Coastal Cactus Wren & California Gnatcatcher Habitat Restoration Project, Phase II

Encanto and Radio Canyons

San Diego, CA

Final Report

AECOM and

GROUNDWORK SAN DIEGO-CHOLLAS CREEK

for SANDAG

December 2013

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BACKGROUND – PHASE I

In collaboration with Groundwork San Diego-Chollas Creek (Groundwork) and the San Diego Association of Governments (SANDAG), AECOM was selected to enhance and restore existing and potential coastal cactus wren (*Campylorhynchus brunneicapillus*) and California gnatcatcher (*Polioptila californica californica*) habitat in Encanto and Radio Canyons. Groundwork is an independent, not-for-profit, environmental business that works within San Diego's Chollas Creek Watershed to improve the environment, economy, and quality of life in the area through local community projects. Over the past several years, Groundwork has been an integral part of the restoration and enhancement of the Chollas Creek area. The project was funded by SANDAG under the *Transnet* Environmental Mitigation Program (EMP).

This project was identified as an opportunity to create and enhance habitat for the coastal cactus wren (Photo 1) and California gnatcatcher and offer a more native landscape for the community surrounding the sites. This is consistent with the goals as identified in the Chollas Creek Enhancement Plan (2001). The habitat enhancement and restoration objectives included removal of nonnative plant cover and planting of approximately 20,000 new coast cholla cactus (*Cylindropuntia prolifera*), which is preferred nesting habitat for the coastal cactus wren. The California gnatcatcher would also benefit from the improved habitat, since this species is also present in the project area and uses maritime succulent scrub habitat in conjunction with coastal sage scrub habitat. Enhancement and expansion of areas with existing occupied gnatcatcher and cactus wren habitats improve and expand habitat for both species, improving the chances for the long-term health of local and regional populations. This project also offered a unique opportunity for students and residents within the surrounding canyon communities to play an important role in planning and implementing of the habitat restoration program.

Photo 1: Coastal cactus wren perched on its preferred cactus habitat

AECOM and Groundwork collaborated in the execution of project tasks. AECOM led the site mapping, habitat restoration, monitoring, maintenance, and reporting tasks, and Groundwork led the educational, community involvement, and publicity aspects of the project.

The project is located in the community of Encanto in southern San Diego, California, north of Market Street between Euclid Avenue and Merlin Drive (Figures 1 and 2). The total area of both canyons combined is 73.62 acres. Encanto Canyon consists of 37.24 acres and Radio Canyon consists of 36.38 acres. The entire project area is within the City of San Diego's Multi-Habitat Planning Area and will be preserved in perpetuity. Phase I of the coastal cactus wren habitat restoration project lasted 2 years, beginning in April 2009 and ending in April 2011. Phase I included the following activities:

1. Baseline vegetation mapping, species inventories, and cactus wren and California gnatcatcher protocol surveys;

2. Coast cholla collection and propagation at Millennial Tech Middle School's EarthLab;

3. Dethatching and nonnative species treatment and removal in the planned planting areas (7.8 acres in Encanto Canyon and 9.1 acres in Radio Canyon);

4. Coast cholla planting in the Stage 1 cactus planting areas (7.8 acres in Encanto Canyon and 4.4 acres in Radio Canyon);

5. Phase I, Year 2 cactus wren and California gnatcatcher protocol surveys;

6. Follow-up weed treatment and maintenance visits; and

7. Education and community involvement activities.

A full description of Phase I of the project, including the baseline vegetation mapping and results of the baseline species inventories, can be found in the AECOM and Groundwork report published in 2011 entitled "Coastal Cactus Wren and California Gnatcatcher Habitat Restoration Project, Encanto and Radio Canyons, Final Report."

PHASE II INTRODUCTION

Phase II of the coastal cactus wren habitat restoration project began in January 2012 and ended at the end of November 2013. This phase was also funded by SANDAG's *Transnet* EMP and built upon the progress of the restoration program begun in Phase I. During both years of Phase II, weed control in the planting areas and bird monitoring continued in Radio and Encanto Canyons. The restoration site boundaries and project work areas are shown in Figure 3, and the areas subject to specific planting and maintenance activities are shown in Figure 4. The Phase II project areas total 14.6 acres and include the following[1]:

- 6.4 acres of Stage 1 cactus planting areas in Encanto Canyon,
- 4.0 acres of Stage 1 cactus planting areas in Radio Canyon, and
- 4.2 acres of Stage 2 cactus planting areas in Radio Canyon.

[1] Note that Phase I and II refer to the first and second grant periods, respectively, and Stage 1 and 2 refer to the two stages of effort in the restoration scheme.

Bird monitoring included avian surveys focused on coastal cactus wren and California gnatcatcher, as well as the installation of wildlife cameras and artificial nest boxes. Habitat diversification was a crucial goal for Phase II, as many of the areas subject to weed removal and dethatching during Phase I supported very little native cover at the end of Phase I. The goal of diversification was to provide more complete habitat for cactus wren and California gnatcatcher within these areas, in addition to the breeding habitat provided by cholla patches. The majority of the habitat diversification activities were conducted during two volunteer planting events, which Groundwork organized as a way of matching the funds provided by SANDAG.

During Year 1 of Phase II, coastal sage scrub/maritime succulent scrub (CSS/MSS) container plants were planted in the Stage 1 cactus planting areas to support habitat diversification in Radio Canyon. CSS/MSS container plants and coast cholla were planted in the Radio Canyon Stage 2 cactus planting areas during a second volunteer planting event in Year 2 of Phase II. During Year 2 of Phase II, cholla cactus that had been planted in the City of San Diego's Brush Management Zone (BMZ) in Encanto and Radio Canyons were removed from the BMZ at the request of the City and transplanted to Stage 1 cactus planting areas in Encanto Canyon and Stage 2 cactus planting areas in Radio Canyon. Removal of cholla from the Radio Canyon BMZ occurred during the second volunteer planting event, and these cholla were transplanted into areas of Radio Canyon that had been subject to weed removal, but no planting activities, during Phase I (the Stage 2 cactus planting areas). The cholla removed from the Encanto Canyon BMZ were transplanted to open patches of the Stage 1 cactus planting areas in Encanto Canyon. During both volunteer planting days, coast prickly pear (*Opuntia littoralis*), propagated at the EarthLab, were planted in the Radio Canyon Stage 1 and 2 cactus planting areas. A CSS/MSS seed mix was also applied to the majority of the project areas during Year 2 (Figure 4). Details of the planting events and subsequent monitoring and maintenance are discussed further in this report.

PHASE II IMPLEMENTATION

Implementation of Phase II began in January 2012. This phase of the project consisted of plant propagation at the EarthLab, site preparation, two rounds of planting of CSS/MSS species and coast prickly pear, and application of CSS/MSS seed to select areas of the site.

Plant Propagation and Seed Collection

During Phase II, Groundwork staff propagated several species of native plant at the EarthLab for use during planting events in Radio Canyon. These plant species included coast prickly pear, deerweed (*Acmispon glaber*), California sagebrush (*Artemisia californica*), broom baccharis (*Baccharis sarothroides*), and bladderpod (*Peritoma arborea*). Coast prickly pear was propagated from cuttings harvested by the AECOM maintenance crew during Phase I of the project and the CSS/MSS shrub species were propagated from seed harvested by Groundwork staff within the project areas. The coast prickly pear cuttings were planted within the Radio Canyon project areas during Years 1 and 2 of Phase II and the CSS/MSS plants were planted within the Radio Canyon Stage 2 cactus planting areas during Year 2 of Phase II. AECOM provided propagation guidance to Groundwork staff during both years of Phase II. In addition, although coast cholla collected by the AECOM maintenance crew during Phase I continued to be propagated at the EarthLab during Phase II, these plants were not needed during this phase as the cholla installed during Phase II was transplanted from the City's BMZ.

Groundwork staff and volunteers also collected seed from native plants within the project areas to use in a native seed mix that was broadcast in the Radio Canyon and Encanto Canyon project areas in Year 2.

Under the direction of a nursery manager with certifications in Landscape Design, Landscape Architecture, Sustainable Urban Landscapes, Irrigation technology, Nursery Technology, and Arboriculture, the Native Plant Propagation Center was developed. Located at the EarthLab (4 acre parcel adjacent to Millennial Tech Middle managed by Groundwork), the propagation center is generating 1200 plants annually in support of Radio/Encanto Canyon community restoration goals. Also being propagated at the EarthLab are cholla and prickly pear cactus, in support of Chollas Creek as well as regional restoration needs in San Diego County. In April 2013, 200 cholla cactus cuttings were shared with the Center for Natural Lands Management for use in the Santee Open Space Cactus Wren Project. In July 2013, 4500 cholla cuttingswere donated to Lakeside's Riverpark Conservancy for establishment of cactus wren habitat along Los Coches Creek, lost during the San Diego fires of 2003 and 2007. The propagation center also serves as a hands-on learning site for students.

Under the direction of a landscape architecture intern and a resource conservation consultant, a propagation center masterplan was completed to expand the current EarthLab nursery and propagation spaces to 7000 sq ft. A series of program evaluations and site planning analyses resulted in design elements that include an ADA compliant path for student access, as well as footprints for a 750 ft hoop house and a 5900 sq. feet. one gallon native plant stock nursery. Materials for the hoop house were donated, and design approved by the site owner, San Diego Unified School District. The site was graded to follow the natural contours of the site to best mitigate stormwater runoff and erosion. Students will have access to all program elements at the EarthLab, including the one gallon native stock nursery and propagation hoop houses. This access will enable students and visitors to see a part of the native plant restoration process, and understand how native plant restoration needs are met. Students and visitors will learn to identify native plants, and will learn their importance in the local ecosystem.

Groundwork Green Team works in the EarthLab Native Plant Propagation Center

Site Preparation

The first round of site preparation occurred in January 2012, immediately preceding the Phase II, Year 1 planting event. It consisted mainly of the removal of nonnative plants within the Radio Canyon project areas, including both the Stage 1 and 2 cactus planting areas, a total of 8.2 acres (Figures 4 and 5, Photos 2 and 3). Nonnative species can overwhelm many native species by competing for precipitation, sun, and space, which limits the value of the habitat for native species such as coastal cactus wren and California gnatcatcher. Nonnative species targeted for removal included seedling acacia (*Acacia* sp.), castor bean (*Ricinus communis*), black mustard (*Brassica nigra*), short-pod mustard (*Hirschfeldia incana*), wild radish (*Raphanus sativus*), chrysanthemum (*Glebionis coronaria*), Russian thistle (*Salsola tragus*), and nonnative grasses (*Avena* spp., *Bromus* spp., others).

At the beginning of Year 2 of Phase II, the boundaries of the Stage 2 cactus planting areas were altered slightly from what was originally planned during Year 1. This change was due to logistic constraints that prevented the removal of many large acacia shrubs that were present in an approximately 1-acre area intended for cactus planting. Therefore, this area was removed from the Stage 2 cactus planting areas and replaced with another 1-acre area at the southern end of Radio Canyon, continuous with the Stage 1 cactus planting areas. The acreage of the restoration areas was not reduced by this change. The newer restoration area is also closer to the occupied cactus wren habitat in Encanto Canyon, thereby narrowing the gap between Encanto Canyon and the restored habitat in Radio Canyon. The changes in the Stage 2 cactus planting areas are shown in Figure 5.

A second round of site preparation occurred in January 2013, immediately before the Phase II, Year 2 planting event. This round of site preparation consisted of weed removal within the Stage 2 cactus planting areas only (a total of 4.2 acres). The weed species removed included most of the species listed above. In addition to weed removal, the maintenance crew cut down several large, dead acacia shrubs that were present in one of the Stage 2 cactus planting areas and piled the brush in the planting area for removal by volunteers during the planting event.

Weed removal during both years included a combination of manual removal (using weed-wackers), dethatching, hand weeding, and herbicide treatments (active ingredient glyphosate). Crews were careful to protect individual native plants during weed control efforts. All weed and thatch material was removed from the site and properly disposed of.

