. However, the Anthem Parkside development has incorporated a regional park facility within its master planned community, located north of Carefree Highway between Skunk Creek and I-17. Figure 4.3: Transportation and Recreation Systems indicates the location of recreational areas within the study area.

4.2.6 Open Space – Open space within the ADMP study area provides a number of functions, such as recreation, aesthetics, and flood control. Open spaces within the city of Phoenix would include the parks discussed above as well as larger designated open spaces, and larger tracts of open space that was identified by the Sonoran Preserve Master Plan. Additionally, Adobe Dam Recreation Area, Cave Buttes Recreation Area, Cave Creek Recreation Area, and the Ben Avery Shooting Facility (Ben Avery Recreation Area) all incorporate open space and are multi-use recreational destination areas. Much of the land within the ADMP study area is currently owned and managed by ASLD and has been identified for preservation as part of the Sonoran Preserve Master Plan. Currently, ASLD provides recreational access to these lands through Recreational Use Permits. Typically, permits are given for the purpose of hiking, equestrian use, bicycling, rock climbing, all terrain vehicles (ATV) use and jeep tours. Hot air ballooning is also a permitted use on ASLD lands. Areas of open space of regional importance located within proximity of the ADMP study area include the Spur Cross Conservation Area, Tonto National Forest, and the McDowell Mountains. The open space within the ADMP study area is shown on the Transportation and Recreation Systems map.

4.2.7 Public Transportation – There is limited public transportation within the project area. Valley Metro provides public bus service as far north as Deer Valley Road. This is limited to the most southern portion of the study area.

4.3 Subarea Summary

The regional ADMP study area is divided into four subareas: Phoenix South of CAP Canal, Phoenix North of CAP Canal, Desert Hills, New River. Local inventories and analyses were conducted for each of the 16 site-specific areas within these subareas.

4.3.1 Phoenix South of CAP Canal – Sites PSC1 and PSC2 are located within this subarea. The primary land uses within this subarea are vacant/undeveloped, open space, residential, public/quasi-public, and industrial. A small neighborhood commercial district is located near PSC1. Additionally, several existing and proposed recreational amenities are located close to these sites (Figure 4.4: Phoenix South of CAP Canal).

According to the *City of Phoenix General Plan* (2001), the planned land uses adjacent to PSC1 include medium- and high-density housing, commercial (commerce/business park), and the majority of PSC1 is planned park/open space. Many of the surrounding arterial and collector streets, as well as some drainage

Figure 4.4: Phoenix South of CAP Canal

features, have proposed trail alignments. These trails are pending official designation in a City of Phoenix's *General Plan Amendment*. A proposed trail that links to the Adobe Dam Recreation Area within the study area is located along Skunk Creek. Additionally, the City of Phoenix has Deem Hills Recreation Area planned northwest of the site (59th Avenue and Jomax Road), and will incorporate hiking trails and a dog park.

Located within PSC1, the Skunk Creek Landfill encompasses the eastern portion of the site. The North Canyon Ranch Industrial Park is located on the southwestern edge of the site. A neighborhood commercial district consisting of a grocery store, fast food restaurants, and other small businesses is located southwest of the site. Large residential tracts of medium-density housing are located to the west (North Canyon Ranch Subdivision) and south (Adobe Highland Subdivision). A few single-family residences, industrial warehouse buildings, and a flood control structure are located within the site boundary.

Several recreational sites are located south of PSC1, including the Adobe Dam Recreation Area, the largest recreational area close to the site. Adobe Dam Recreation Area is a multi-use recreational destination area that includes a combination of several special interest activities including go-kart racing, remote controlled-airplane activities with landing strips, and model railroads. MPRD manages this facility. Two public golf courses (Adobe Dam and the 500 Club Golf Course), a sports facility (six baseball fields), and a water park (Waterworld Safari) are located adjacent to Adobe Dam Recreational Area and Thunderbird Park. Directly to the south of PSC1, Paseo Highland Park is under construction and will accommodate the adjacent Adobe Highland residential community. The undesignated open space within PSC1 is largely undeveloped and provides flood control and recreational use along Skunk Creek and other smaller ephemeral drainages. A Skunk Creek flood control structure is located north of Pinnacle Peak Road, which crosses along the southern border of the PSC1. Other transportation corridors include Happy Valley Road and I-17, located to the north and east of the site, respectively.

Located within PSC2, medium-density housing and open space are planned south of the CAP Canal. Two proposed trails within PSC2 were identified south of the CAP Canal, located along Skunk Creek and Sonoran Wash on a north-south alignment by the city of Phoenix. The *Maricopa County Regional Trail System Master Plan* has proposed a regional hiking and riding trail that will parallel the CAP Canal. No developed recreational sites are located within PSC2. However, a large portion of PSC2 is used for open space and recreational activities, which include equestrian use and hiking on the western portion of PSC2, users fly remote-controlled model airplanes and use level portions of the site for landings.

Within the PSC2, two flood control structures cross the CAP Canal, facilitating Skunk Creek's and Sonoran Wash's southward drainage. Several low-density residences are located south of the CAP Canal and one to the north. Dynamite Mountain Ranch, a medium-density residential community is located southeast of the site and I-17, and Dynamite Subdivision is located across I-17, west of the site. An APS power substation is

also located directly west of the site and I-17. To the northeast, a large industrial mining operation (Madison Granite Supplies) is within 1 mile of the site.

Flood Control Structure at Skunk Creek below Cap Canal

4.3.2 Phoenix North of CAP Canal – According to the *City of Phoenix General Plan* (2001), floodplain and park/open space are planned within PNC3 north of the canal, with Public/Quasi-Public use planned for areas north of the site. Two trails are proposed south of the site and are located along Skunk Creek and Sonoran Wash on the opposite side of the CAP Canal. The *Maricopa County Regional Trail System Master Plan* has proposed a regional hiking and riding trail that parallel the CAP Canal (Figure 4.5: Phoenix North of CAP Canal).

The primary land uses within and surrounding PNC3 are vacant/undeveloped (water/flood control) and open space. Two previously mentioned flood control structures cross the CAP Canal located on the southern edge of the site, which facilitate the southward drainage of Skunk Creek and Sonoran Wash. One residence is located in the western portion of the site, along the I-17 frontage road. Large, medium-density residential communities are located southwest (I-17 and Dynamite Subdivision) and southeast (Dynamite Mountain Ranch) of the site. Madison Granite Supplies has a large mining operation located approximately 1 mile northeast of the site. Most of area the surrounding the site is used for undesignated open space and recreational activities, including equestrian use and hiking.

4.3.3 Desert Hills – According to the *City of Phoenix General Plan* (2001), residential development and designated open space is planned within this subarea. According to the *Skunk Creek Watercourse Master Plan (2001)*, a trail is proposed along the Skunk Creek alignment. At the south end of DH4's study area, the Carefree Highway is designated as a Road of Regional Significance, and includes planned bicycle lanes.