Photo 2: Herbicide spraying of nonnative plants in Radio Canyon

Photo 3: Dead weeds in Radio Canyon post-herbicide treatment

Phase II, Year 1 CSS/MSS Planting

To support habitat diversification within Radio Canyon, 1099 CSS/MSS container plants and 316 prickly pear segments were planted on January 28, 2012, by volunteers. The areas subject to habitat diversification during Phase II, Year 1 consisted of 4.0 acres of Radio Canyon that had been planted with patches of cholla during Phase I. This area is known as the Radio Canyon Stage 1 cactus planting area (Figure 5). The majority of the CSS/MSS container plants were concentrated around the edges of the cholla patches, as studies suggest that cactus wren prefers nesting habitat characterized by low shrub density. In addition, the native shrubs planted around the edges of the cactus patches will act as a buffer to reduce the impacts of "edge effects" (particularly invasion by nonnative species) on the cholla patches. CSS/MSS species were planted in much lower density within the cholla patches. A patch of coast prickly pear cuttings was planted adjacent to an existing cholla patch to provide additional succulent diversity. The species and quantities of container plants are included in Table 1. All plants except the coast prickly pear, which was propagated at the EarthLab, were purchased from RECON Native Plant Nursery.

Table 1
Phase II, Year 1 Habitat Diversification Plantings

Type	Scientific Name	Common Name	Size	Year 1 Total
Shrub	*Adolphia californica*	California adolphia	1 gal	93
Shrub	*Eriogonum fasciculatum*	California buckwheat	1 gal	885

Shrub	*Lycium andersonii*	desert thorn	1 gal	71
Succulent	*Opuntia littoralis*	coast prickly pear	cuttings	316
Tree	*Quercus agrifolia*	coast live oak	15 gal	
Shrub	*Rhus integrifolia*	lemonadeberry	1 gal	14
Shrub	*Sambucus nigra* ssp. *caerulea*	Mexican elderberry	1 gal	36
				1415

Phase II, Year 2 Cactus and CSS/MSS Planting

Phase II cactus and CSS/MSS shrub planting was implemented during Phase II, Year 2 on January 26, 2013, and was also completed by volunteers (Photo 4). The planting occurred in areas of Radio Canyon that were subject to weed control (but no planting) during Phase I and Phase II, Year 1. This area, which totals 4.2 acres, is known as the Radio Canyon Stage 2 cactus planting area (Figure 5). The purpose of the additional planting was to expand cactus wren nesting habitat and strategically provide several habitat patches spaced throughout the canyon complex, allowing for a stepping stone pattern of habitats to serve as a backbone for future restoration projects and for future cactus wren use.

The cholla planted in the Stage 2 cactus planting areas were transplanted from the Radio Canyon BMZ, where a patch of cholla had been planted during Phase I (Figure 5). During the Phase II, Year 2 planting event, the AECOM maintenance crew removed the cholla from the Radio Canyon BMZ and installed them in patches within the Stage 2 cactus planting areas. The locations and sizes of the patches were determined by an AECOM restoration ecologist and were intended to mimic the cholla patches planted during Phase I. The cuttings were installed in a manner that mimics natural plant distribution (e.g., random and/or aggregate distributions rather than uniform rows). The cacti were planted by hand using shovels, trowels, and tongs. In addition to the patches of coast cholla, several patches of coast prickly pear cuttings were planted during the Year 2 planting event.

As with the Phase II, Year 1 planting, CSS/MSS species were planted infrequently within the cholla patches and were concentrated around the edges of the patches. The species and quantities of CSS/MSS container plants are included in Table 2.

Table 2
Phase II, Year 2 Habitat Diversification Plantings

Type	Scientific Name	Common Name	Size	Year 2 Total
Shrub	*Acmispon glaber*	deerweed	rose pot	15*
Shrub	*Adolphia californica*	California adolphia	1 gal	30
Shrub	*Artemisia californica*	California sagebrush	rose pot	43*
Shrub	*Baccharis sarothroides*	broom baccharis	rose pot	3*
Shrub	*Eriogonum fasciculatum*	California buckwheat	1 gal	435
Shrub	*Lycium andersonii*	desert thorn	1 gal	106
Succulent	*Opuntia littoralis*	coast prickly pear	cuttings	300*
Shrub	*Peritoma arborea*	bladderpod	rose pot	156*
Shrub	*Rhus integrifolia*	lemonadeberry	1 gal	8
Shrub	*Sambucus nigra* ssp. *caerulea*	Mexican elderberry	1 gal	30

TOTAL				**1126**

* Propagated by Groundwork at the EarthLab.

Photo 4: Volunteer planting event in Radio Canyon

CSS/MSS Seeding

Groundwork volunteers also applied a CSS/MSS seed mix to the majority of the Radio Canyon planting areas (including Stage 1 and 2 cactus planting areas) on March 3, 2013. The seed mix included California sagebrush, deerweed, and San Diego viguiera (*Bahiopsis lacinata*). The seed mix was combined with sand or potting soil and hand broadcasted throughout the Radio Canyon planting areas. In addition, jojoba (*Simmondsia chinensis*) seeds were planted by hand within a portion of the Stage 2 cactus planting areas. As with the CSS/MSS container plantings, seeding efforts were concentrated around the edges of the cholla patches. The CSS/MSS seed mix will be applied to portions of the Encanto Canyon Stage 1 cactus planting areas with sparse native cover (Figure 4) in December 2013.

Irrigation

No irrigation system was installed on-site within the Radio Canyon planting areas (Stage 1 and 2 cactus planting areas). Cholla cactus naturally requires little moisture to survive, and it was assumed that the planted segments would be able to establish on-site with natural precipitation. The planting efforts were timed to occur during the winter rainy season (both occurred in January). The Stage 2 cactus planting occurred immediately after a rain event so that the soil was saturated. The cholla segments in the Stage 2 cactus planting areas were watered in conjunction with irrigation of the CSS/MSS container plants (see discussion below) to aid in their establishment.

Watering of the CSS/MSS container plants in the Stage 1 and 2 cactus planting areas was completed by Groundwork volunteers and/or Urban Corps personnel (under contract with City of San Diego Parks and Recreation). During watering events, each container plant received approximately 1 gallon of water. Water was directed into the plant basins in order to maximize the amount of water that the roots received and to minimize runoff. During regular vegetation monitoring visits, the AECOM restoration ecologists inspected the container plants for signs of drought stress and/or overwatering and provided feedback to Groundwork, as necessary. During the rainy season (approximately November through May of each year), the container plants were watered twice a month, when possible. When the site received over 0.25 inch of precipitation during a rain event in this period, the plants were not watered until 2 weeks subsequently. From June to the end of October, plants were watered once a month during the early morning or late afternoon to avoid evaporation during the hottest part of the day. Watering of the CSS/MSS container plants in the Stage 1 cactus planting areas was ceased at the end of Year 1 of Phase II as the container plants were well established and self-sufficient by this time. Watering of the cholla and CSS/MSS container plants in the Stage 2 cactus planting areas was ceased at the end of Year 2 of Phase II, when the rainy season began, as the plants were expected to become fully established by the end of this rainy season.

MONITORING AND MAINTENANCE

The monitoring and maintenance phase of the project began after implementation and continued through the end of Phase II. Monitoring consisted of follow-up bird surveys and qualitative site monitoring visits. Maintenance consisted primarily of continued weed treatment and trash removal.

Coastal Cactus Wren and California Gnatcatcher Surveys

Coastal cactus wren and California gnatcatcher (Photo 5) protocol surveys were performed in Encanto and Radio Canyons during Years 1 (2012) and 2 (2013) of Phase II. Four surveys were performed during both 2012 and 2013 (Table 3). In 2012, two coastal cactus wren pairs were observed during surveys within the project limits in Encanto Canyon. An additional coastal cactus wren pair was observed within Encanto Canyon in a small finger canyon just outside the project boundary. This area was also occupied by a pair of cactus wrens in 2010. Within Encanto Canyon, during 2013 surveys, at least three separate pairs of cactus wrens were detected. All pairs had several nests within their territories. Only two of the pairs were observed with juveniles. One pair was observed with two juveniles, and a second pair was observed with at least one juvenile. Therefore, at least nine cactus wrens were detected in Encanto Canyon during the 2013 surveys.

Table 3. Phase II Coastal Cactus Wren and California Gnatcatcher Survey Dates

Survey Date	AECOM Biologists
YEAR 1	
March 12, 2012	Andrew Fisher and Jimmy McMorran
April 23, 2012	Andrew Fisher and Brennan Mulrooney
June 7, 2012	Brennan Mulrooney
July 10, 2012	Andrew Fisher and Jimmy McMorran
YEAR 2	
March 29, 2013	Jimmy McMorran and Brennan Mulrooney

April 26, 2013	Andrew Fisher and Brennan Mulrooney
June 11, 2013	Andrew Fisher
July 5, 2013	Andrew Fisher

Encanto Canyon has a large population of coastal California gnatcatchers that successfully breed each year. Numerous pairs with young and nests were observed in 2012 and 2013. Individual observations of both coastal cactus wren and California gnatcatcher are depicted in Figure 6. No cactus wrens or California gnatcatchers were observed within Radio Canyon. The restored habitat there will likely require several more years of growth before it can support these two species.

Photo 5: Coastal cactus wren juveniles (left) and California gnatcatcher (right)

Artificial Nest Boxes

Four artificial nest boxes were installed within the Radio Canyon Stage 1 cactus planting areas and four nest boxes were installed in the Stage 1 cactus planting areas in Encanto Canyon during Year 1 of Phase II. The locations of these boxes locations were selected in the field by AECOM wildlife biologists and are mapped in Figure 6. These boxes were installed in pairs, with each pair containing two slightly different designs—a basic design and a modified design (Photo 6). Both types of nest box were fixed to 6-foot metal poles, and the pairs of nest boxes were placed 10–20 meters away from each other within restored cactus patches. The basic designs for the nest boxes have been adapted from designs provided by Robb Hamilton of Hamilton Biological, Inc. The modified nest boxes had chicken wire wrapped around the pole; soil was placed at the bottom of the chicken wire cage and cactus pads were planted in the soil, thereby imitating the placement of the next box within a cactus stand at a mature height.

These boxes were installed in February 2012 to ensure that cactus wrens had not already started buildings nests. The nest boxes were monitored by AECOM biologists in association with the protocol bird monitoring surveys. No cactus wrens were observed using any of the nest boxes, although other bird species, such as northern mockingbird (*Mimus polyglottos*), used the boxes as perches. During Year 1, several of the nest boxes were damaged by vandals. An AECOM wildlife biologist repaired the damage and reinstalled these nest boxes in January 2013. In spring 2013, a pair of nest boxes was stolen from Encanto Canyon and has not been replaced due to concerns about theft and vandalism.

Photo 6: Basic nest box in background, modified nest box in foreground

Wildlife Cameras

During Year 2 of Phase II, a wildlife monitoring camera was installed near an active cactus wren nest in Encanto Canyon to provide Groundwork with video footage of cactus wren chicks and nesting activities (Photo 7). The camera was installed in early June 2013 by an AECOM wildlife biologist and was taken down in July 2013 after the chicks in the nest had fledged. The camera footage, camera, and set-up materials, as well as an additional wildlife camera and set-up, were provided to Groundwork to use during future nest monitoring. The location of the wildlife camera is depicted in Figure 6.

Photo 7: Wildlife camera hidden in cactus patch in Encanto Canyon

Site Maintenance

Weeds represent one of the greatest threats to the successful establishment of native species and the long-term habitat value of the restored habitat. Given the high density of nonnative and invasive species within and surrounding the restoration areas (Photos 2 and 3), diligent weed control efforts are considered crucial to restoration success. Nonnative species targeted for treatment and removal included seedling acacia, castor bean, black mustard, short-pod mustard, wild radish, chrysanthemum, nonnative grasses, fennel (*Foeniculum vulgare*), and tree tobacco (*Nicotiana glauca*).

AECOM's maintenance crew conducted three maintenance visits in the Radio Canyon project areas and one maintenance visit in the Encanto Canyon project area during each year of Phase II. Maintenance activities included a combination of weed whacker removal, dethatching, and herbicide treatments (Round-up®; active ingredient glyphosate). All weed and thatch material was removed from the site and properly disposed of. AECOM restoration ecologists monitored weed conditions during the growing season of each year (approximately December through June) so that weeding efforts could be

strategically timed to treat the widest possible range of weed species before they began producing seed. Table 4 summarizes the site preparation and maintenance activities conducted during Phase II.

Table 4. Site Preparation and Maintenance Activities for Encanto and Radio Canyons

Date	Activity Performed
January 2012	Weeding, dethatch, and site preparation of all Radio Canyon project areas
February 2012	Weed treatment of Encanto Canyon project areas
April 2012	Weed treatment of Radio Canyon Stage 1 cactus planting areas
May 2012	Weed treatment of Radio Canyon Stage 1 cactus planting areas
June 2012	Weed treatment of Radio Canyon Stage 1 cactus planting areas
January 2013	Weeding and site preparation of Radio Canyon Stage 2 cactus planting areas; transplantation of cholla from Radio Canyon BMZ
February 2013	Weed treatment of Radio Canyon Stage 1 cactus planting areas
March 2013	Weed treatment of Encanto Canyon project areas
April 2013	Weed treatment of all Radio Canyon project areas
May 2013	Weed treatment of Radio Canyon Stage 1 cactus planting areas and Encanto Canyon project areas
June 2013	Weed treatment of all Radio Canyon project areas
September 2013	Transplantation of cholla from Encanto Canyon BMZ

Site Monitoring

During Phase II, AECOM restoration ecologists completed qualitative site monitoring visits on approximately a monthly basis during the growing season (December through June) and approximately a bimonthly basis during the remainder of each year. Monitoring focused on the Radio Canyon project areas, as these areas were subject to planting and the majority of the weed control during Phase II. During each monitoring visit, the restoration ecologist walked the entire project area within Radio Canyon (including Stage 1 and 2 cactus planting areas), noting areas that required maintenance. The results of the monitoring visits were used to schedule maintenance visits and inform Groundwork of any concerns within the Radio Canyon project areas. Monitoring of the Stage 1 cactus planting areas in Encanto Canyon occurred less frequently and was focused during the early growing season of each year. These visits were used to schedule the single maintenance visit that took place in these areas during each year.

In January 2013, permanent photo-documentation points were established within the Radio Canyon Stage 1 and 2 cactus planting areas. The locations of the permanent photo points are shown in Figure 5. Photos taken at these points in February 2013 are included in Appendix 1. Photos will continue to be taken at these points in the future to document the progress of the restoration areas. Additional qualitative monitoring photos were taken during the site monitoring visits to document areas of concern. These photos were provided to Groundwork, when necessary, and some photos have been incorporated into this report.

Between July and November 2013, Groundwork staff and a team of three university student interns documented existing vegetation conditions in Radio and Encanto Canyons, for the purpose of tracking Phase II restoration activities. Surveys were conducted using an iPad and donated software from Google

and ESRI. The recorded data were used to calculate survival rates of Phase II Year 1 and 2 CSS/MSS container plantings, which were compared to planting rates to ensure that restoration goals were achieved (see Results section). Student interns also documented locations of erosion and dumping locations, and performed a photo survey of existing conditions.

Removal of Cholla from the Brush Management Zone

In January 2013, AECOM and Groundwork met with staff from the City of San Diego to discuss cholla cactus that had been planted in the City's BMZ in the Encanto Canyon and Radio Canyon Stage 1 cactus planting areas. The city requested that all planted cholla be removed from the BMZ, as the presence of this species created access concerns for their brush removal crews. City staff flagged the limits of the BMZ in the areas of concern. During the Phase II, Year 2 planting event, the AECOM maintenance crew removed the cholla from the Radio Canyon BMZ and installed them in patches within the Stage 2 cactus planting areas.

A small number of cholla were also taken from the Encanto Canyon BMZ during the Phase II planting event. The remaining cholla within the Encanto Canyon BMZ were transplanted from the BMZ to portions of the Encanto Canyon project areas outside of the BMZ by the AECOM maintenance crew in September 2013 (Photo 8). Figure 7 shows the cactus patches that were removed from the Encanto Canyon BMZ and the locations to which they were transplanted. As shown in the figure, the total area of cholla patches planted within the Encanto Canyon project areas was actually increased by the transplantation effort. In October 2013, Groundwork met with City of San Diego staff to discuss the results of the transplantation. During this meeting, the City agreed that all planted cholla had been successfully removed from the City's BMZ, except for a small patch near the northeast corner of the canyon, off of Pitta Street. These cacti were transplanted from the BMZ into the cholla transplantation areas shortly thereafter by Groundwork staff and volunteers, and the City's BMZ is considered free of planted cholla.

Natural Resource Management Plan

San Diego's urban canyons experience a complex mix of pressures and support. They are expected to support biological values and public access/recreation values. A holistic conceptual master plan-the Natural Resource Management Plan- provides a comprehensive view of the issues and opportunities and long-term goals for an entire canyon and provides multiple benefits for future native habitat and coastal cactus wren restoration efforts. In July, 2013, Trestles Environmental was retained to work with Groundwork staff and interns to complete a Natural Resource Management Plan for the Radio/Encanto/Emerald Hills Complex (Appendix 2). Meetings were held and one site visit was conducted with City of San Diego MSCP and Parks and Recreation staff, as well as representatives from the U.S. Fish and Wildlife Service. This plan will now be submitted for formal review and approval by the City of San Diego, and will serve as the guiding document for future canyon maintenance, monitoring, enhancement, and public use.

Photo 8: Cholla being removed from the BMZ in Encanto Canyon

EDUCATION, COMMUNITY INVOLVEMENT, AND PUBLICITY

A three-pronged approach has engaged dozens of teachers and hundreds of Millennial Tech Middle School students in the Coastal Cactus Wren and California Gnatcatcher Habitat Restoration Project. Goals were to:

- **Enlist school administrative and teacher support in restoration activities.** With the arrival of the Next Generation Science Standards in September 2013, the administration and teachers at Millennial Tech Middle School graciously accepted academic support from Groundwork San Diego. Two teacher professional development days were established in October and November. The California Science Project and Groundwork San Diego worked with 10 teachers to develop habitat-based activities that also met the requirements for the Next Generation Science Standards. The goal is to utilize cactus wren citizen science (restoration photo monitoring, wildlife camera monitoring, seed collection/propagation, tree mapping, plant survivability, plant propagation) and IPad technology to advance STEM academic objectives for students.
- **Raise middle school student awareness of local habitat and resources.** Three ecology lessons were developed during the professional development and implemented in October and November. These lessons included scientific illustration, habitat observations, and introductory plant identification. All of the 7th and 8th grade students (approximately 220 students) participated in the above activities.

- **Engage students in restoration and stewardship activities.** Once introductory skills were established and nature etiquette refined, students began more in depth restoration and stewardship activities. Teachers were given opportunities to bring their classes out to propagate the seeds in the EarthLab Native Plant Propagation Center in preparation for the January 2014 Radio Canyon Day. School administrators are supporting the January event by convening Saturday school students at Radio Canyon to participate in canyon planting and stewardship activities.

Millennial Tech Middle School students illustrate the Prickly Pear cactus during a Conservation Science lesson.

Several volunteer events took place during Phase II that contributed to the restoration of Radio and Encanto Canyons. Working with volunteers from the Armed Services, YMCA – San Diego, and the local community, a cleanup event was held on September 6, 2013, that removed close to 2,000 pounds of trash and waste from Radio Canyon. Several seed collection events were also held to help augment Phase II planting and seeding requirements. Many of the seeds collected were distributed in the canyons during the CSS/MSS seeding events or propagated at the EarthLab facility at by Groundwork staff, volunteers, and local students. A regular cadre of canyon stewards now monitors canyon activities and reports to Groundwork.

RESULTS

Habitat restoration and enhancement efforts in Encanto and Radio Canyons during Phase II are considered successful. Planting of CSS/MSS species and additional cholla have improved the quality of the canyon environments and increased potential habitat for the coastal cactus wren, California gnatcatcher, and other native plant and animal species. The restoration effort has increased native plant cover in the project areas and decreased invasive species cover, thereby expanding food sources and providing a more complete set of ecosystem services for native wildlife. In addition, the establishment of additional cholla patches will provide expanded nesting habitat for the coastal cactus wren. Site maintenance activities, including dethatching, herbicide spraying, and trash removal, have been successful in controlling weeds within the planting areas and improving the potential for native species to continue to occupy these areas. In addition, improving the quality of habitat in these canyons helps to address the goals of the City of San Diego's Multiple Species Conservation Program by contributing to the native habitat and habitat connectivity in the region. The sections below discuss the progress of the Stage 1 and 2 cactus planting areas with respect to success standards identified in Groundwork's Phase II grant proposal to SANDAG.

Habitat Enhancement

Phase II success standards for the areas subject to cactus planting and habitat enhancement (Radio Canyon Stage 1 and 2 cactus planting areas) include the following:

1. Less than 30% weed cover in the 2009–11 restoration plots by November 2013.

2. Less than 50% weed cover in the new 2011–13 restoration plots by November 2013.

3. Successful eradication of woody exotics in all restoration plots by November 2013.

4. Significant increase in cover of cholla cactus and successful establishment of additional CSS/MSS species by November 2013.

The Radio Canyon Stage 1 and 2 cactus planting areas were meeting all success standards except standard #3 at the end of Phase II. The Stage 1 cactus planting areas support less than 30% weed cover and the Stage 2 cactus planting areas support less than 50% weed cover. In addition, both cactus planting areas have experienced a significant increase in native cholla cover since the beginning of Phase II. CSS/MSS container plantings have been successfully established in both planting areas, with the planting areas supporting an average of approximately 570 CSS/MSS container plants per acre. Mortality was higher than desired in the Stage 2 cactus planting areas; however, portions of the Stage 1 and 2 cactus planting areas with low CSS/MSS container plant cover will be subject to supplemental planting during future volunteer planting events (see Recommendations and Future Plans section), which will ensure that these areas successfully fill in with CSS/MSS species in the future.

Standard #3 could not be accomplished during Phase II due to the project's limited resources. Several patches of living acacia and several mature palm trees are present within the Radio Canyon planting areas. However, all seedling acacia are treated by the AECOM maintenance crew when observed, thereby preventing the spread of this species within the planting areas. In addition, the January 25, 2014 Radio Canyon community restoration day will utilize large NASSCO work crews to begin acacia removal.

Seedling palm trees have not been observed in the planting areas, but the maintenance crew will treat any that are observed with herbicide.

Coastal Cactus Wren and California Gnatcatcher

Phase II success standards for coastal cactus wren and California gnatcatcher populations within the project areas include the following:

5. No decrease in the number of cactus wrens or nesting success as compared to previous monitoring years, indicating success in avoiding further decline of the population in this area.

6. Observed presence of cactus wrens in Radio Canyon. This objective will not be achievable within the grant period due to the inherently slow maturation rate of the habitats being installed by the project, but the continuous annual record of bird monitoring data beginning in 2009 and continuing through at least 2013 will provide a clear record for future evaluation. Groundwork student citizen science activities will ensure long-term monitoring.

7. Observed successful nesting of cactus wrens in Radio Canyon. This is also a long-term objective that will not be achieved by 2013. However, it is clear that the quality and distribution of cactus wren habitat have been further improved by the habitat enhancement activities completed in Phase II of the project, and we are hopeful that future restoration work in Radio Canyon will increase the likelihood of these goals being achieved (see further discussion in the Conclusions section).

Education, Community Involvement, and Publicity

8. Implementation of an ongoing plant propagation center at the EarthLab that will provide a low-cost resource for community restoration efforts in the future.

9. New institutionalized and sustainable relationships with the surrounding property owners and residents, and education of students and residents on conservation issues, evidenced in part by generating at least 400 student volunteer hours and 600 adult volunteer hours annually.

The EarthLab Native Plant Propagation Center has become embedded in the short-term use and long-term masterplanning of the space. The center is currently functioning as en educational resource for Millennial Tech Middle School students, and will be expanded, along with other EarthLab offerings, to engage the additional 4000 students within walking distance. It will continue to serve as a source of cholla and prickly pear cactus for regional cactus wren restoration projects, and as an ongoing source of plants for the Radio/Encanto/Emerald Hills Canyon complex. Additionally, in 2014, marketing efforts will position the center as a supplier of other watershed restoration plant needs. Finally, the center will serve as the source of native plants for a 2014 Chollas Creek Waterkeepers initiative, through which households throughout the watershed will receive training in drought-tolerant backyard landscaping.