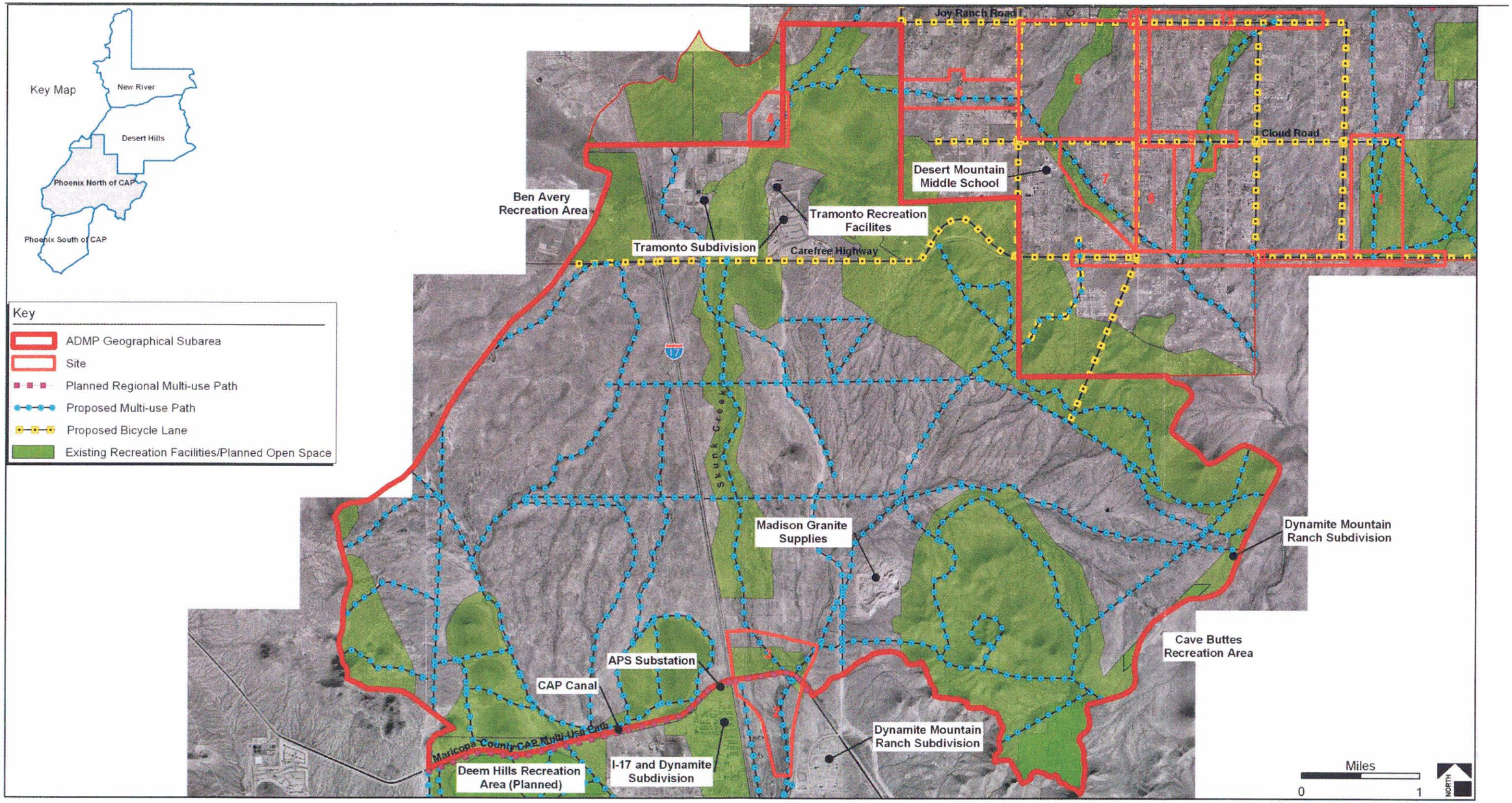


Figure 4.5: Phoenix North of CAP Canal

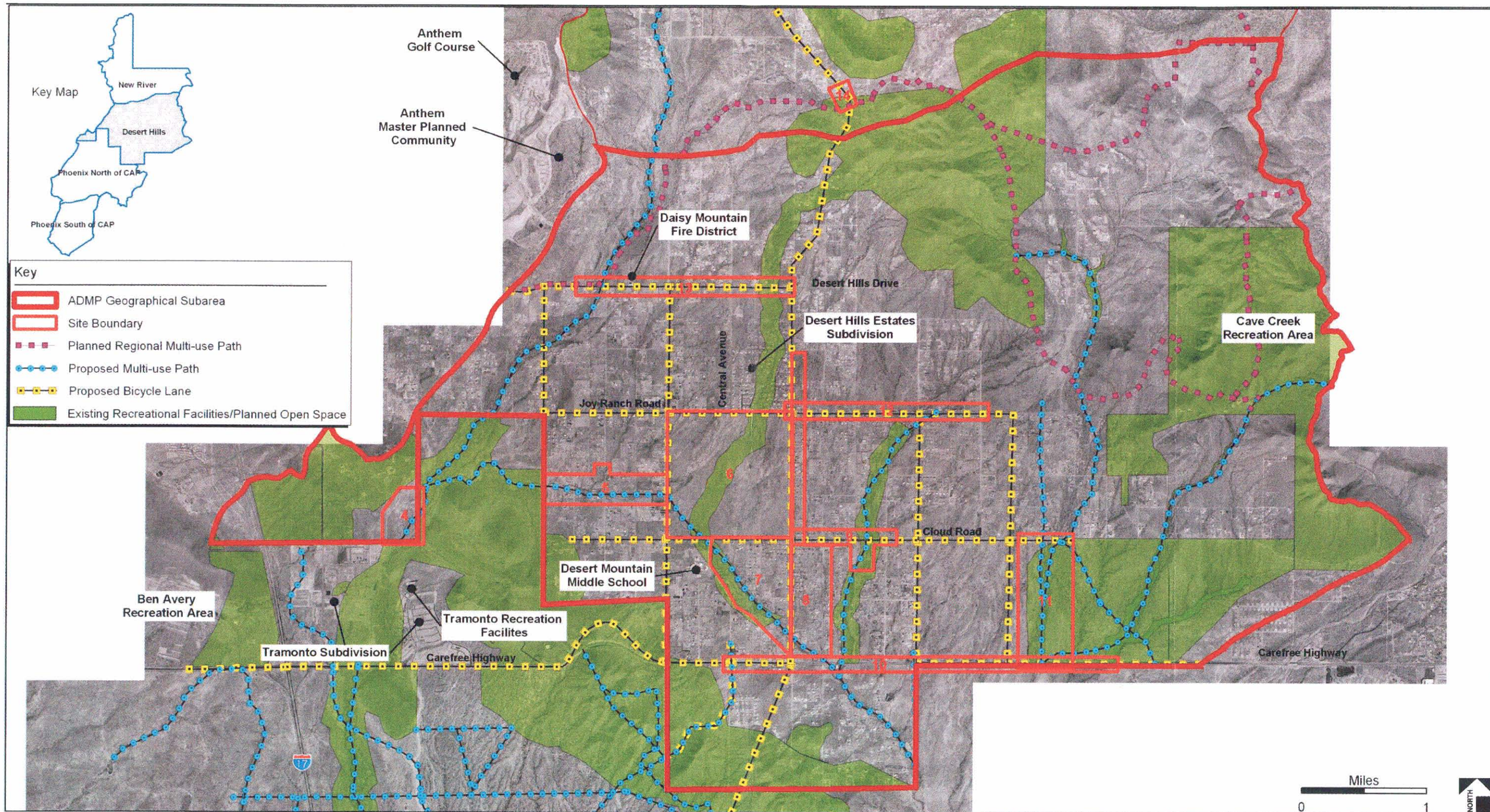
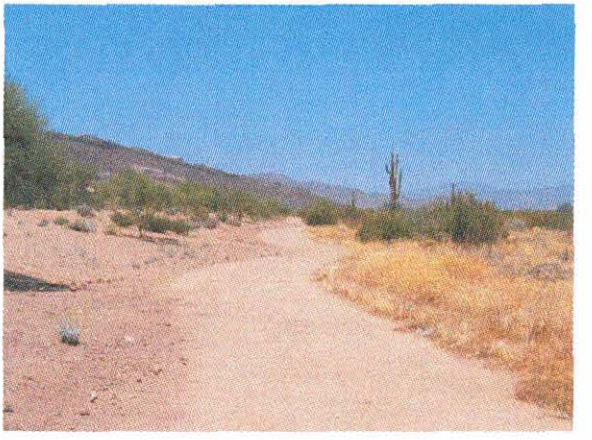


Figure 4.6: Desert Hills

The primary existing land uses of sites DH4 through DH12's study areas include low- and medium-density residential housing (large lot residential, estate residential) and/or vacant/undeveloped. This vacant/undeveloped land is typified by large ephemeral drainages and/or smaller washes that create open space and opportunities for recreational activities (Figure 4.6: Desert Hills).



Existing Unpaved Multi-use Path in Tramonto Subdivision

One residence is located in the northern portion of DH4. Skunk Creek makes up the majority of the southeastern portion of the site. The primary land uses that encompass the area surrounding DH4 include vacant/undeveloped and open space. To the southeast, open space is bordered by the recent Tramonto development, which is made up of medium-density residential housing and recreational facilities. Low-density development can be seen to the north and west of the site. The Ben Avery Shooting Facility (Ben Avery Recreation Area) is located just over 1 mile west of DH4. Other nearby recreational facilities include the Tramonto development's recreational complexes; these include two facilities located southeast of the site and contain swimming pools and tennis and basketball courts. An existing unpaved multi-use path is south of the site, paralleling the west side of Skunk Creek. Additionally, an existing multi-use path is located along a segment of the Carefree Highway, between Skunk Creek and 19th Avenue.

Low-density residential development and open space are planned within these areas surrounding DH5. There are no existing trails within the site. The area surrounding DH5 is made up of low-density residential development in addition to large equestrian facilities. Undesignated open space is connected to several ephemeral drainages that are intermixed between housing and vacant lots.

Within DH6, an open space corridor that would parallel Desert Lake Wash is planned in a southeast-northwest direction in the center of the site. This planned open space corridor extends north to DH13, which is directly linked to several proposed trails along Desert Hills Drive, Skunk Creek, and the Maricopa County Regional Trail, Lake Pleasant to Cave Creek alignment. DH6 is comprised of vacant/undeveloped ASLD

land. This fenced-off, square parcel is bordered on all sides by low- and medium-density residential development (Desert Hills Estates) and vacant land. The previously mentioned Desert Mountain Middle School is located adjacent to, and south of, the site. Several horse facilities are located southwest of the site.

Within DH7, planned open space is designated for Desert Lake Wash, which runs through the site and links to the previously mentioned open space corridor in the vacant/undeveloped land of DH6. This corridor has a proposed trail that follows the wash. In addition to low-density residential development within DH7, the Desert Mountain Middle School is located in the western portion of the site. This school's recreational facilities include ballparks and playfields. Two nurseries are located south of the site in addition to commercial properties, located along the Carefree Highway.

DH8 and DH9 are made up of low-density residential housing land use intermixed with vacant/undeveloped land. Several ephemeral drainages filter through the landscape. Two churches are located at the west end of DH8 and southwest of DH9. No existing trails are located within these sites. However, two proposed trails are located along Desert Lake Wash and Desert Hills Wash, which cross portions of the sites. Bicycle lanes are proposed along 7th Street, Joy Ranch Road, and Cloud Street.

DH10 is located along Carefree Highway (designated as a Road of Regional Significance) corridor, with the previously mentioned improvements planned. According to MAG, several proposed bicycle routes and trails connect south and north of the roadway at the western end of the site (Figure 4.6 Desert Hills). Along the entire site, low-density housing and open space are planned south of the highway. North of the site, open space is planned in alignment with two ephemeral drainages. Currently, a few commercial businesses are located along the highway, including two nurseries, fast-food restaurants, and a dance studio. Two previously referred to churches are located near the eastern end of the site, north of Carefree Highway. The rest of the site is made up of low-density residential housing intermixed with vacant/undeveloped land.

To the south of DH11, the previously mentioned improvements are planned along Carefree Highway. Cave Creek Recreational Area is located within 2 miles northeast of the site. Trails and bicycle lanes are proposed along 24th Street. DH11 is made up of vacant/undeveloped land. Low-density housing and several ephemeral drainages (e.g., Apache Wash) are located north of the site. Other transportation corridors include 24th Street, which divides the site on a north-south axis and Prescott Mesa Power Road, which crosses the northeast corner of the site.

The Maricopa County Regional Trail, Lake Pleasant to Cave Creek alignment, is planned within a mile of DH12. A proposed trail located along Desert Hills Wash crosses portions of the site. Bicycle lanes are planned along Joy Ranch Road. Existing low-density residential housing intermixed with vacant/undeveloped land typifies DH12. Several ephemeral drainages filter across the site. Cave Creek

Recreational Area is located approximately 1.5 miles east of DH12. No existing trails are located within this site.

According to the *Skunk Creek Watercourse Master Plan*, a trail is proposed along the Skunk Creek alignment, within DH13. Open space is also planned for ephemeral drainage areas at the east end of the site. Additionally, the Maricopa County Regional Trail, Lake Pleasant to Cave Creek alignment, links up to Desert Hills Drive in the western portion of the site. In addition to Site DH13's low-density residential development, the Daisy Mountain Fire House is located on Desert Hills Drive. This road extends through the site on an east-west alignment and crosses vacant/undeveloped land that includes Skunk Creek and several ephemeral drainages. This vacant/undeveloped land creates open space and opportunities for passive recreational activities.

4.3.4 New River – The primary existing land uses of NR14, NR15, and NR16 areas are low-density (large lot residential, estate residential) or rural residential housing. All three study areas have large portions of vacant/undeveloped land. This vacant/undeveloped land is typified by large ephemeral drainages and/or smaller washes that create undesignated open space and opportunities for recreational activities (Figure 4.7: New River).

Located within NR14, a planned regional trail (Maricopa County Regional Trail, Lake Pleasant to Cave Creek alignment) is identified on an east-west alignment paralleling Rodger Creek. According to the New River Area Plan (revised 1998), proposed open space is identified for areas to the north (Pyramid Peak area) and to the south (Apache Peak). This open space occupies the southern half of the site. Rodger Creek runs east to west and is located in the northern part of the site. This open space area is bordered by residential development to the north, with a lone residence located south of the wash.

Within NR15, designated planned open space is located in the southern portion of the study area around the previously mentioned Pyramid Peak area. No recreational sites or trails are located within the site. In addition to NR15's low-density residential development within the northern portion of the study, a church is located adjacent to New River Road, northwest of the site.

Within NR16's boundary, a proposed trail will parallel New River Road through the site, according to the *Skunk Creek Watercourse Master Plan* (2001). Bicycle lanes are also proposed along New River Road. Rural residential development is designated for the entire northern portion of the site, and flood control use planned for the southern areas of the site, which follow the Skunk Creek floodplain. The majority of rural residential development is located in the northern portion of the site, with additional low-density residential development on the southern edge. Within the rural development, a newspaper publishing company, a tavern, and a real-estate agency are located on the east side of New River Road. Undesignated open space

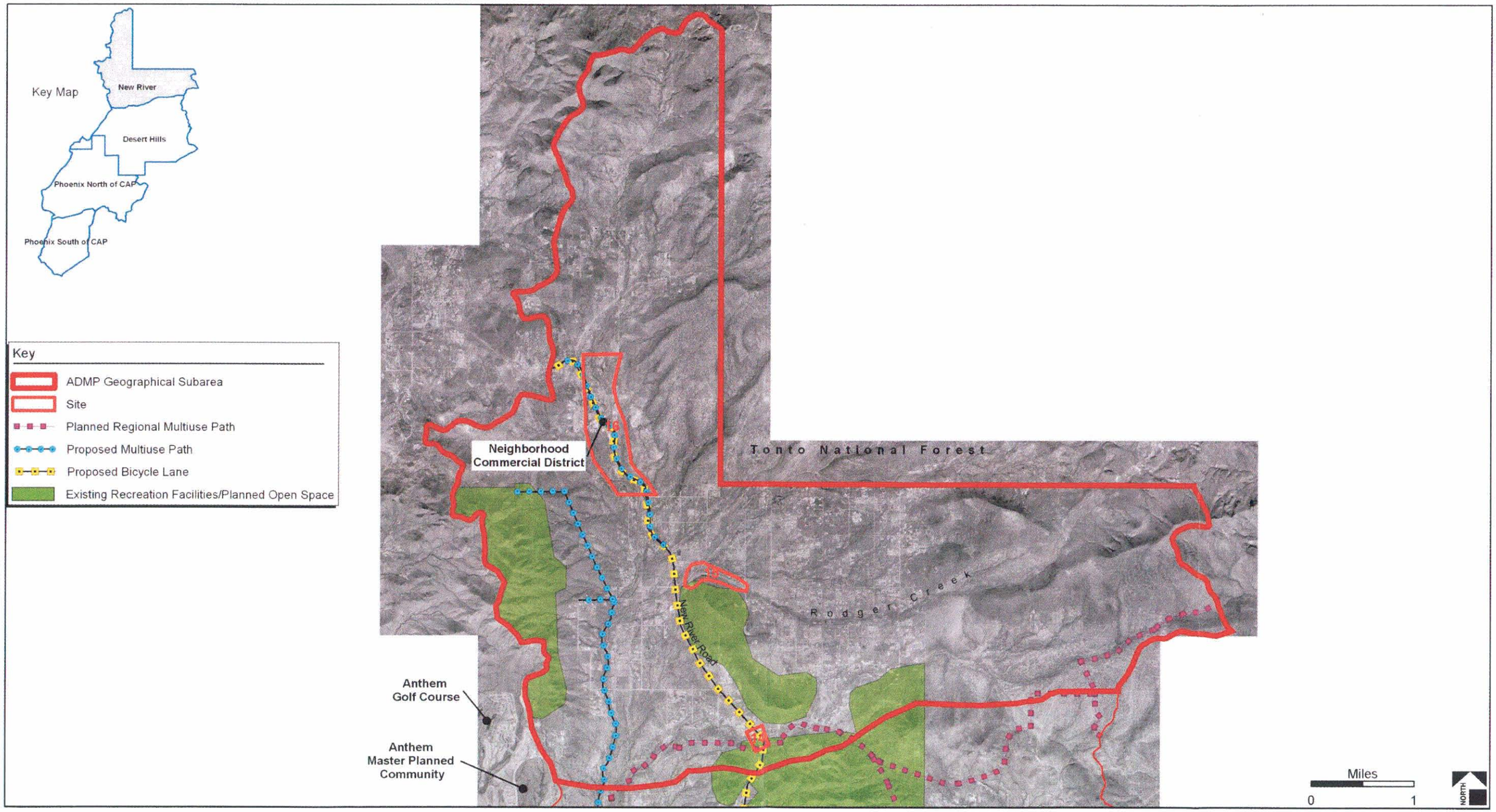


Figure 4.7: New River

(vacant/undeveloped) occupies the majority of the southern portion of the site in addition to the ephemeral drainage areas that extend throughout the site, on a north-south alignment.

5.0 Planning Influences and Opportunities for Protection or Restoration

Table 5.1 and Figures 5.1–5.16 identify multiple-use opportunities and limitations based on the analysis of the site inventory and visual analysis information. These maps and table also detail opportunities for habitat restoration or preservation, which identified disturbed areas and areas of habitat. They also show proposed trails identified by other master plans and potential trails that would link to both regional and proposed trails. Bikeways, neighborhood nodes, and potential passive recreation areas are also identified within the site boundaries.

6.0 Appropriate Multiple-Use Opportunities

6.1 Regional Opportunities

Opportunities to link multi-use paths and trails to a planned regional trail system exist in several locations. Several regional recreation areas are located within the ADMP study area and link to this regional trails system. A trail corridor proposed by the MPRD is located along the south side of the CAP Canal, which is aligned east to west with in the ADMP study area. This Maricopa County Regional Trail could be linked to several local trails that are proposed by the City of Phoenix. A few of these local proposed trails are located south and north of the CAP Canal at the east and west end of PSC 2 and within PNC 3.

The Maricopa County Regional Trail, Lake Pleasant to Cave Creek alignment, is an additional regional pathway and is located in the north section of the ADMP study area. This regional trail could link to several local trails identified by the *Sonoran Preserve Master Plan* and the *Skunk Creek Watercourse Mater Plan*.

6.2 Local Opportunities

Existing drainage features within the ADMP provide opportunities to link many local trails. Specifically, these include areas along Skunk Creek and its primary tributaries. Additionally, the existing drainage features located within recreational areas and open spaces and within adjacent areas along existing roads, schools, and parks provide prime opportunities for recreational trail use.

Table 5.1: Planning Influences

Site	Planned/Proposed Multi-use Pathways, Trails, and Bikeways	Potential Multi-Use Pathways, Trails, and Bikeways*	Open Space/Recreation Areas	Residential Areas	Major Roadways	Other Planning Influences
PSC1	▪ Proposed trail along Skunk Creek	▪ Potential trails along roadways	▪ Adobe Dam Recreation Area/Thunderbird Park, located to the south ▪ Paseo Highland Park are adjacent to the south ▪ Skunk Creek Landfill provides opportunities for future passive recreation area	▪ Adjacent residential development to the west (potential neighborhood node) and southeast	▪ Pinnacle Peak Road	▪ Grade Control Structure located in at the south end of the site
PSC2	▪ Planned regional multi-use pathway along the CAP Canal ▪ Proposed trails located along Skunk Creek and Sonoran Wash on a north-south alignment	▪ Potential trails	▪ Open space is planned for north of the site	▪ Medium-density developments located near the western portion of the site	▪ I-17 is located to the west	▪ Cliffs along the Skunk Creek Channel
PNC3	▪ Planned regional multi-use pathway along the CAP Canal ▪ Proposed trails located along Skunk Creek and Sonoran Wash on a north-south alignment	▪ Potential trails	▪ The majority of the site is planned open space	▪ Low-density development located in the western portion of the site	▪ I-17 is located to the west	▪ Flood Control Structure
DH4	▪ Existing multi-use paths located south of site (trail connection) ▪ Proposed trails along Skunk Creek	▪ Potential trail along roadways	▪ Existing recreational facilities in Tramonto developments ▪ Ben Avery Shooting Facility (Ben Avery Recreation Area) located to the southwest	▪ Adjacent residential development to south (Tramonto) ▪ Low-density development located within site		▪ Potential neighborhood node adjacent to Skunk Creek
DH5	▪ Proposed trails on a east-west alignment ▪ Proposed bicycle lanes along 7th Avenue	▪ Potential trail along 7th Avenue and ephemeral drainage area		▪ Low-density housing is located throughout the site	▪ 7th Avenue is located along the eastern edge of the site	
DH6	▪ Proposed trail on the southwest corner of the site ▪ Proposed bicycle along roadways	▪ Potential trails on the edge of the site	▪ Open space is planned within the central area of the site, which is part of a corridor that links to the north and south	▪ Adjacent low- and medium-density residential development	▪ 7th Street and 7th Avenue are adjacent to the site	▪ Desert Mountain Middle School is located south of the site
DH7	▪ Proposed trail along the southwest edge of the site ▪ Proposed bicycle lanes along 7th Street and Cloud Road	▪ Potential trails along 7th Street and Cloud Road	▪ Open space is planned along the western portion of the site, which is part of a corridor that links to the north	▪ Low-density housing is located throughout the site	▪ 7th Street is located along the eastern edge of the site ▪ Carefree Highway located to the south	▪ Desert Mountain Middle School is located west of the site ▪ Church located within site
DH8	▪ Proposed trail crosses the southwest corner of the site ▪ Planned bicycle lanes along Carefree Highway	▪ Potential trails along 7th Street, Joy Ranch and Cloud Road	▪ Planned open space west of site	▪ Low-density housing is located throughout the site	▪ 7th Street is located in the western portion of the site ▪ Carefree Highway	
DH9	▪ Proposed trail along Desert Hills Wash ▪ Planned bicycle lanes planned along roadways	▪ Potential trails along 7th Street and Cloud Road	▪ Open space is planned in the eastern portion of the site, which is part of a corridor that links to the north and south	▪ Low-density housing is located throughout the site	▪ 7th Street is located in the western portion of the site	
DH10	▪ Proposed trails along ephemeral drainage areas ▪ Proposed bicycle lanes along Carefree Highway, and 24th, 16th, and 7th Street	▪ Potential trails along 7th Street and the Carefree Highway	▪ Planned open space corridors are within the site	▪ Low-density housing located along Joy Ranch Road	▪ 7th Street is located in the western portion of the site ▪ Carefree Highway	

Site	Planned/Proposed Multi-use Pathways, Trails, and Bikeways	Potential Multi-Use Pathways, Trails, and Bikeways*	Open Space/Recreation Areas	Residential Areas	Major Roadways	Other Planning Influences
DH11	▪ Proposed trail along Apache Wash, 24th Street and northeast corner of site ▪ Planned bicycle lanes along Carefree Highway and 24th Street		▪ Planned open space within the majority of the site ▪ Cave Creek Recreational Area located to the northeast	▪ Low-density housing located north of Cloud Road	▪ Carefree Highway	
DH12	▪ Proposed trail along wash	▪ Potential trails along 7th Street and Joy Ranch Road	▪ Open space is planned in the eastern portion of the site, which is part of a corridor that links to the north and south	▪ Low-density housing located along Joy Ranch Road	▪ 7th Street is located in the western portion of the site	
DH13	▪ Planned Lake Pleasant to Cave Creek regional trail alignment, located in the western portion of the site ▪ Proposed bicycle lanes along Desert Hills Drive ▪ Proposed trail along ephemeral drainages	▪ Potential trails along Desert Hills Drive, 7th Street and ephemeral drainages	▪ Open space is planned in the western portion of the site, which is part of a corridor that links to the north and south	▪ Low-density housing located along Desert Hills Drive	▪ 7th Street is located east of the site	▪ Daisy Mountain Fire House is located on Desert Hills Drive
NR 14	▪ Planned Lake Pleasant to Cave Creek regional trail alignment, which parallels Rodger Creek ▪ Potential trail connection across New River Road ▪ Proposed Bicycle Lanes along New River Road		▪ Planned open space is located south of the site in the Apache Peak area	▪ Low-density housing located northern portion of the site	▪ New River Road	▪ New River Road
NR 15		▪ Potential trails along	▪ Planned open space is located south of the site and in the Pyramid Peak area	▪ Low-density housing located north and south of the road	▪ New River Road located to the west	
NR 16		▪ Potential trail and bicycle lane would parallel New River Road		▪ Rural residential-density housing located in the northern portion of the site	▪ New River Road	▪ New River Bridge

*Potential multiple-use opportunities identified from inventory and analysis of sites within study area