The annual target of 400 student and 600 volunteer hours has been exceeded in both 2012 and 2013. Through the institutionalization of cactus wren/biodiversity in area school curriculum, and Radio Canyon Day in the culture and calendars of local residents, there is now an ever-growing awareness of the rich

biodiversity and special-status species of statewide significance that exist in and adjacent to their schools and neighborhoods.

CONCLUSIONS

As discussed above, Phase II of the project is meeting many of its success standards. Although it is too early in the restoration program for coastal cactus wren and California gnatcatcher to occupy the restored habitat, many ecological benefits have already been provided by the project. These include the following:

- **Expanded Habitat Acreage**: New habitat has been created that can help expand the ranges of coastal cactus wren and California gnatcatcher into previously unsuitable habitat. This may help in expanding the local population of these species within the canyons. The expanded habitat may also help establish populations that are more capable of withstanding annual population fluctuations, thus fortifying the populations over the longer term.

- **Increased Distribution of Habitats**: The distribution of new cactus habitat in stepping stone patches will permit the expansion of occupied coastal cactus wren and gnatcatcher territories and will promote the creation of new territories by providing sufficient vegetative cover for these species during routine activities such as foraging for food. Coastal cactus wrens and California gnatcatchers are vulnerable to predators without sufficient vegetative cover that camouflages them and offers protection. The planting of cactus in stepping stone patches will allow dispersing birds to move through the habitat matrix with more protection and gain access to a much wider range that is close to protective cover.

- **Habitat Diversification:** The habitat diversification implemented in Phase II has created a more natural and functional environment that will provide for the full suite of cactus wren needs, from nesting to foraging and dispersal. Because bare ground is an important aspect of the wren's habitat, noncactus species were concentrated more heavily around the perimeter of each cactus patch, leaving the core areas to a mix of cactus and bare ground. Establishing a denser matrix of native habitat on the perimeter of the cactus plantings will also help protect the area from reinvasion by the exotic species, providing natural weed control.

- **Native Plant Propagation Center:** A fully-functioning center promises to provide an ongoing supply of the species needed to support the area's biodiversity, and to train students and families to participate in restoration and backyard landscaping effort.

RECOMMENDATIONS AND FUTURE PLANS

The priorities for the canyons should be protecting and improving the Stage 1 and 2 cactus planting areas, continuing avian and restoration monitoring, and creating a detailed long-term management plan for the entirety of the two canyons.

Phase III

A Phase III of the project was recently approved by SANDAG and funded by SANDAG's *Transnet* EMP. Phase III will build upon and protect the progress made during Phases I and II of the project. Phase III began in July 2013 and will end at the beginning of September 2015. Phase III will include the following two main tasks:

- **Long-term Canyon Management:** Through Phase I and Phase II funding, Groundwork San Diego has developed the capacity to serve, in partnership with the City of San Diego, as long-term manager of the canyon complex. Under a Right of Entry Permit issued by the City, Groundwork will continue to oversee maintenance, monitoring, school-based citizen science, plant propagation, community stewardship, restoration, and public use enhancements. Groundwork will also continue to lead resource generation to supplement limited City resources. Groundwork has requested, in partnership with the Urban Corps of San Diego, an $835,000 grant through the State of California Urban Greening for canyon improvements (Appendix 3).

- **Maintenance:** During Phase III, AECOM's maintenance crew will conduct three herbicide treatments each year within the Encanto Canyon and Radio Canyon Stage 1 and 2 cactus planting areas (Figure 3). The herbicide treatments will be conducted during the rainy season months, and each treatment will be timed to kill early season, mid-season, and late season weed species before they are able to mature and drop seed. AECOM staff will monitor the restoration areas to determine the timing of herbicide treatments and advise Groundwork of the need for further weeding by volunteers. This continued maintenance effort will ensure that Stage 1 and 2 restoration efforts are not lost and that the restored habitat continues to develop and support sensitive species, including the coastal cactus wren and coastal California gnatcatcher.

- **Community-driven Restoration:** Phase III will include the restoration of 3 acres of Radio Canyon that are currently dominated by nonnative vegetation with coast cholla and native CSS/MSS plant species. This restoration effort will be completed by volunteers and is currently scheduled to take place in January 2014. This additional restoration will continue to build on the progress made during Phases I and II and will add to the habitat for coastal cactus wren, California gnatcatcher, and other native species in Radio Canyon. In Phase III, volunteer planting events will include additional enhancement activities in portions of the Stage 1 and 2 cactus planting areas that were not meeting the Phase II success standards at the end of Phase II. Such enhancement could include additional planting and/or seeding with native CSS/MSS species. AECOM has provided Groundwork with a list of recommended species that are appropriate for the canyons.

Additional volunteer activities planned for Phase III include plant propagation at the EarthLab, summer watering events for winter plantings, and supplemental nonnative vegetation and trash removal. Volunteer groups consist of community organizational partners such as NASSCO, US Joyner, PCI, military, area faith-based institutions and schools, and nonprofits (i.e., Second Chance and VIP Mentors). These groups and contributed supplies, with support from Groundwork funding partners, will contribute the match needed to complete 3 acres of restoration as a part of Phase III.

In addition to these two tasks, AECOM will prepare annual monitoring reports that document all aspects of the project for that year, including methods, schedule, maps, and results. Each annual report will provide all data collected during that year and will offer recommendations for future efforts in the Radio

Canyon and Encanto Canyon restoration areas and their vicinity. Groundwork will conduct all grant reporting/compliance activities; partner, staff, volunteer, and sub-consultant management; and volunteer oversight. Groundwork will also work on incorporating AECOM's maintenance and monitoring protocols into volunteer capacity building. Complementing existing invasives removal and restoration protocols/methods with maintenance expertise will allow Groundwork to sustain future canyon restoration with minimal requirements for external funding.

Additional Recommendations

In addition to the activities being undertaken as part of Phase III of the project, AECOM recommends that the following activities be considered for future funding:

- **Bird Monitoring**: The continuation of the coastal cactus wren and California gnatcatcher monitoring begun in Phase I of the project is critical for monitoring the performance and effectiveness of habitat restoration in relation to project goals. For this project, the key monitoring question is to determine whether and at what point coastal cactus wrens and coastal California gnatcatchers begin foraging and/or nesting in the restored habitat. In the absence of continued avian monitoring, the actual effects of habitat restoration on these species will not be known and this information will not be available to be applied to future restoration efforts.

  Therefore, although not currently included in Phase III of the project, AECOM highly recommends that Groundwork seek additional funding and/or professional volunteers to continue the avian monitoring program through the end of Phase III. Ideally, a robust monitoring program would be implemented that documents coastal cactus wren and California gnatcatcher use of the project areas for a minimum of 5 years.

  Avian monitoring methods should be coordinated with regional coastal cactus wren monitoring programs to ensure consistency of data and efficiency of effort. Potential methods for monitoring could include banding, global positioning system/telemetry tracking, or motion-activated remote cameras aimed at active nests. Banding methods are generally the easiest to implement, but are most effective when monitoring of banded birds occurs over an area broader than the immediate project area. Broader monitoring for banded birds allows the monitoring program greater probability of capturing regional dispersal patterns of birds beyond Encanto and Radio Canyons. Avian monitoring must be done by qualified biologists in possession of the appropriate permits.

- **Tree Removal:** During the Phase II avian surveys, AECOM wildlife biologists observed an active Cooper's hawk (*Accipiter cooperii*) nest in a western cottonwood (*Populus fremontii*) tree in the eastern part of Encanto Canyon (Figure 6). In 2013, a pair of cactus wrens nested less than 100 feet away from the raptor nest. Cooper's hawks are known cactus wren predators, and at least four juvenile Cooper's hawks fledged from the nest. To protect the nesting cactus wrens, Groundwork may want to consider seeking permission from the City to remove this tree and several other nearby large trees that could provide nesting and roosting habitat for Cooper's hawk. If pursued, tree removal would need to occur outside of the breeding season of this species, generally between January 15 and September 15 of each year.

  Implementation Plan: Created under the framework of the Natural Resources Management Plan, an implementation plan address inter-stakeholder coordination, phasing strategies, cost

estimates, regulatory needs, and potential funding sources. It would allow community and nonprofit groups to efficiently and effectively apply volunteer efforts to long-term goals. It would also provide a high level of confidence to funding agencies that their contributions will be effectively applied to targeted goals. The plan would provide an implementation roadmap that could be followed by contractors, community stewards, and students alike.

- **Future Habitat Restoration**: Part of the volunteer-driven portion of Phase III will include community planting events and the restoration/enhancement of an additional 3 acres in Radio Canyon. We recommend that additional restoration implemented in the canyons be guided by the master plan discussed above, to ensure that appropriate habitats are planned and that the restoration design will provide for the ecological needs of coastal cactus wren and California gnatcatcher.

  Given the poor baseline condition of the planting areas and their surroundings, weed issues will certainly remain a significant threat to restoration success for several more years until the restored habitat fully matures. Therefore, any additional areas of the canyons that are subject to restoration should also be maintained for a minimum of 2 years (ideally 5 years) following planting. Continued maintenance and weed control will ensure that restoration efforts are not lost to weeds or urban pressures. Weed abatement programs for large restoration areas are typically most effective when they focus primarily on chemical methods. All chemical use must be done under the supervision of a person who holds a Qualified Applicator License (QAL) and is highly knowledgeable in native plant identification and weed eradication programs. It is also recommended that the City target the portions of the BMZ adjacent to the restoration areas for weed control efforts, if possible, to prevent the spread of nonnative species from these areas into the restoration areas.

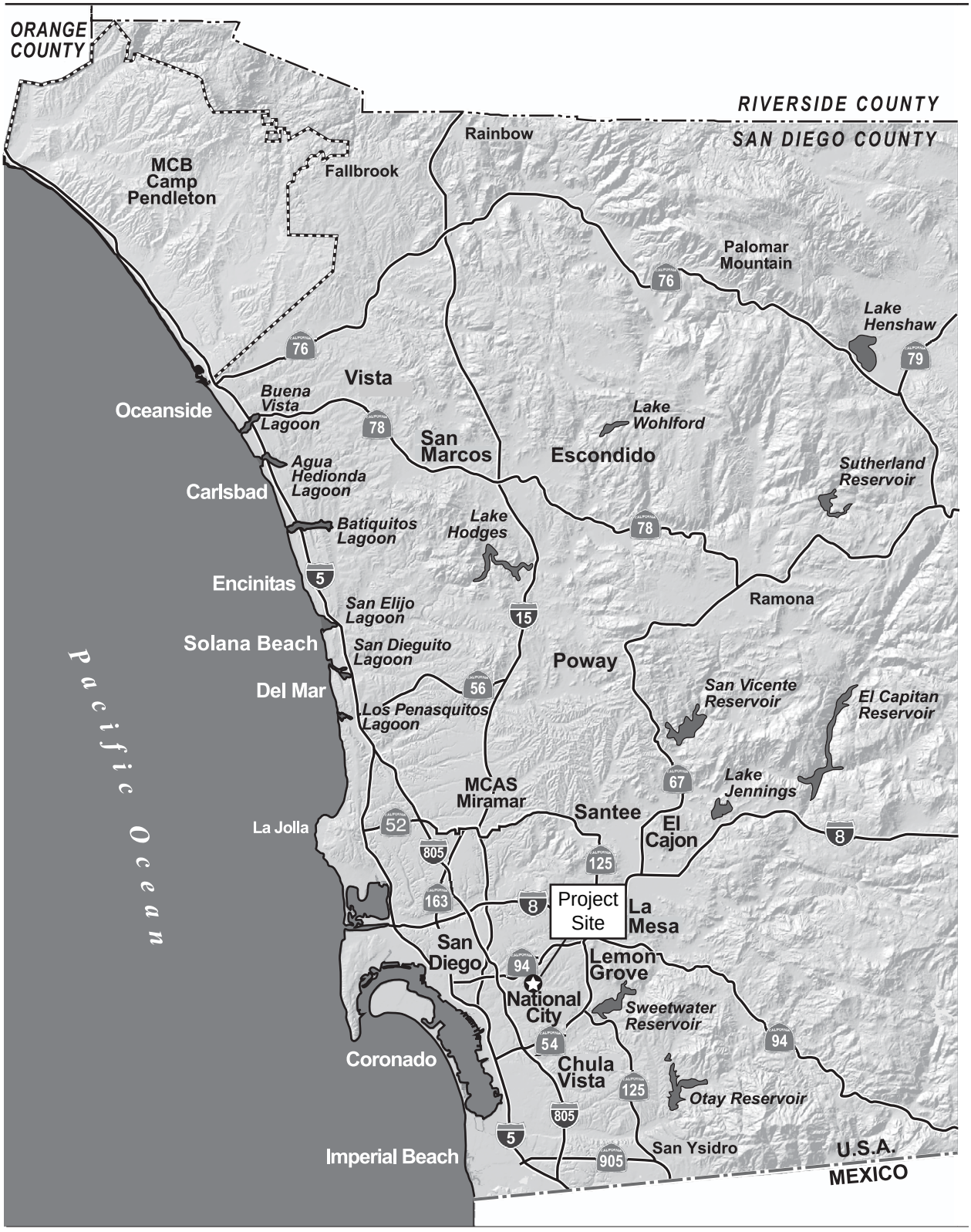
  As restoration success is achieved in the canyons, restoration of disturbed habitats to the north of the Radio Canyon should be considered as a tool to facilitate safe movement of coastal cactus wrens between populations elsewhere in the region. Generally, additional restoration in the canyons should address the following:

  - Coastal cactus wren habitat, specifically maritime succulent scrub patches dominated by cholla cactus, should be further expanded by increasing the size of the current patches and/or creating new patches. Coastal cactus wren habitat should be carefully located to maximize benefit to the species and facilitate safe movement throughout the two canyons.