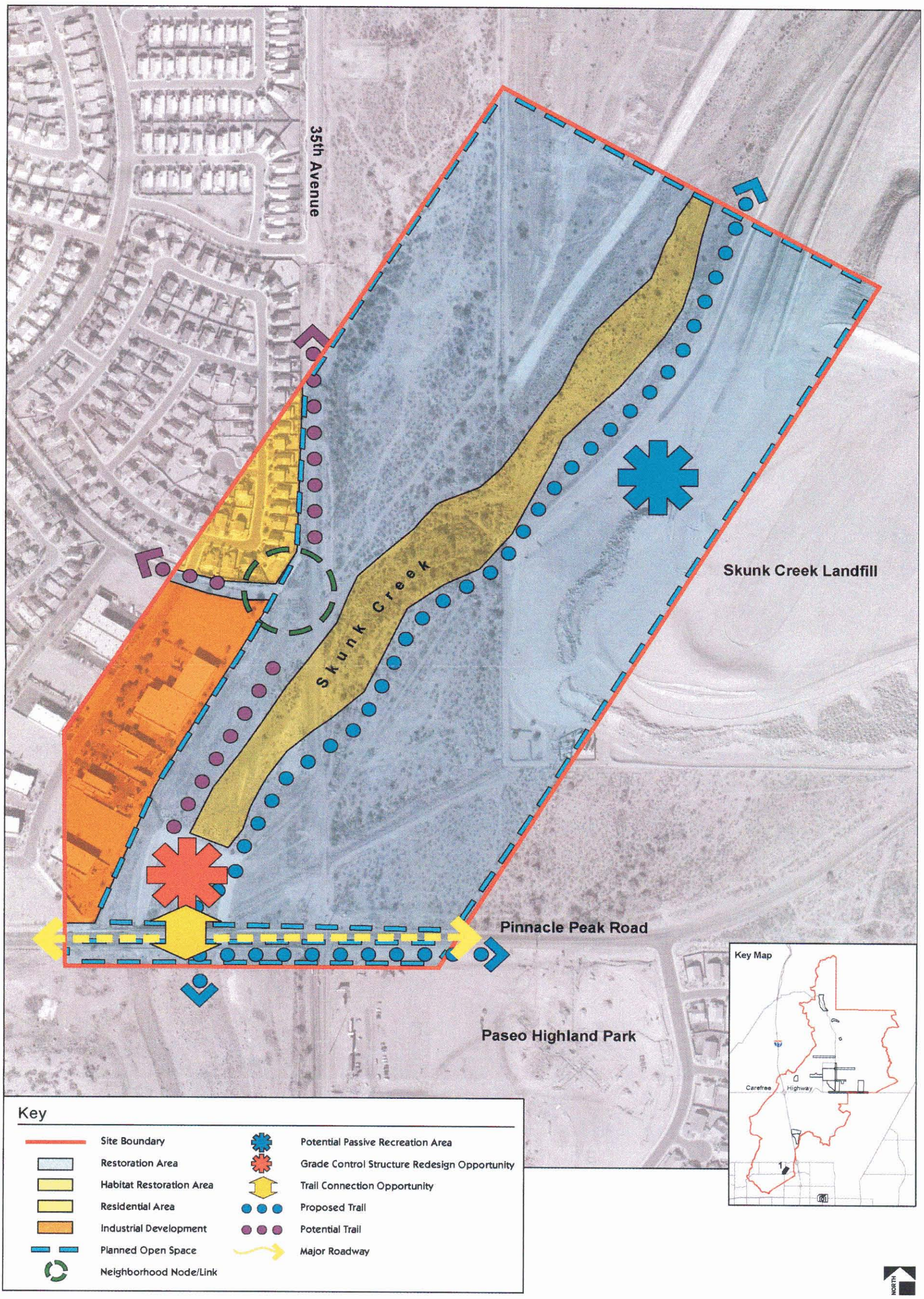


Figure 5.1: PSC1 Planning Influences

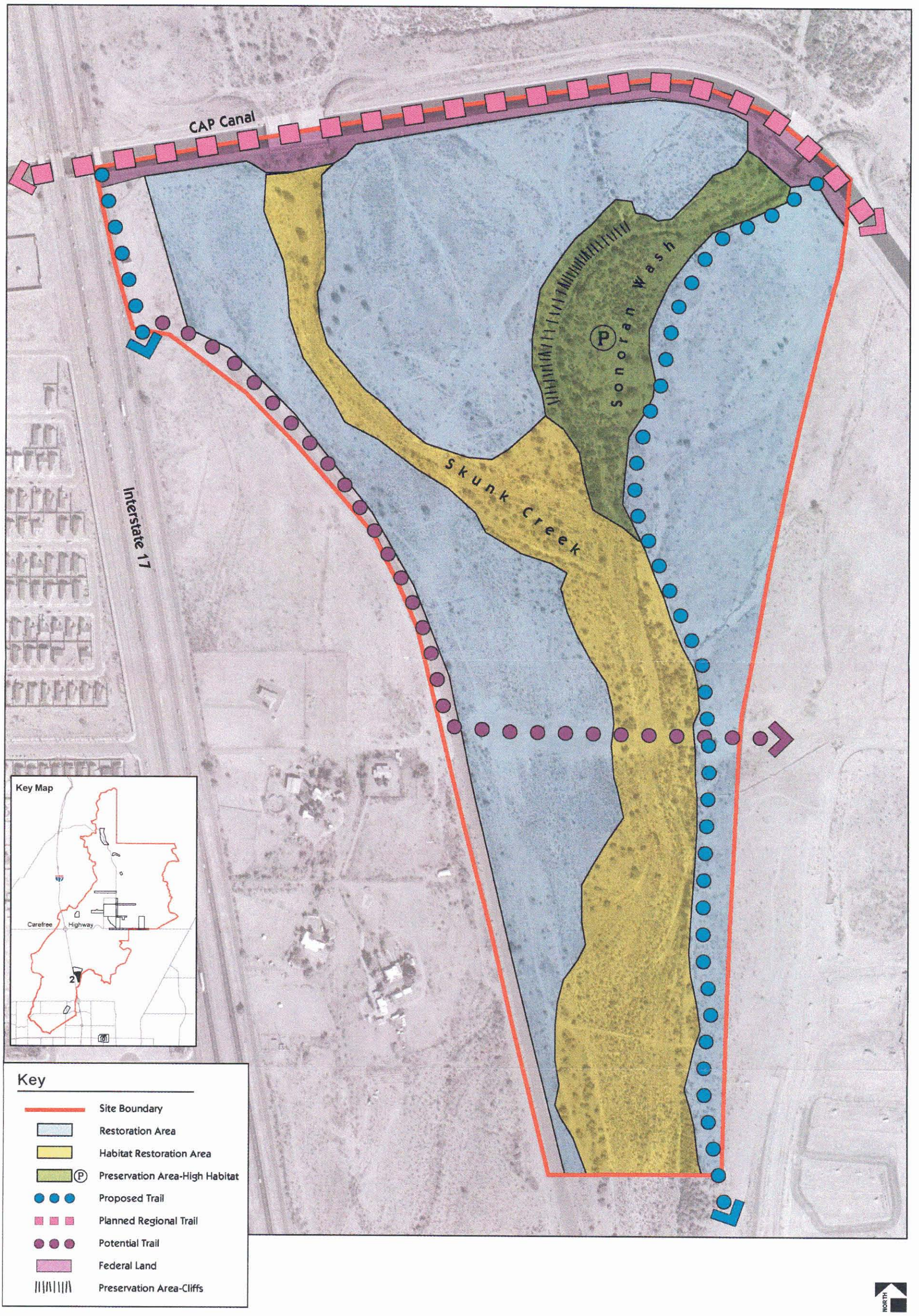
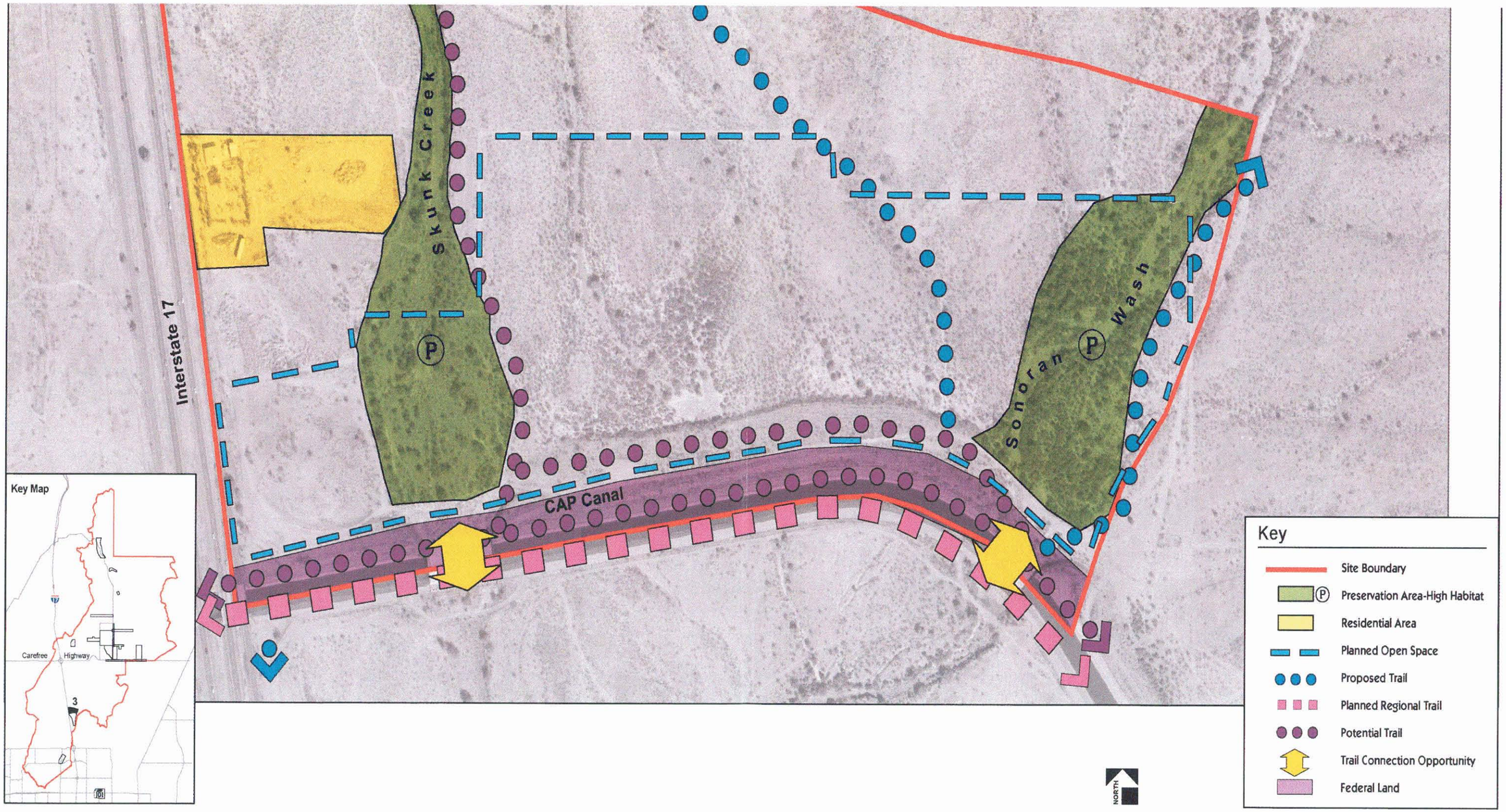


Figure 5.2: PSC2 Planning Influences



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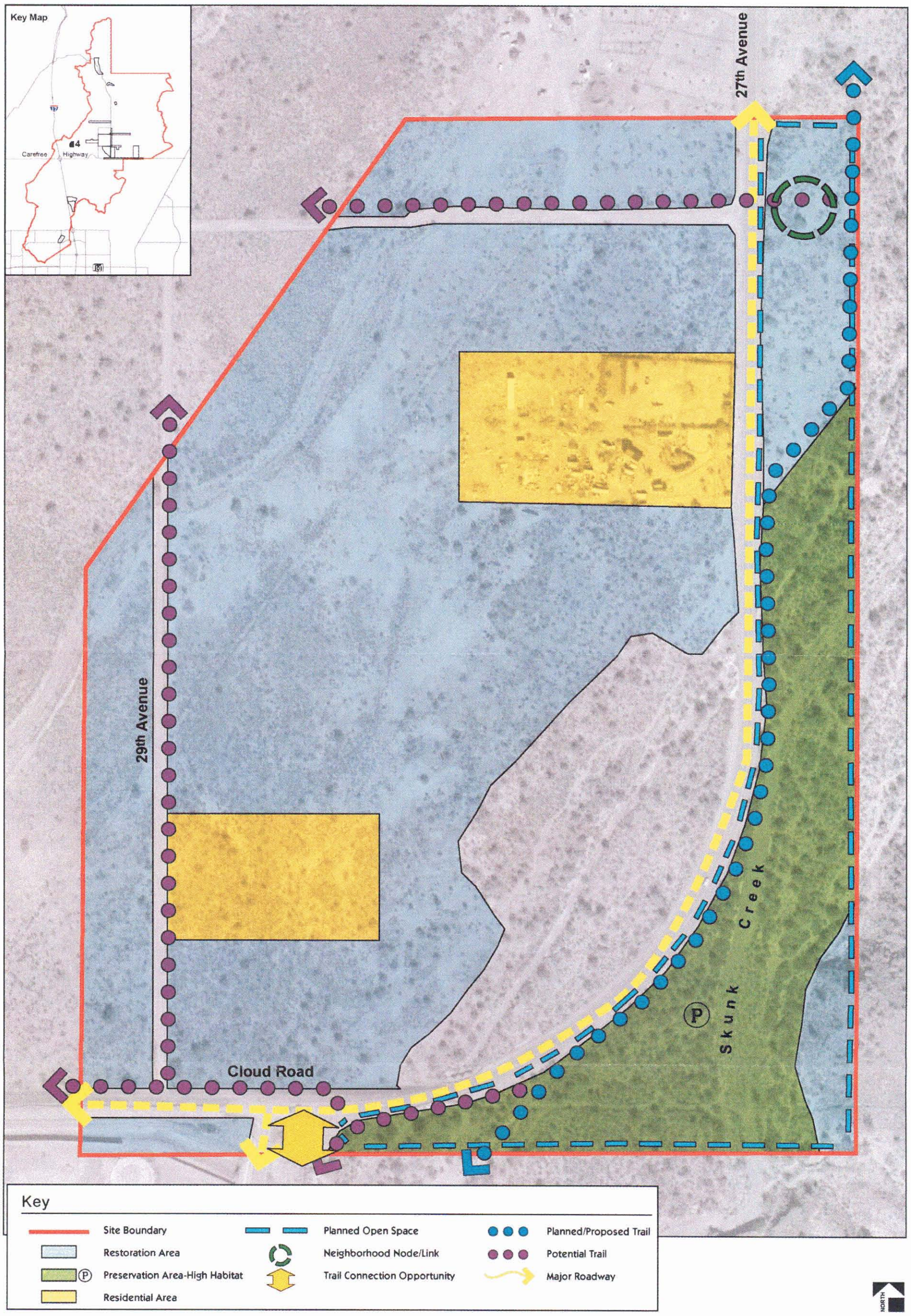

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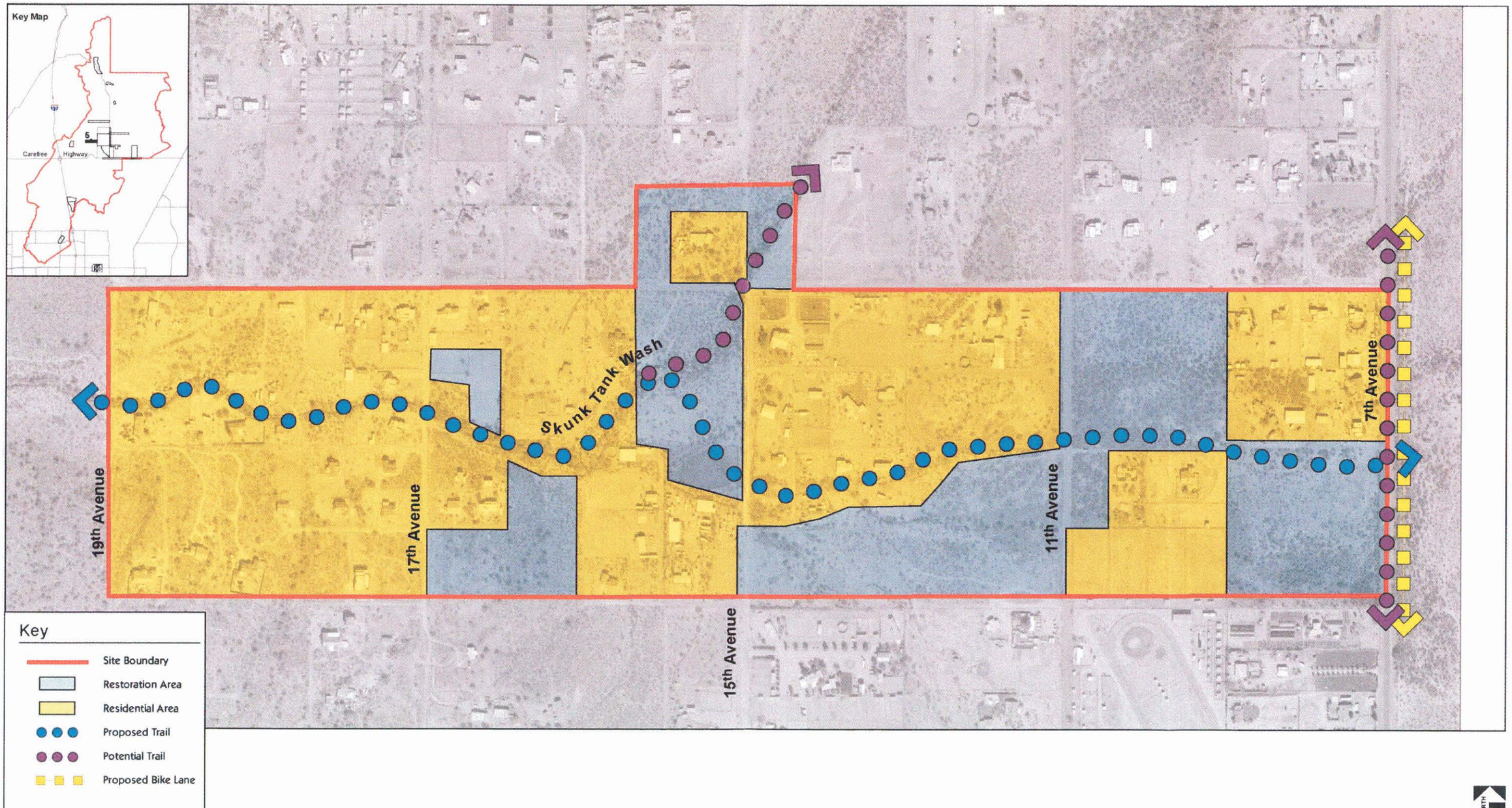

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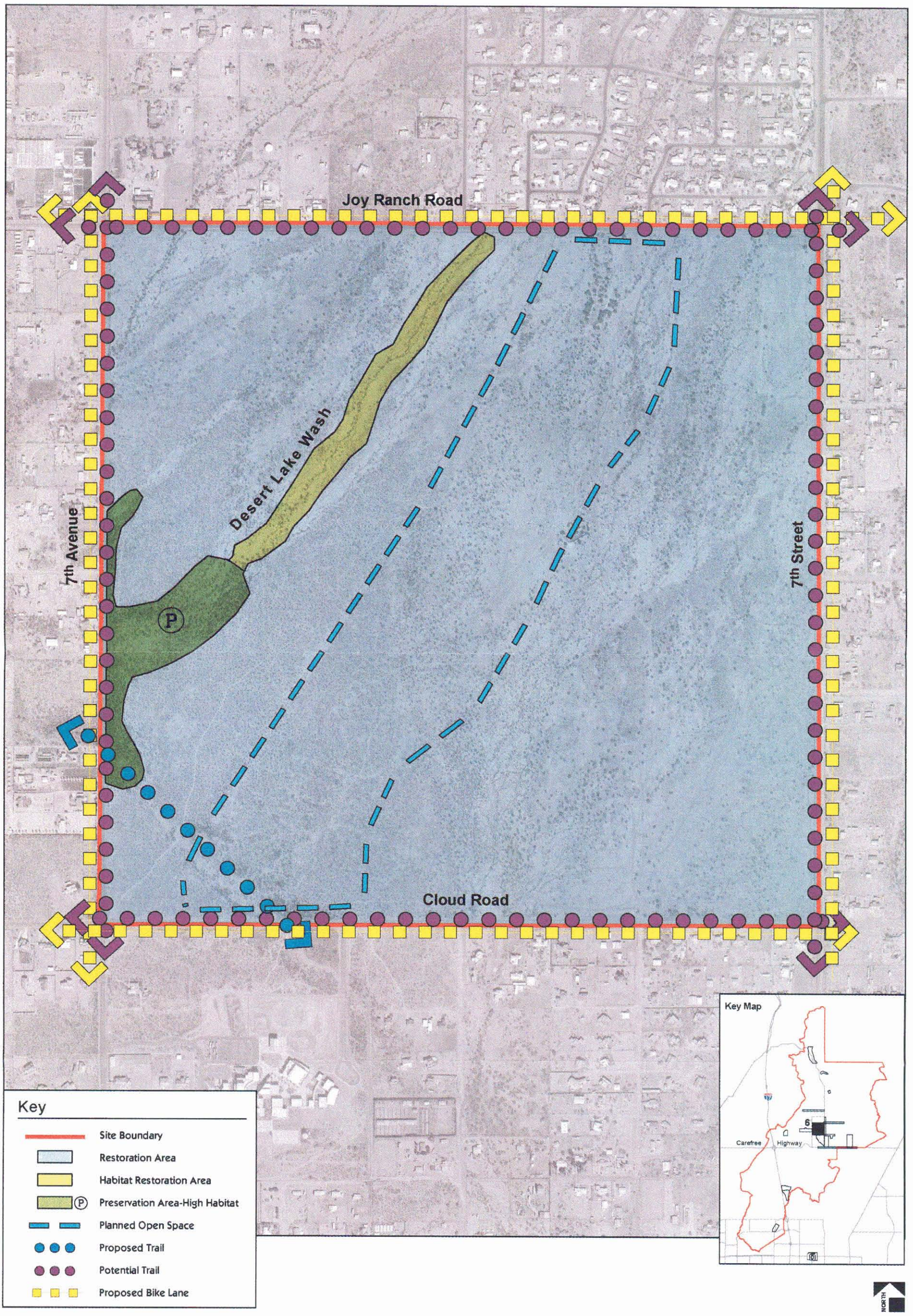

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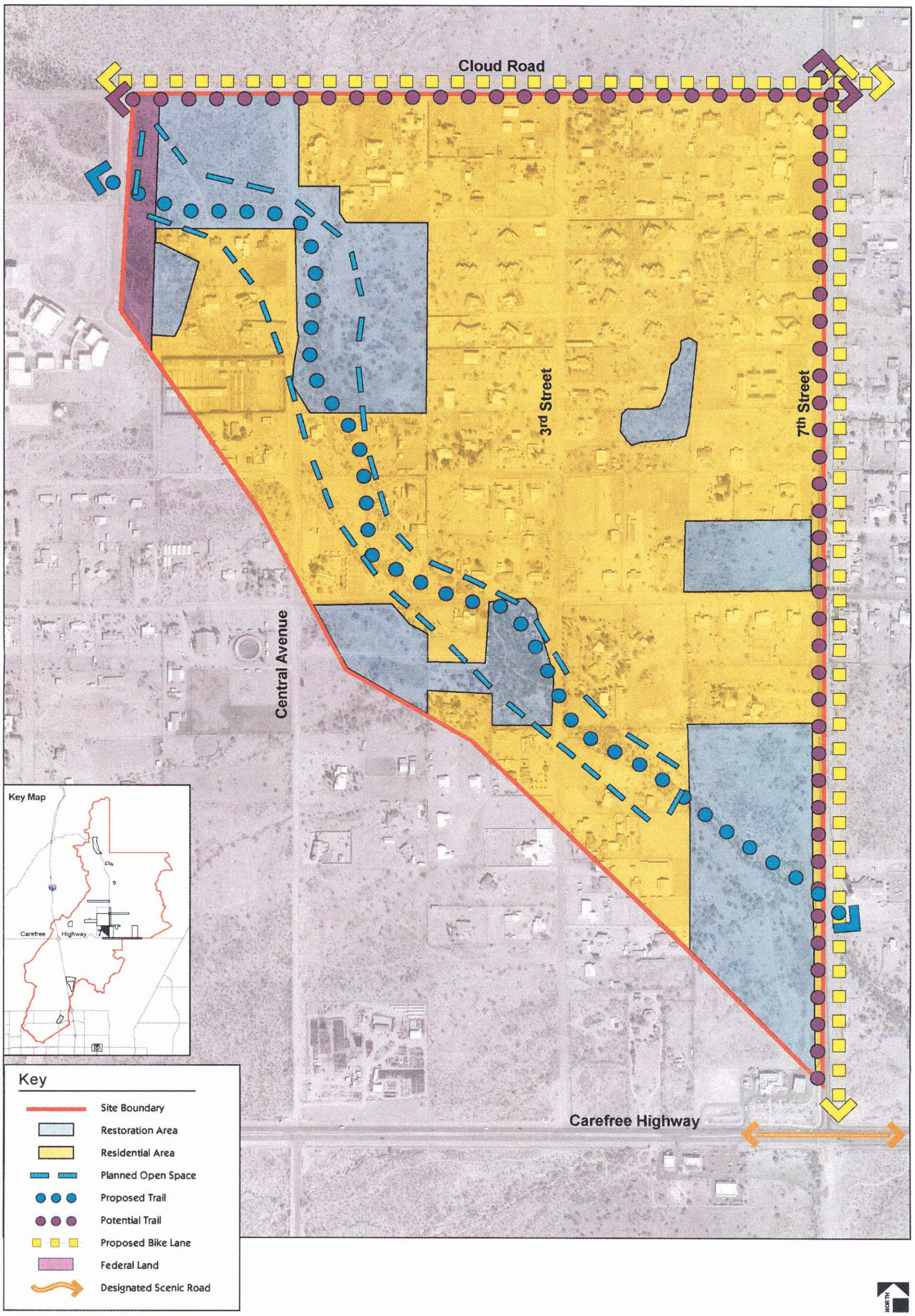

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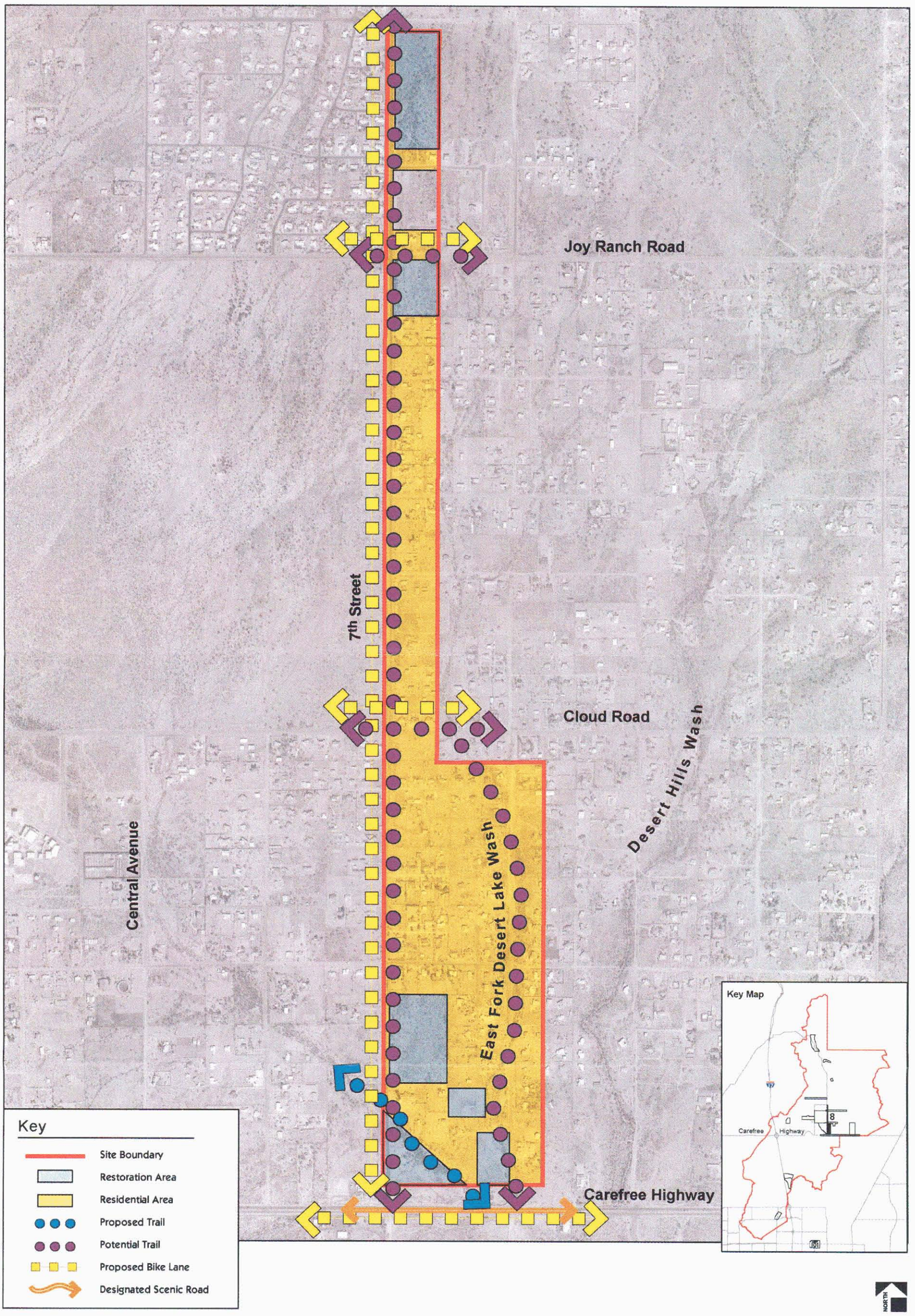