  - Coastal sage scrub habitat should be restored to support the California gnatcatcher. This habitat should ideally become the background matrix habitat in Radio Canyon, with maritime succulent scrub habitat emerging in the hot, dry slopes most suited to that habitat.

  - The ephemeral drainages defining the spine of each canyon should be restored, including the removal of arundo and other invasive exotics and the establishment of riparian scrub habitats where hydrology will support them. Existing storm drain and street runoff problems currently causing erosion should be addressed as well. Riparian habitat restoration should avoid establishing large tree species that could facilitate raptor predation on the coastal cactus wren or California gnatcatcher population.

FIGURES



0 3.75 7.5 15 Miles

1" = 7.5 Miles

Figure 1
Regional Map

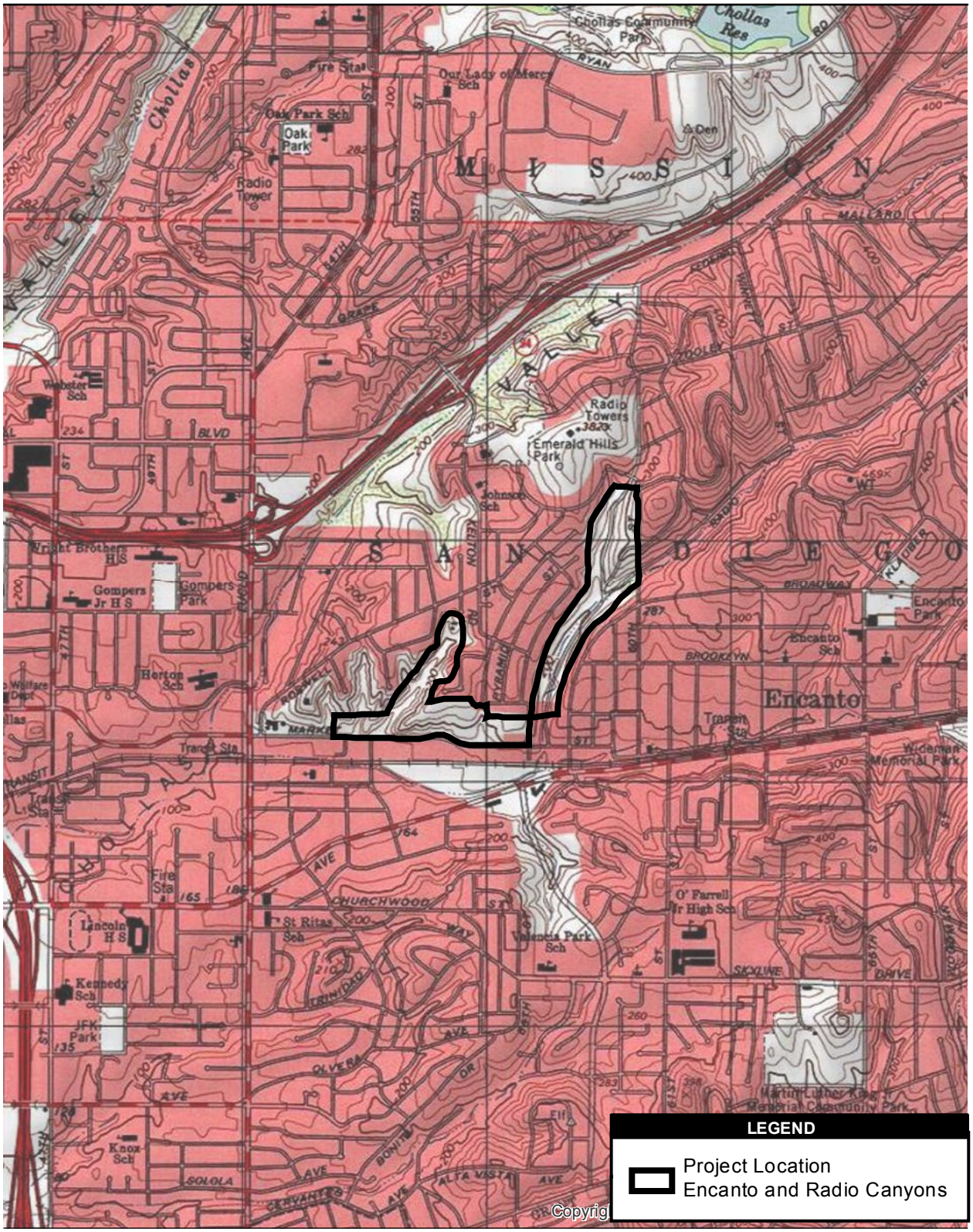


Figure 2
Project Location

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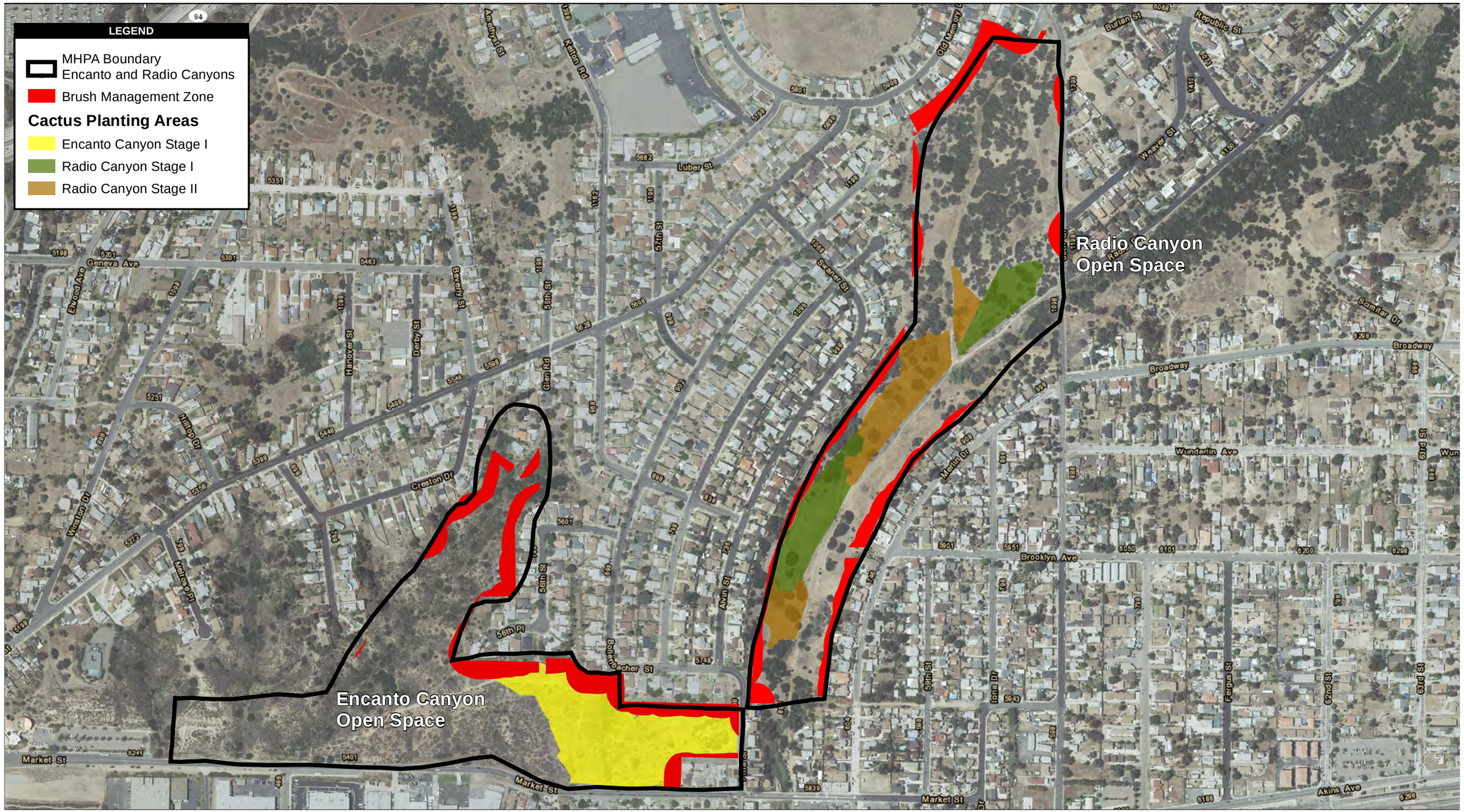

Source: Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom; SanGIS 2009; SANDAG 2012; AECOM 2013

Figure 3
Project Areas and Restoration Site Boundaries

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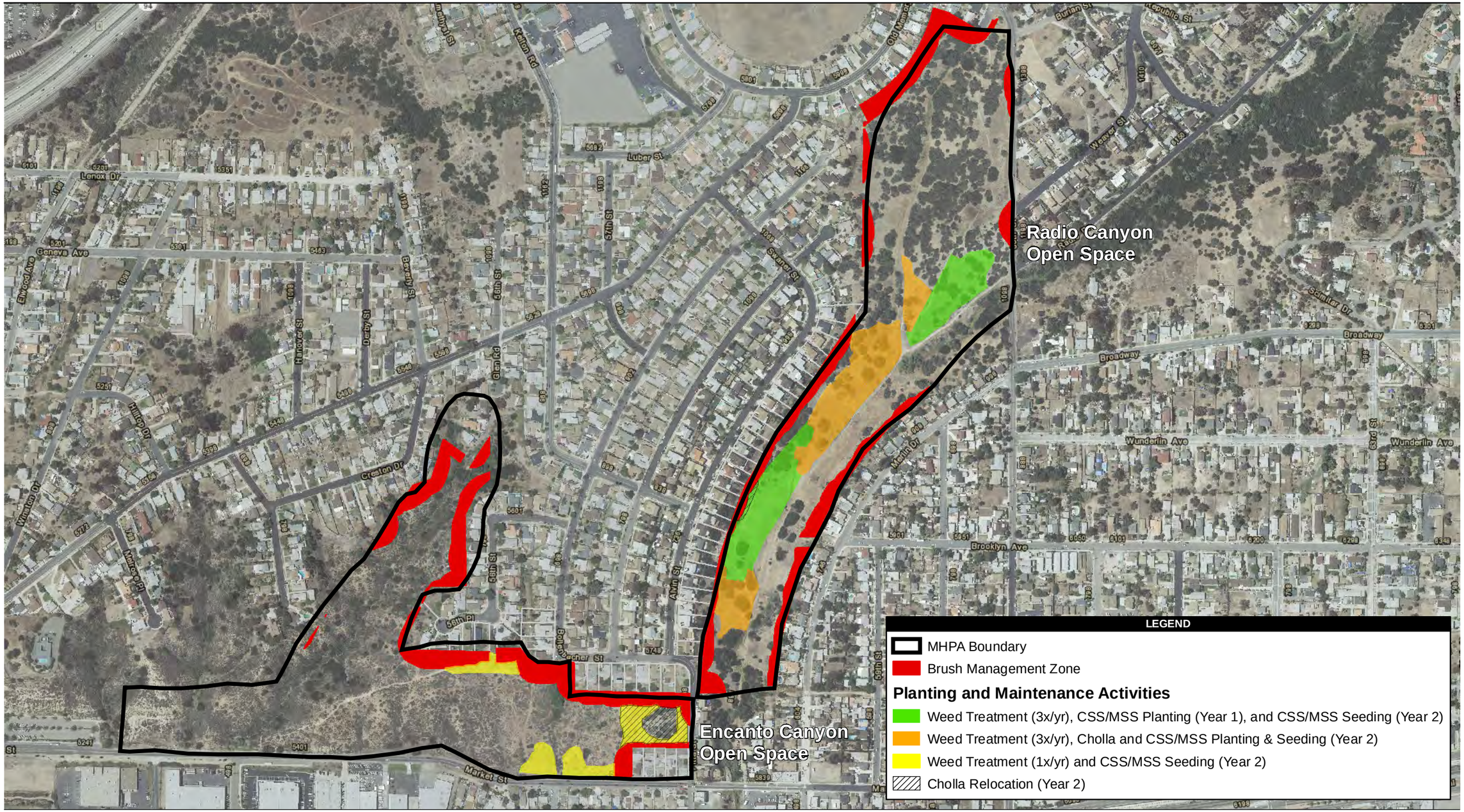