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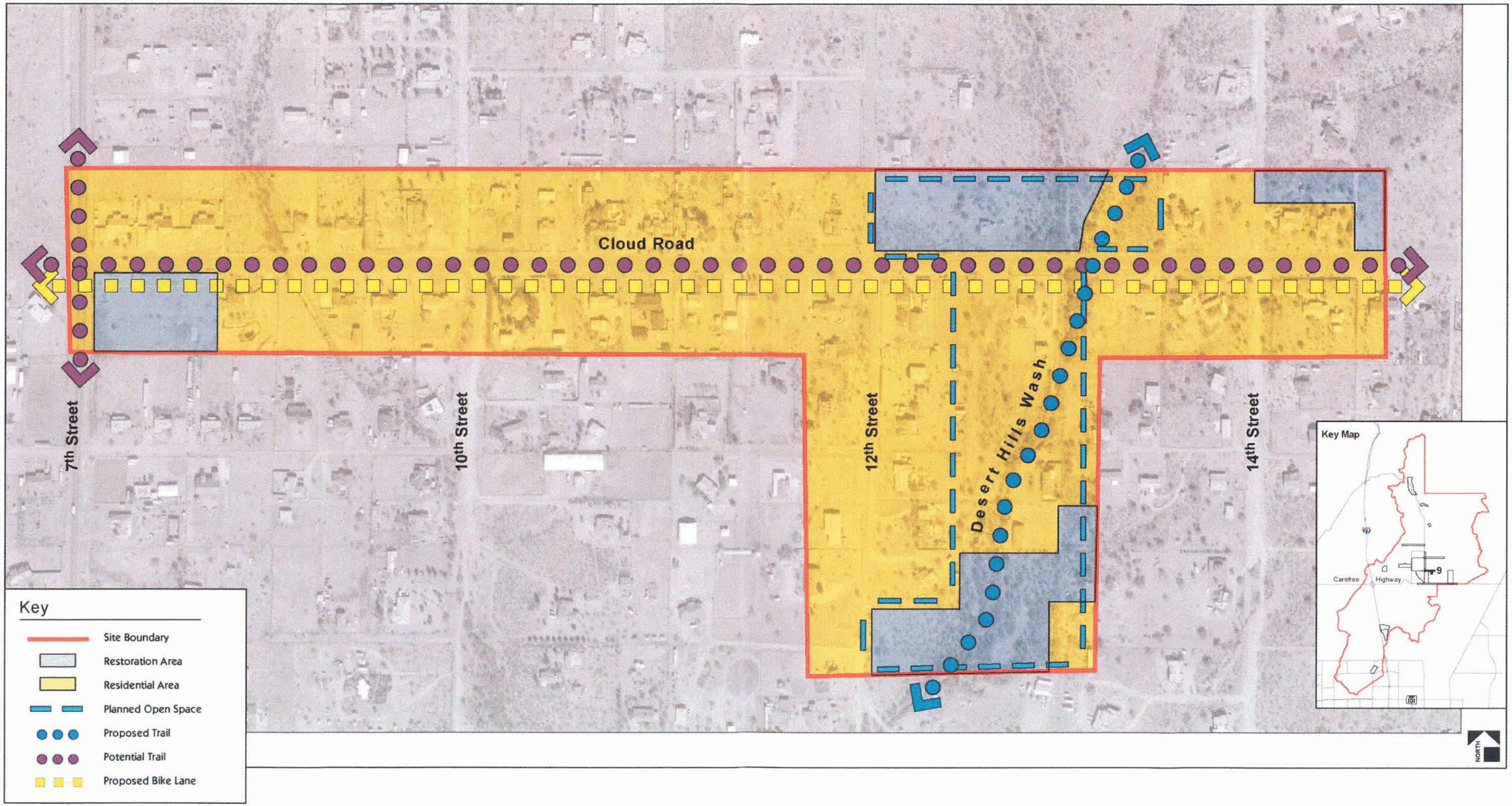

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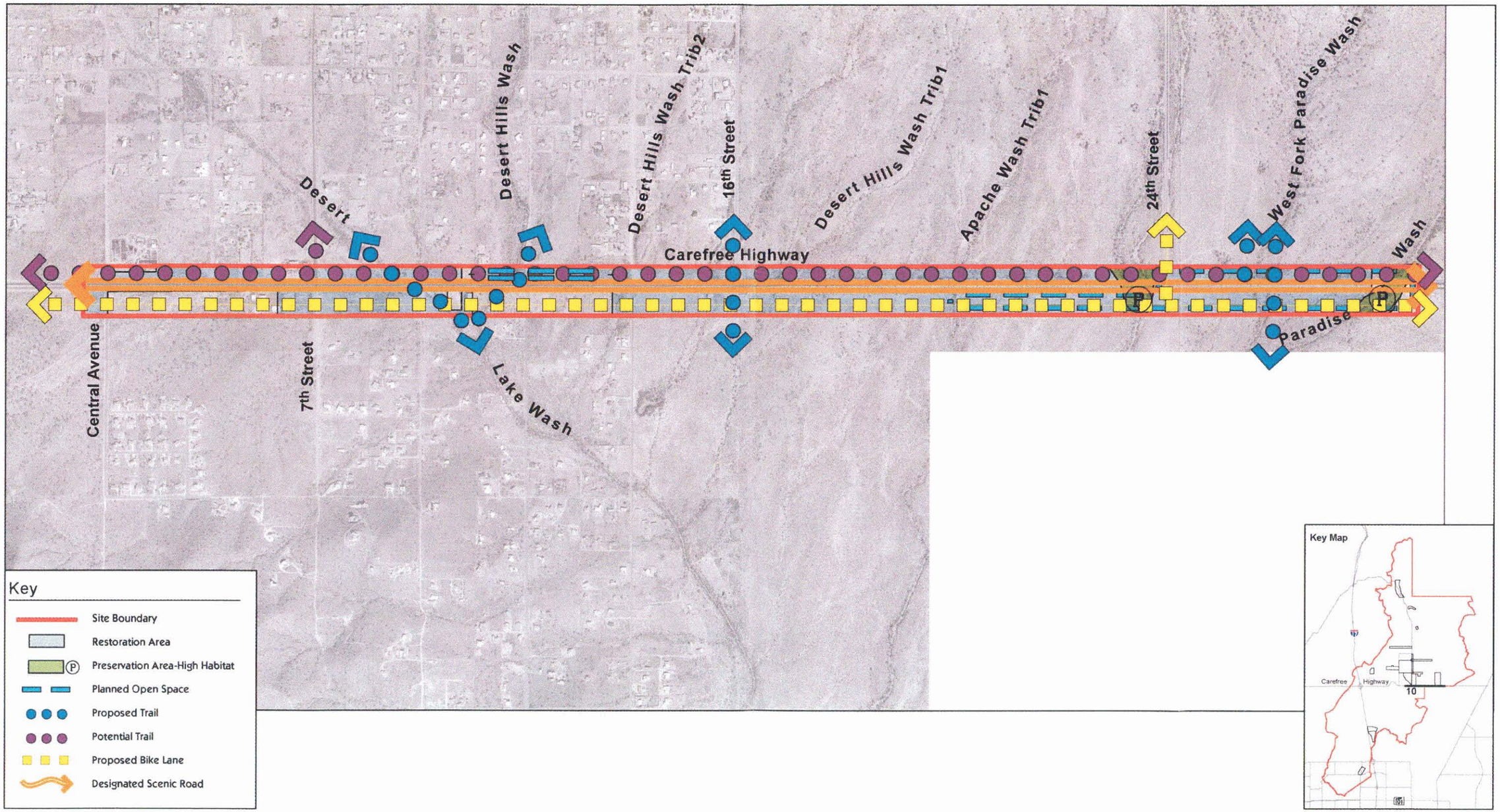

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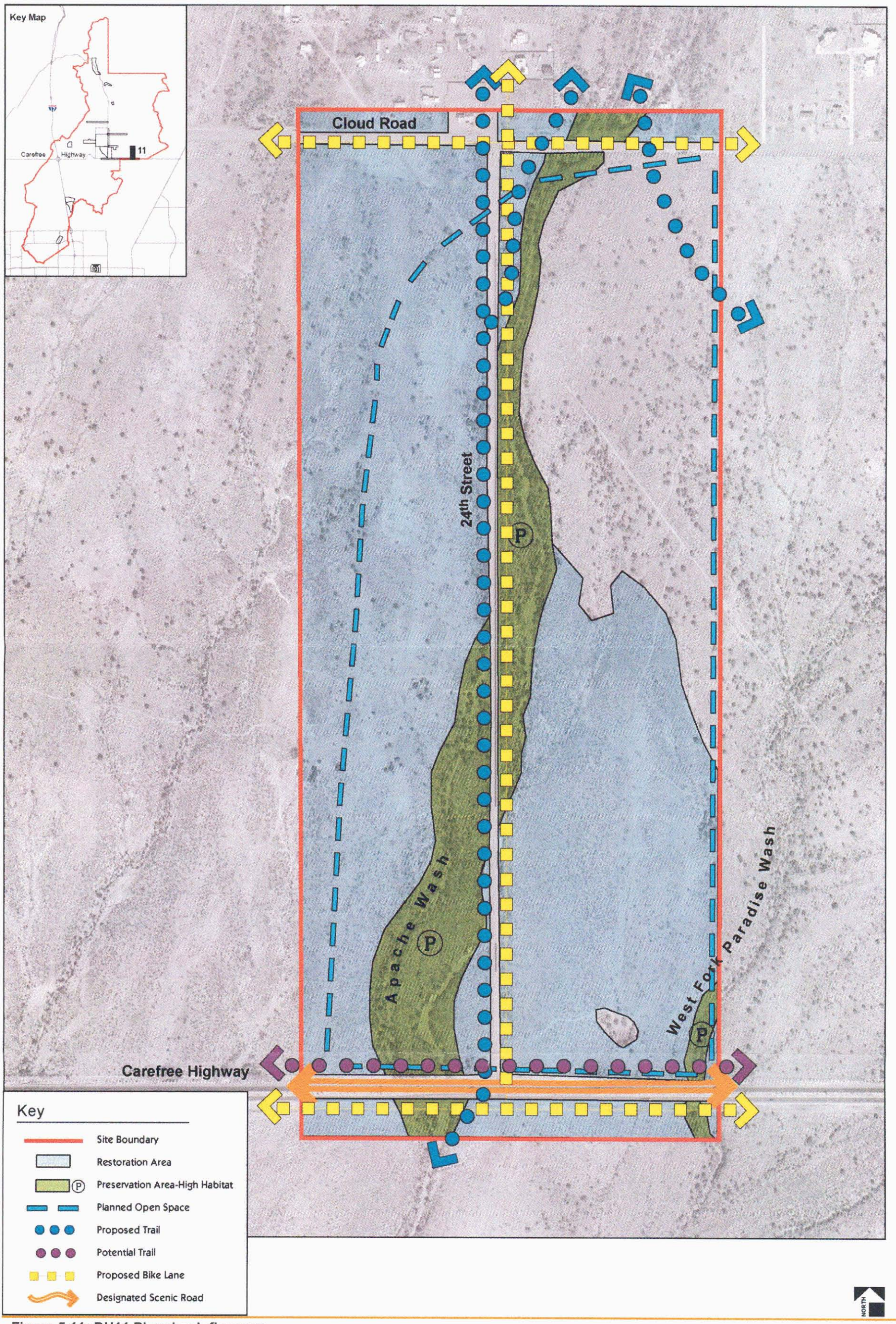

Figure 5.11: DH11 Planning Influences

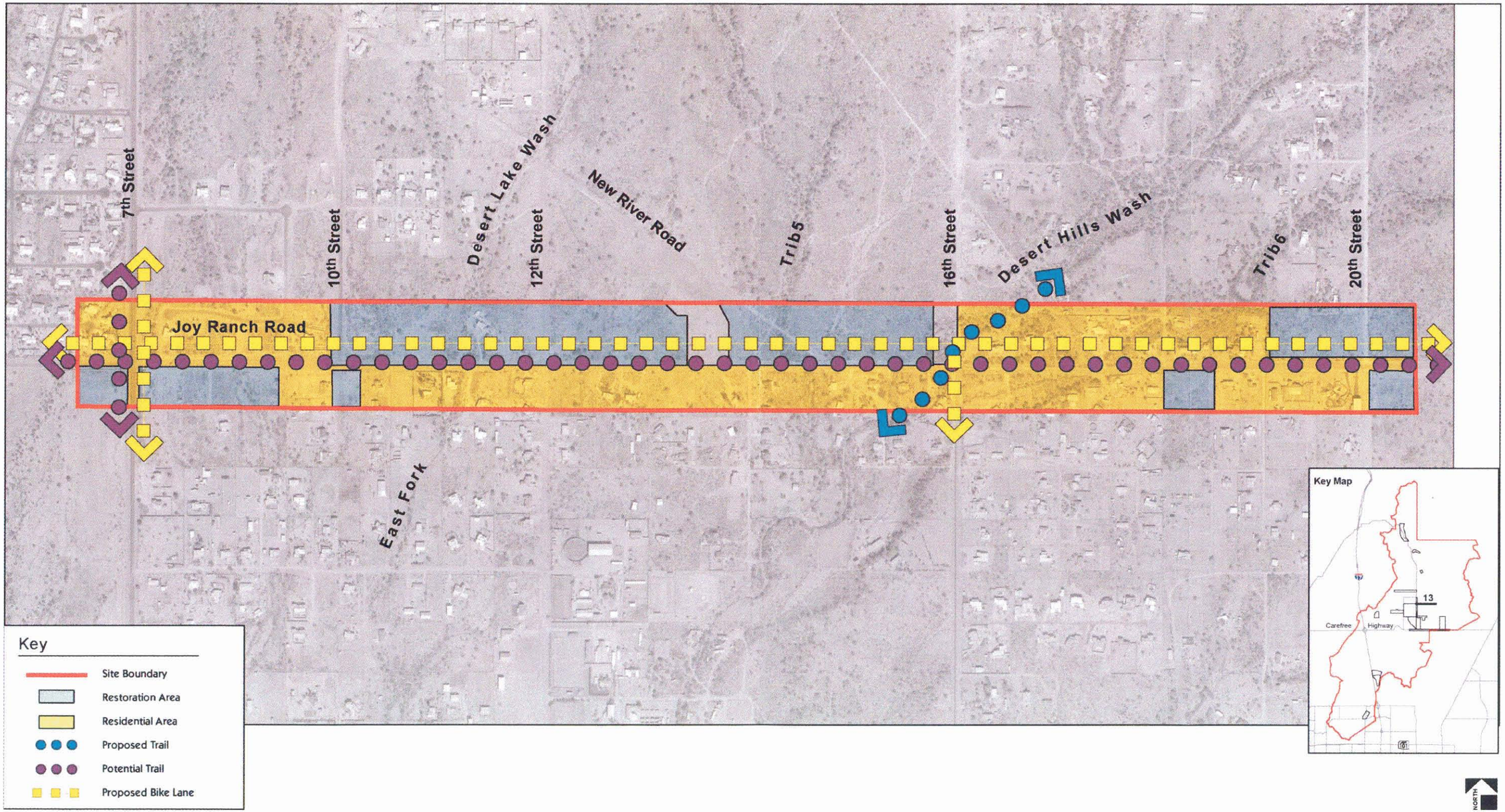

Figure 5.12: DH12 Planning Influences

Figure 5.13: DH13 Planning Influences

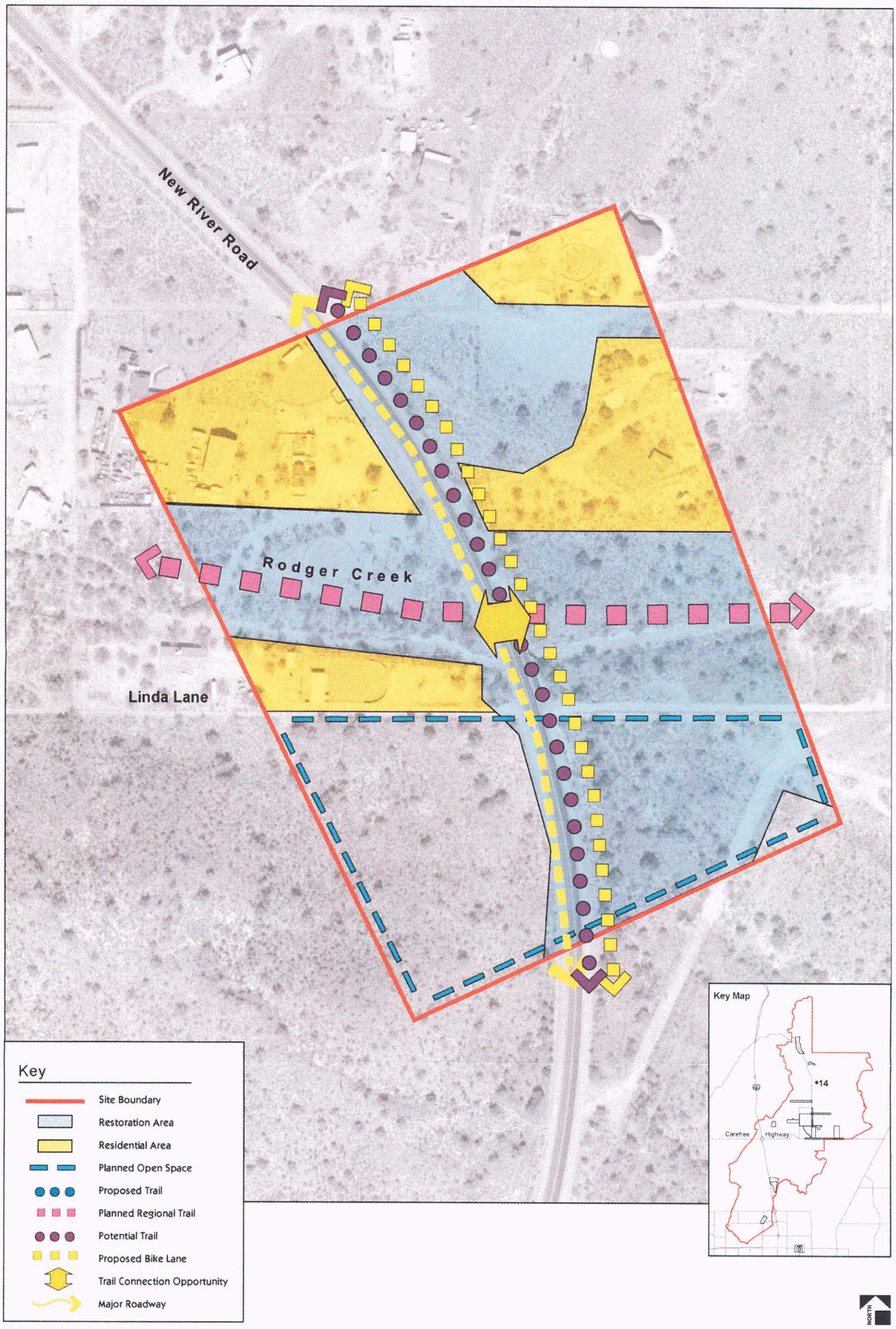

Figure 5.14: NR14 Planning Influences

Figure 5.15: NR15 Planning Influences

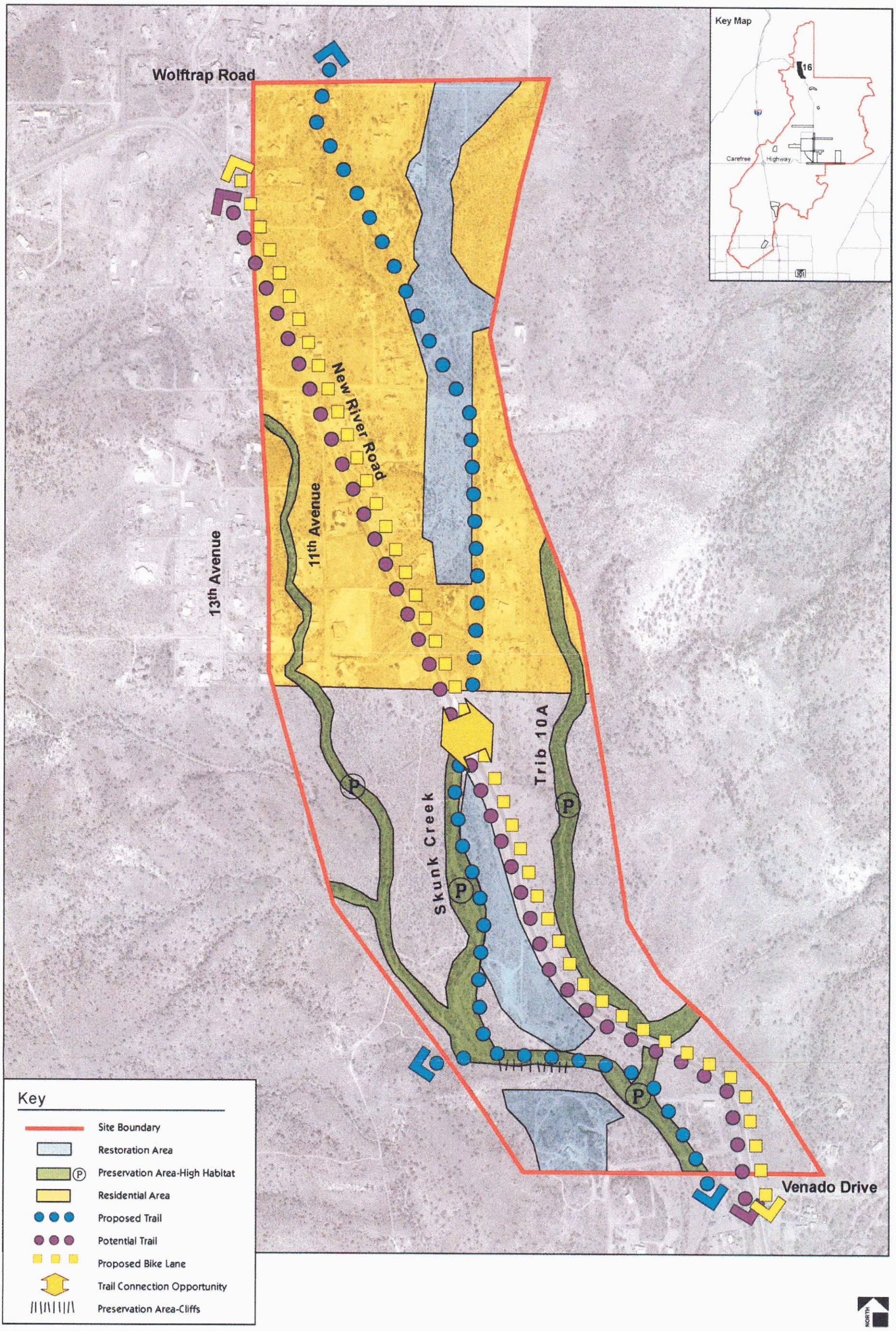

Figure 5.16: NR16 Planning Influences

7.0 Possible Partners and Funding Sources

7.1 Possible Partners—The use and development of existing or new stakeholder groups, special interest groups, private and public organizations, not-for-profit organizations, etc., is key to the success of a proposed project. A few of these groups are listed below.