Figure 4
Planting and Maintenance Activities

Coastal Cactus Wren & California Gnatcatcher Habitat Restoration Project – Phase II

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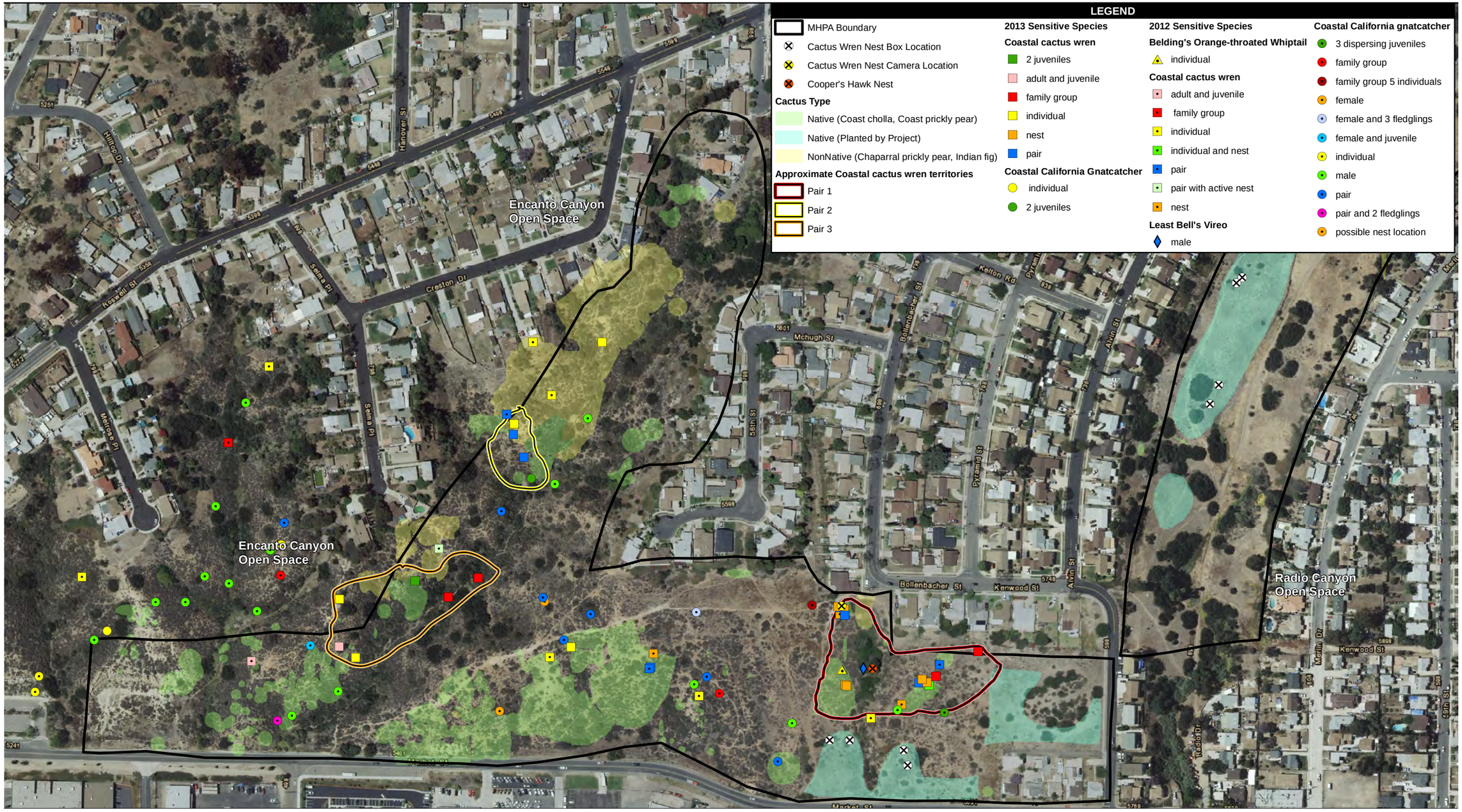
Source: Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom; SanGIS; SANDAG; AECOM 2013

150 75 0 150 Feet

Scale: 1:1,800; 1 inch = 150 feet

Figure 5
Radio Canyon Project Areas Detail

Path: P:\2009\09080138 Cactus Wren\6.0 GIS\6.3 Layout\Figures\PhaseII_Report\Fig5_RadioCyn_RestoDetail.mxd, 11/27/2013, steinb



Source: Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom; SANDAG 2012; AECOM 2013

250 125 0 250 Feet

Scale: 1 = 3,000; 1 inch = 250 feet

Figure 6
Coastal Cactus Wren and California Gnatcatcher Survey Results

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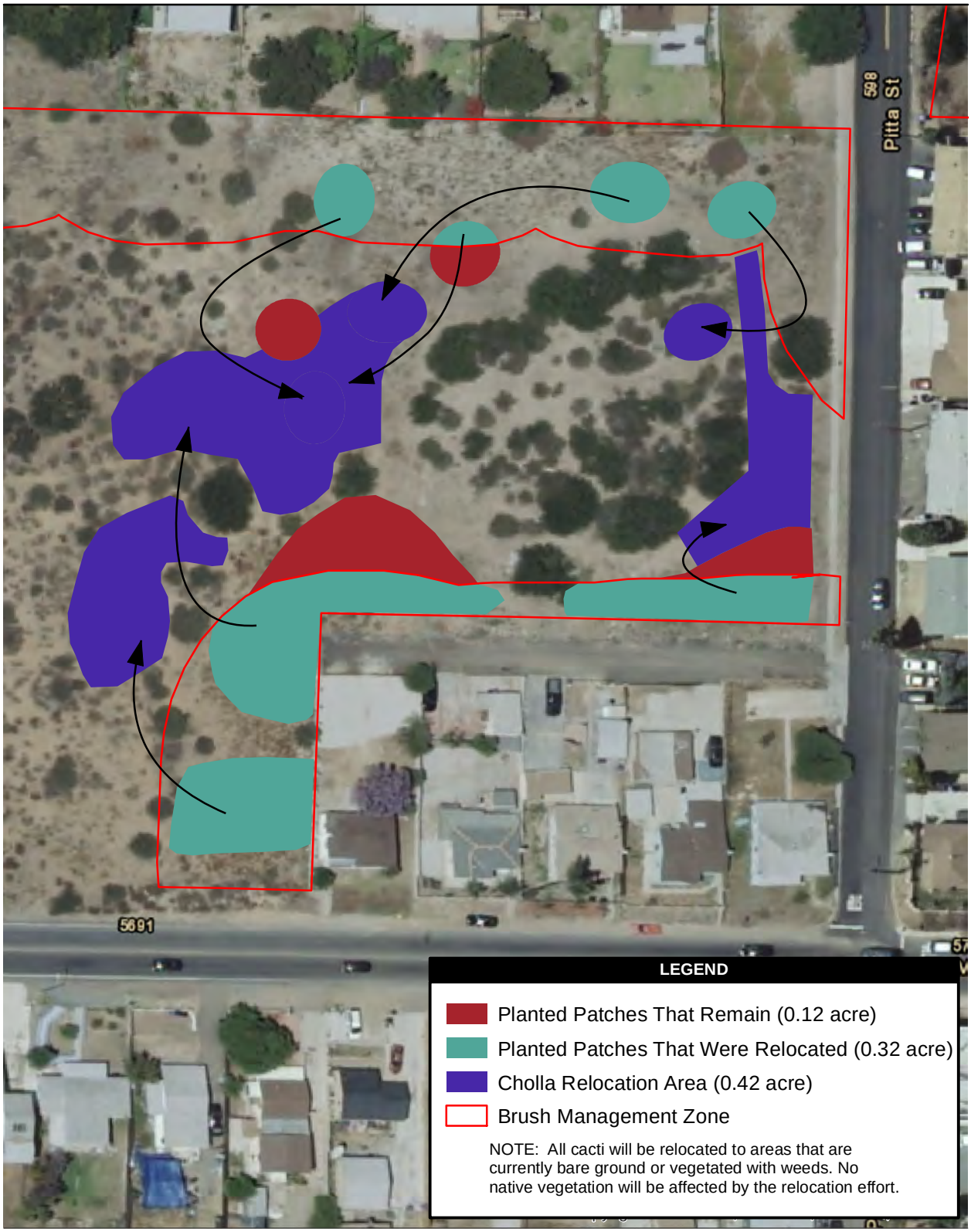

Source: SANDAG 2012; SanGIS 2013; AECOM 2013

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Scale: 1:900; 1 inch = 75 feet

Figure 7
Encanto Canyon
Cactus Relocation Plan

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APPENDIX 1

RADIO CANYON PHOTO-DOCUMENTATION

FEBRUARY 2013

Photo Point 1. Stage 1 cactus planting areas after a recent round of herbicide treatment (Feb 2013).

Photo Point 2. Stage 2 cactus planting areas after a round of herbicide treatment and cactus and CSS/MSS planting (Feb 2013).

Photo Point 3. Stage 1 cactus planting areas after a recent round of herbicide treatment (Feb 2013).

Photo Point 4. Stage 2 cactus planting areas after a round of herbicide treatment and the January 2013 planting event (Feb 2013).

Photo Point 5. Stage 2 cactus planting areas after a round of herbicide treatment and the January 2013 planting event (Feb 2013).

Photo Point 6. Stage 1 cactus planting areas (Feb 2013).

Photo Point 7. Stage 1 cactus planting areas (Feb 2013).

Photo Point 8. Stage 1 cactus planting areas (Feb 2013).

Photo Point 9. Stage 2 cactus planting areas after a round of herbicide treatment and cactus and CSS/MSS species planting (Feb 2013).

Photo Point 10. Stage 2 cactus planting areas after CSS/MSS planting (Feb 2013).

Photo Point 11. Stage 2 cactus planting areas after CSS/MSS planting (Feb 2013).