- **Deer Valley and North Gateway Village Planning Committee** – These two City of Phoenix planning committees are responsible for reviewing all development projects within their planning areas and make recommendations concerning those projects back to the City Council. These two committees are very supportive of the development of trails and trail connections throughout their prospective Villages.
- **Valley Forward** – Valley Forward is a non-profit business organization that promotes aesthetic, cultural, and quality-of-life interest in the Phoenix area. Valley Forward is interested in promoting the development regional trail connections throughout the valley.
- **Arizona State Horseman's Association (ASHA)** – This organization has been extremely influential in the success of trail development projects in the area. Supportive of all trail types this organization has often times written letters of support for funding request.
- **Local Home Owners Associations/Groups** – Residential development in these project areas is growing exponentially. These groups are developing trails within their communities to link to the regional trail system. These communities can potentially take an active roll in the support, implementation and maintenance of portions of the trail. These groups can also serve as the "eyes and ears" of the community to help deter crime and keep the trails safe for all users.
- **Maricopa County Trails Commission** – The Trail Commission seeks to create linkages between County Park Systems and a number of individual trail projects throughout the Valley. Working together, the goal is to make recreational destinations more visible and accessible for the entire County.
- **Phoenix Mountain Preservation Council** – Originally formed to save open space in the City of Phoenix area, this non-profit organization is very supportive of developing trails along existing washes and drainage facilities.
- **Central Arizona Water Conservation District (CAWCD) Board of Directors** – The Central Arizona Project (CAP) canal, owned by the Bureau of Reclamation (BOR) is managed and operated by the CAWCD. The Board is responsible for establishing policy and has been very instrumental in the pursuit to develop the regional trail along the south side of the canal.
- **Arizona State Committee on Trails (ASCOT)** – ASCOT serves as an advisory committee to the Arizona State Parks Board concerning non-motorized public trails throughout the state.

7.2 Possible Funding Sources—There are several local, state, and federal funding opportunities available for the implementation of trails, trail crossings, and trail signage.

- **General Funds of the Affected Municipalities** – The primary revenue source of local municipalities, these funds are limited and often used to only provide the necessary match to state or federal grants.
- **General Obligation Bonds** – With proper planning, bond packages that are tied to specific facility are program improvements can be presented for voter approval. Bonding can provide the facilities more expediently if approved by the voters, however, it takes many years to plan and develop the bond package.
- **Highway User Revenue Fund** – The Highway User Revenue Fund (HURF), consists of State gas tax revenues, the vehicle license tax, and other miscellaneous fees and services. This revenue source constitutionally restricted to roadway purposes, which includes all purposes contained within the roadway right-of-way. Arizona jurisdictions have utilized HURF to provide roadway landscaping and to construct bicycle lanes, paved shoulders, sidewalk facilities, and shared use pathways that are within the roadway right-of-way. The HURF can also be used to construct bicycle facilities as part of roadway bridge crossings of the New River to access the path on both sides of the river, and for secondary pathways, bike lanes, sidewalks, landscaping, and support facilities such as park-and-rides and rest areas located within the roadway right-of-way. This kind of funding can also technically be used for at-grade pathway crossings of major roadways as well as grade-separated crossings such as bridges and underpasses.
- **Local Transportation Assistance Fund** – Recent legislation has changed the eligibility of LTAF funds, which now must be used for transit purposes in all jurisdictions. These funds may be available for construction of sidewalks, bicycle racks, and other facilities that directly relate to or support transit use.
- **Arizona State Parks Heritage Funds** – Monies are appropriated statewide from this fund to a variety of State Parks projects including development of trails. Trail funds are a 50-50 match to locally provided money. When trails are a part of other projects, such as an interpretive center, park development, trailheads, etc., the project may be eligible for other Heritage Fund categories. The specific trails fund category of the Arizona Heritage Fund is only available to trails currently listed in the Arizona State Trail System.
- **Arizona Game and Fish Department** – The Arizona Game and Fish Department provides 100 percent funding grants for projects including habitat creation, interpretive displays, signage, improved access areas for wildlife, etc. The grants do not require agency matches, and are awarded annually through a nomination and approval process similar to that of the Arizona State Parks Heritage Funds. Eligible applicants include the federal government or any federal department or agency, Indian tribe, the State of Arizona, all departments, agencies, boards and commissions of the state, counties, school districts, cities, towns, all municipal corporations, and any other political subdivisions of the state.
- **Transportation Enhancement Activity Funds (TEA-21)** – Transportation Enhancement Funds are a source of federal funds available for pedestrian and bicycle projects. These funds are set aside by TEA-21 in order to add community or environmental value to a completed or ongoing transportation project. Fifty percent of the Transportation Enhancement funds are retained by the Arizona State Transportation Board for ADOT projects. The remaining enhancement funds are available for local projects recommended by the metropolitan planning organizations (MPOs) and rural councils of government (COGs).

The eligible Transportation Enhancement activities include the following:

- Provision of facilities for pedestrians and bicycles (off-road or on-road facilities, including modification of existing public sidewalks to comply with the requirements of the Americans with Disabilities Act),
- Provision of safety and educational activities for pedestrians and bicyclists,
- Acquisition of scenic easements and scenic or historic sites,
- Scenic or historic highway programs (including the provisions of tourist and welcome center facilities),
- Landscaping and other scenic beautification,
- Historic preservation,
- Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals),
- Preservation of abandoned railroad corridors (including the conversion and use for pedestrian or bicycle trails),
- Control and removal of outdoor advertising,
- Archaeological planning and research, and
- Environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity, and
- Establishment of transportation museums.

Local government projects must be sponsored by a governmental body and must be endorsed by a MPO or rural COG. Private non-profit organizations are also able to work with governmental agencies to develop project applications. Transportation enhancement funds must be matched with other non-Federal funds of the total project costs. In Arizona, TEA-21 awards must be matched with a 5.7 percent cash contribution from sponsoring governments.

- **Congestion Mitigation and Air Quality Improvement Program (CMAQ)** – These funds are programmed by TEA-21 for projects that are likely to contribute to the attainment of a national ambient air quality standard, and congestion mitigation. These funds can be used for a broad variety of bicycle and pedestrian projects, particularly those that are developed primarily for transportation purposes. The funds can be used either for construction on bicycle transportation facilities and pedestrian walkways or for non-construction projects related to safe bicycle and pedestrian use (maps, brochures, etc.). The projects must be tied to a plan adopted by State and MPO.
- **Bridge Replacement and Rehabilitation** – These funds may only be used for replacing and rehabilitating bridges. This program provides funding for replacement of a structurally deficient or functionally obsolete highway bridge or to rehabilitate the structural integrity of a bridge. Bicycle lanes and sidewalks can be built as part of bridge rehabilitation, as well as pathway undercrossings of bridges.
- **Highway Safety Funds** – Bicycle and pedestrian safety remain priority areas for highway safety program funding. The Governors Office of Highway Safety administers funding for safety-related programs in Arizona, including pedestrian and bicycle projects that improve safety along or across roadways. Grants are in the form of reimbursable contracts and are made on the basis of a 10 percent local match.

8.0 Conceptual-Level Design Standards—These conceptual design standards for non motorized trails, trail roadway crossings, and trail signage are captured within the most recent editions of the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, the United States Department of Transportation (USDOT) Designing Sidewalks and Trails for Access, the USDOT Manual on Uniform Traffic Control Devices (MUTCD), the City of Phoenix Trail Standards, and other guidelines recognized by the State of Arizona.

These conceptual level design standards also meet the American with Disabilities Act (ADA) most recent guidelines. In addition to the following design standards, additional measures should be considered to ensure the security of public and private property and the safety of the trail user by incorporating Crime Prevention Through Environmental Design (CPTED) principles.

8.1 Surface – The surface must be "firm" (i.e., does not give way significantly under foot) and "stable" (i.e., does not shift from side-to-side or when turning). The degree of firmness and stability desired, or most appropriate, is related to the intended use of the trail, the predominant direction(s) of travel, and the overall length of the trail. For example, a surface, which is both very firm and very stable, is recommended for trails of more than 0.5 mile in length due to the duration of travel for a person with a disability. However, it may be acceptable for the surface to be moderately firm (rather than very firm) for trails less than 0.5 but greater than 0.1 mile in length, and where the travel pattern is primarily linear. It may also be acceptable for the surface to be both moderately firm and moderately stable for trails less than 0.1 miles in length, and where the trail is moderately level (<3 percent slope). The trail surface is considered not firm if there is greater than 0.5-inch penetration and not stable if there is grater than 1.0-inch penetration. Regardless of surface type, all surface materials need to be free from irregularities and maintain a uniform trail width.

8.2 Grade – The grade of the trail should not exceed 5 percent. If grades over 5 percent are unavoidable, then ADA guidelines need to be used. Trail grades over 5 percent will need to meet one or more of the following:

- up to 8.33 percent for 200 feet maximum, resting intervals no more than 200 feet apart.
- up to10 percent for 30 feet maximum, resting intervals 30 feet.
- up to 12.5 percent for 10 feet maximum. Resting intervals 10 feet

8.3 Resting Intervals – The top and bottom landings will be no less than 6-feet long by the width of the trail. All intermediate landings will be no less than 5-feet long by the width of the trail. Although landings spaced at the appropriate intervals meet ADA guidelines they can provide a rough ride for those users traveling at speeds greater than 10 miles per hour. It is therefore recommended that trail grades not exceed 5 percent to maximize user safety while still meeting ADA guidelines.

8.4 Width – Trail width should be a minimum 10 feet with a minimum 2-foot graded shoulder on each side. Trail width can be reduced to a minimum 8-foot with 2-foot shoulders in locations where bicycle use is expected to be minimal. There should be no planted vegetation, irrigation equipment, or obstructions within the shoulder area.

8.5 Cross Slope – The minimum cross slope of the trail should be 2 percent to provide adequate drainage. Maximum cross slope can be 5 percent in areas where specific drainage is a concern. Drainage to the outslope of the trail is preferred to keep the water from running down the length of the trail. This will minimize the need for costly culverts and/or reduce erosion caused by the crossing drainage. A surface free from irregularities will eliminate potential pooling or channeling of water on the trail as well.

8.6 Vertical Clearance – The vertical clearance to obstructions should be a minimum 10-feet. It is recommended that under crossings and tunnels have a 12-foot minimum vertical clearance to accommodate equestrian users and maintenance vehicles.

8.7 Horizontal Clearance – The horizontal clearance to obstructions (utility boxes, fire hydrants, poles, signs, fences, etc.) should be a minimum 3 feet from the edge of the trail.

8.8 Surface Openings – Surface openings or gaps in trail surfaces should be of a size which does not permit passage of a one-half inch diameter sphere and must be perpendicular or diagonal to the direction of travel. The exception that permits parallel openings to the direction of travel is if those openings do not permit passage of one-quarter inch diameter sphere. Expansion and construction joints fall into the same criteria.

8.9 Safety Railing – Safety railing needs to be used in areas where you have less than a 5 foot shoulder next to downhill slopes that are 1:3 or greater. The railing shall be a minimum 3.5 feet in height and consist of smooth rub rails. The safety railing should be installed no closer than 3 feet from the edge of the trail.

8.10 Design Speed – The paved trail should be designed for a minimum design speed of 20 miles per hour. If the trail exceeds 4 percent grade, the design speed of the trail should be increased to 30 miles per hour.

8.11 Sight Distance – Trails should be designed to maximize sight distance of the highest anticipated design speed.

8.12 Horizontal Curvature – The horizontal curvature for 20 miles per hour should be 95 feet. For 30 miles per hour the horizontal curvature should be 250 feet.

8.13 Vegetation – No thorny or spiny vegetation shall be planted within 10 feet of the trail. Mature height of all vegetation within three feet of the trail shall not exceed 3 feet; trees and shrubs outside that 3-foot buffer may exceed this height. No poisonous plants (*Nerium oleander* or *Sophora secundiflora*, etc.) shall be planted within 10 feet of the trail.

8.14 Signage – Signage should be provided at the pedestrian scale, as allowed by the MUTCD, except in higher hazards locations where trails intersect roadways. Vehicle scale signage should be used in these areas to alert both trail users and drivers of the trail crossing. Signs should also be placed at trailheads and access points that identify trail type, maximum cross slope, and maximum grades so that potential users may develop reasonable expectations for that section of trail. Trail signage must be readable from the trail, however, may not be placed within the 3-foot clearance buffer.

Safety signage and barriers also need to be installed to warn users when flood conditions exist.

9.0 References

Aerial Photograph, 2002

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