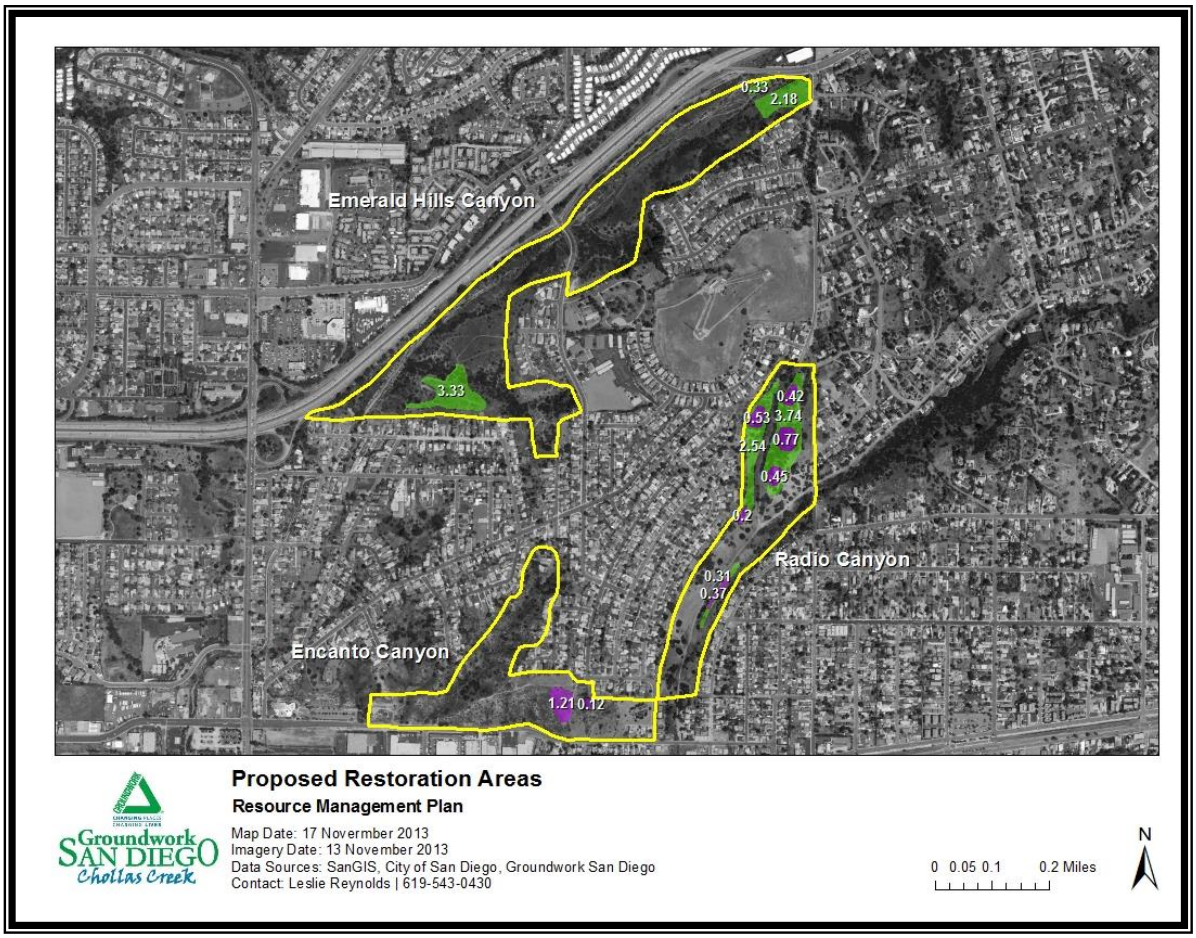
Photo Point 12. Stage 2 cactus planting areas after herbicide treatment and the January 2013 planting event (Feb 2013).

APPENDIX 2

Encanto, Emerald Hills, Radio Canyon

Natural Resources Management Plan

Encanto, Radio, and Emerald Canyons Resource Management Plan



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October 2013

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Resource Management Plan

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Acknowledgements:
Special thanks to Groundwork San Diego Interns: Danny Ong, Robert Wheeler and Margarita Martinez for field work and GIS Support.

Thanks also to Nicole Schott and Dick Rol for additional data and field work assistance.

1.0 INTRODUCTION

1.1 Mission

Groundwork San Diego-Chollas Creek (Groundwork) is an independent, not-for-profit, environmental business that works within San Diego's Chollas Creek Watershed to improve the environment, economy, and quality of life in the area through local community projects.

The Groundwork is dedicated to the enhancement, restoration, and management of open space in the Chollas Creek watershed for preservation of the land to protect the biological diversity, as well as providing recreational opportunities and raising environmental awareness. It has taken the lead in many environmental projects in the Chollas Creek Watershed, and is the recipient of a SANDAG Transnet Environmental Mitigation Program (EMP) grant, for which has funding this Resource Management Plan (RMP). One of Groundwork's priorities is to protect and Open Space Areas the habitat integrity of Encanto and Radio Canyons through habitat restoration and management, while also seeking opportunities for low-impact recreational use and environmental education.

1.2 Open Space Areas Overview

Encanto, Radio and Emerald Canyons are located in the community of Encanto in southern San Diego, California, north of Market Street between Euclid Avenue and Merlin Drive (Figures 1 and 2). Encanto Canyon consists of 37.24 acres and Radio Canyon consists of 36.38 acres. All three canyons (Open Space Areas) are within the City of San Diego's Multi-Habitat Planning Area (MHPA). The canyons are owned by the City of San Diego and are designated as open space and are situated in an urbanized environment surrounded by residential and industrial development. The Open Space Areas fall within the Chollas Creek watershed.

1.3 Purpose of this RMP

This Resource Management Plan (RMP) builds on the restoration efforts already accomplished under this grant, and provides a framework for future restoration activities, as well as recreational and educational opportunities, as funding and staffing become available. This document will serve as a guideline for long-term planning and project implementation as it pertains to the management of these open space areas.

This RMP is designed to allow changes and refinements to the approach for open space management as more is learned about the habitats and the responses of these habitats to environmental stressors, including human use. The objective of this RMP is to identify the best framework to implement, manage, protect, and enhance the natural resource values of the Open Space Areas while providing safe recreational and educational

Figure 1. Regional Map

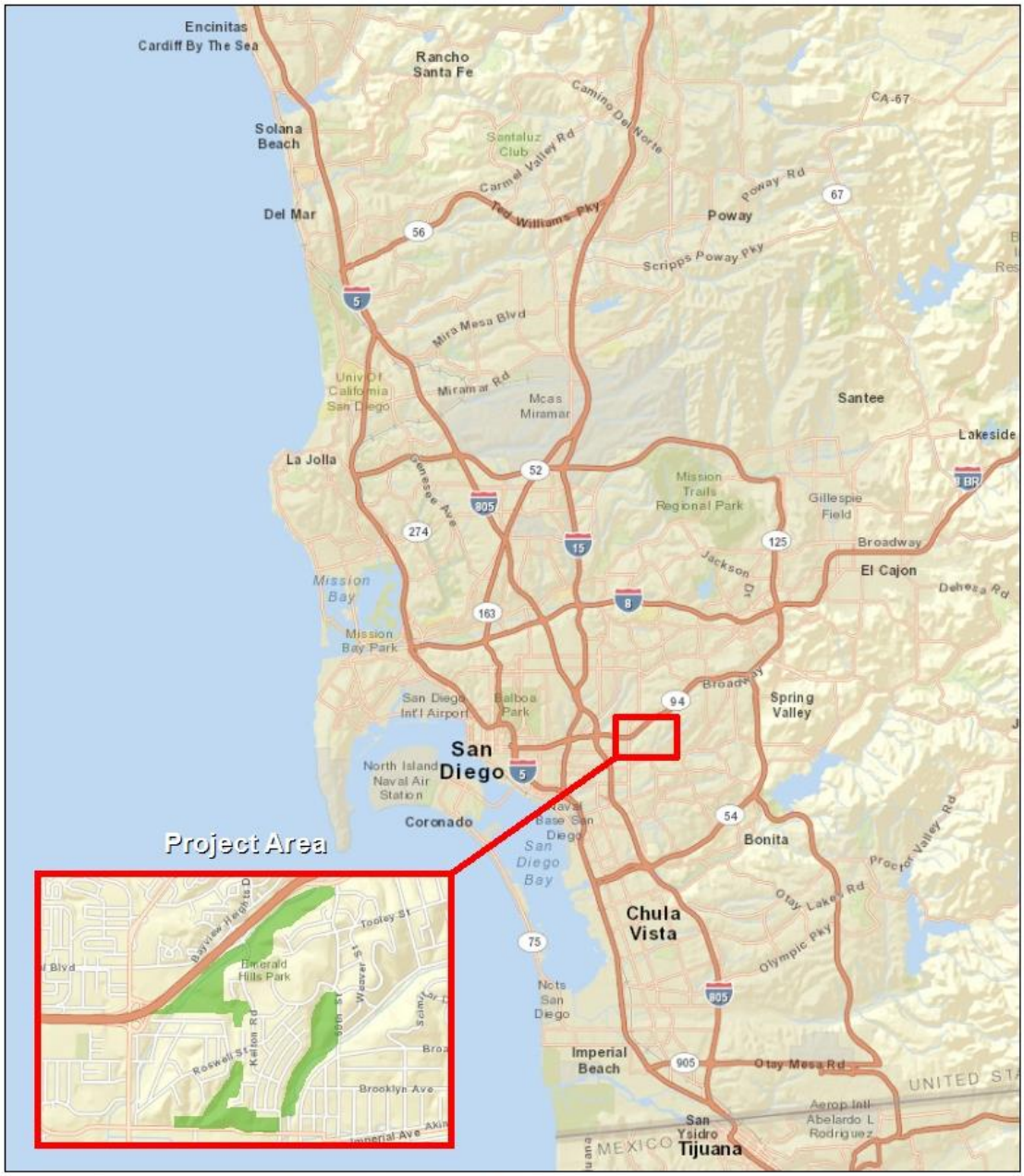
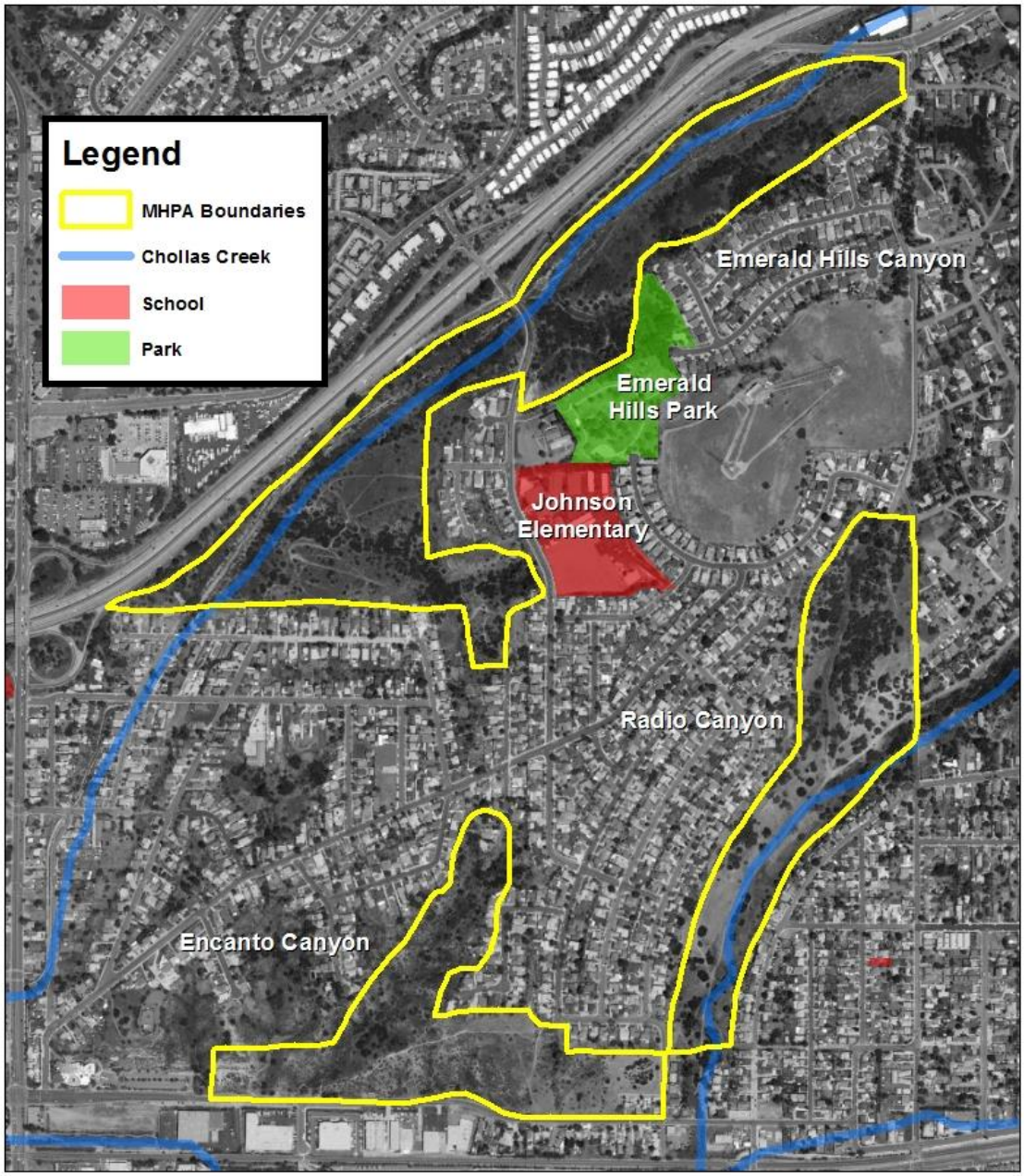


Figure 2. Project Location Map



opportunities to the public. The major objectives are to enhance and restore native habitats, manage exotic species, institute long-term wildlife and vegetation monitoring and adaptive management actions, as well as provide safe, low-impact recreational opportunities and public access.

Adaptive management is a key essential feature for the management and restoration of the Open Space Areas. Adaptive management acknowledges uncertainty about how ecological systems function and how they respond to management actions. Under this model, management activities are based upon monitoring outcomes, conducting targeted studies, and then applying management activities initially as experimental treatments then on a larger scale. The restoration work under this grant is a good example of this model which will allow for future restoration work to be done, while building upon scientific data collected. The results feed back into decision-making, reducing uncertainty and improving the effectiveness of the program through time. Adaptive management implies an ongoing scientific commitment to the plan in perpetuity. Under adaptive management, managers use the best available information to make informed decisions while seeking opportunities to learn how best to accomplish the goals of this RMP.

1.4 Biological Resources

1.4.1 Vegetation communities

In 2009 Groundwork San Diego and the San Diego Association of Governments (SANDAG), was awarded a grant through SANDAG under the Transnet Environmental Mitigation Program (EMP) to restore and enhance existing and potential coastal cactus wren (*Campylorhynchus brunneicapillus*) and California gnatcatcher (*Polioptila californica californica*) habitats in Encanto and Radio Canyons.

As part of this grant the pre-restoration condition of the vegetation communities was mapped in 2009. Since the effort was to primarily identify restoration opportunities, mapping concentrated primarily on documenting cactus and other perennial woody species, including nonnative vegetation. However, by generalizing the detailed information collected at the species level, overall vegetation communities was mapped in a broad sense. Figure 3 depicts the pre-restoration vegetation communities onsite, with species classified into habitat types. Areas in Figure 3 that are not shaded were dominated by nonnative species (primarily non-native grassland species) or disturbed land cover. A more detailed mapping effort of Radio and Encanto Canyon was conducted in September 2013 (Figure 4) by Groundwork's Interns Danny Ong and Seth Connolly, under the direction of Earthwork's manager Nicole Schott and biologist Julie Fontaine. This mapping effort focused primarily on invasive species locations, and has been used in the identification enhancement and restoration opportunities and priorities. No baseline work has occurred in Emerald Canyon.

Figure 3. Vegetation Communities

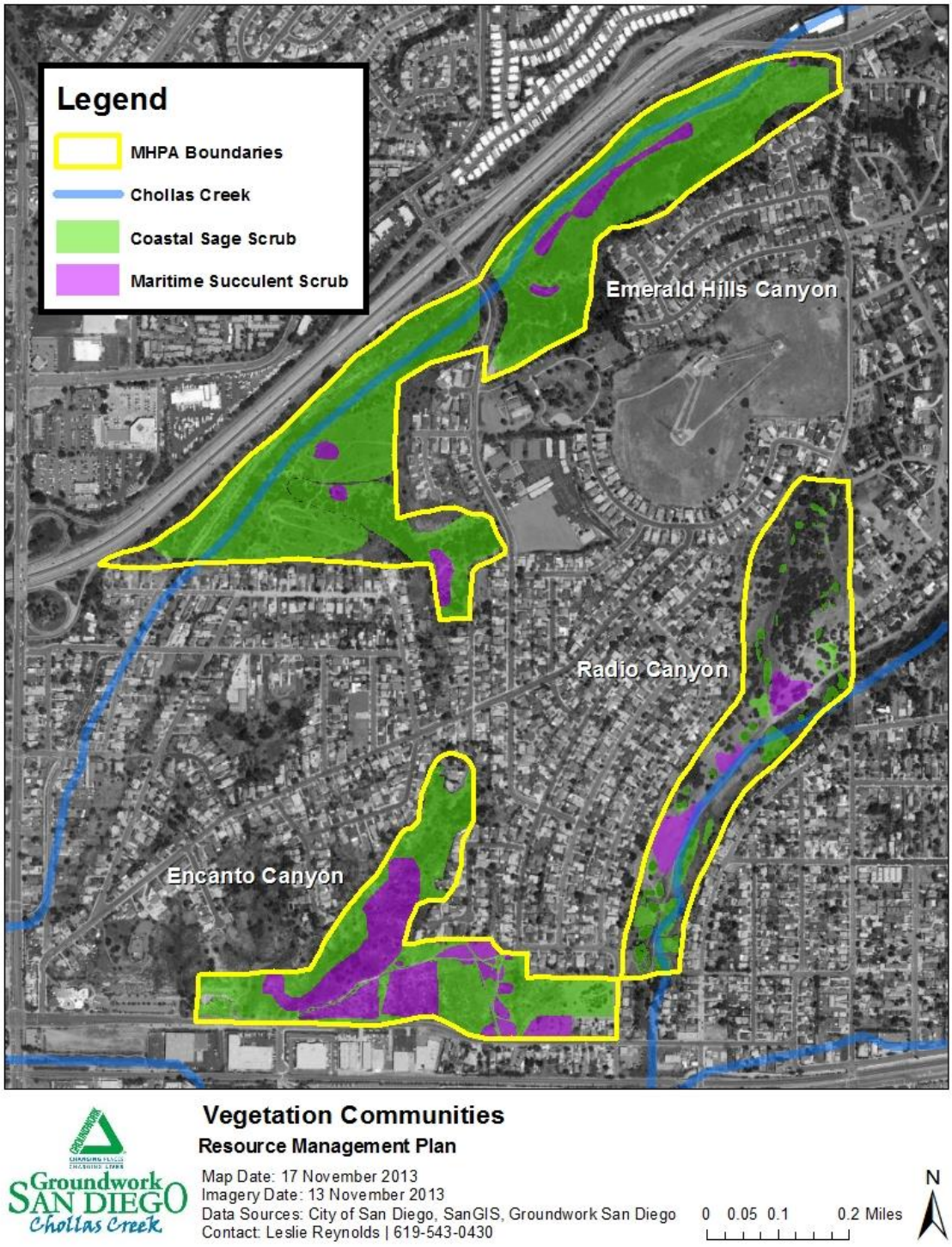
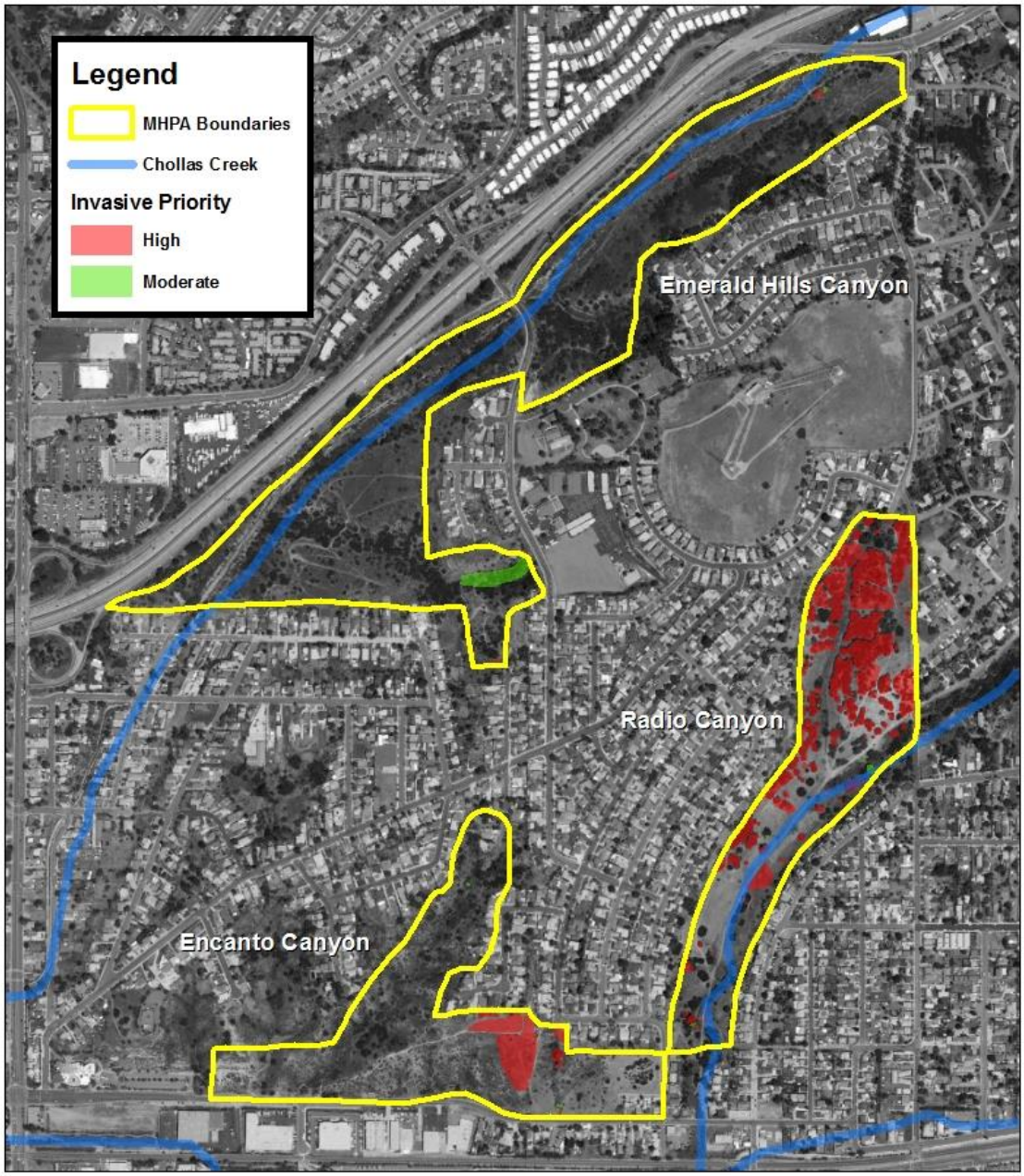


Figure 4. Exotic and Invasive Species Locations



Groundwork San Diego Chollas Creek

Exotic & Invasive Plant Species

Resource Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

N

Encanto Canyon

According to the AECOM, the biologists that conducted the mapping, habitat types within Encanto Canyon include coastal sage scrub, maritime succulent scrub and non-native grassland/vegetation. Common coastal sage scrub plant species found include are coastal sagebrush (*Artemesia californica*) and lemonadeberry (*Rhus integrifolia*). Common succulent plant species, located primarily on south-facing slopes are coast cholla (*Cylindropuntia prolifera*), coast barrel cactus (*Ferocactus viridescens* var. *viridescens*), fish-hook cactus (*Mammillaria dioica*), and dudleyas (*Dudleya* spp.). A population of spineshrub (*Adolphia californica*) and jojoba (*Simmondsia chinensis*) exist adjacent to Market Street on exposed southern slopes (AECOM 2011). Habitat within the northern arm of the canyon is considered good quality, as is much of the habitat in the west end of the project area along Market Street. Populations of cactus wren and California gnatcatcher observed are located in these areas. The remaining areas within the canyon, particularly the eastern-most portion, consisted of large populations of exotic grasses and forbs or disturbed habitat. These areas were targeted for habitat enhancement under the 2009 grant.

Radio Canyon

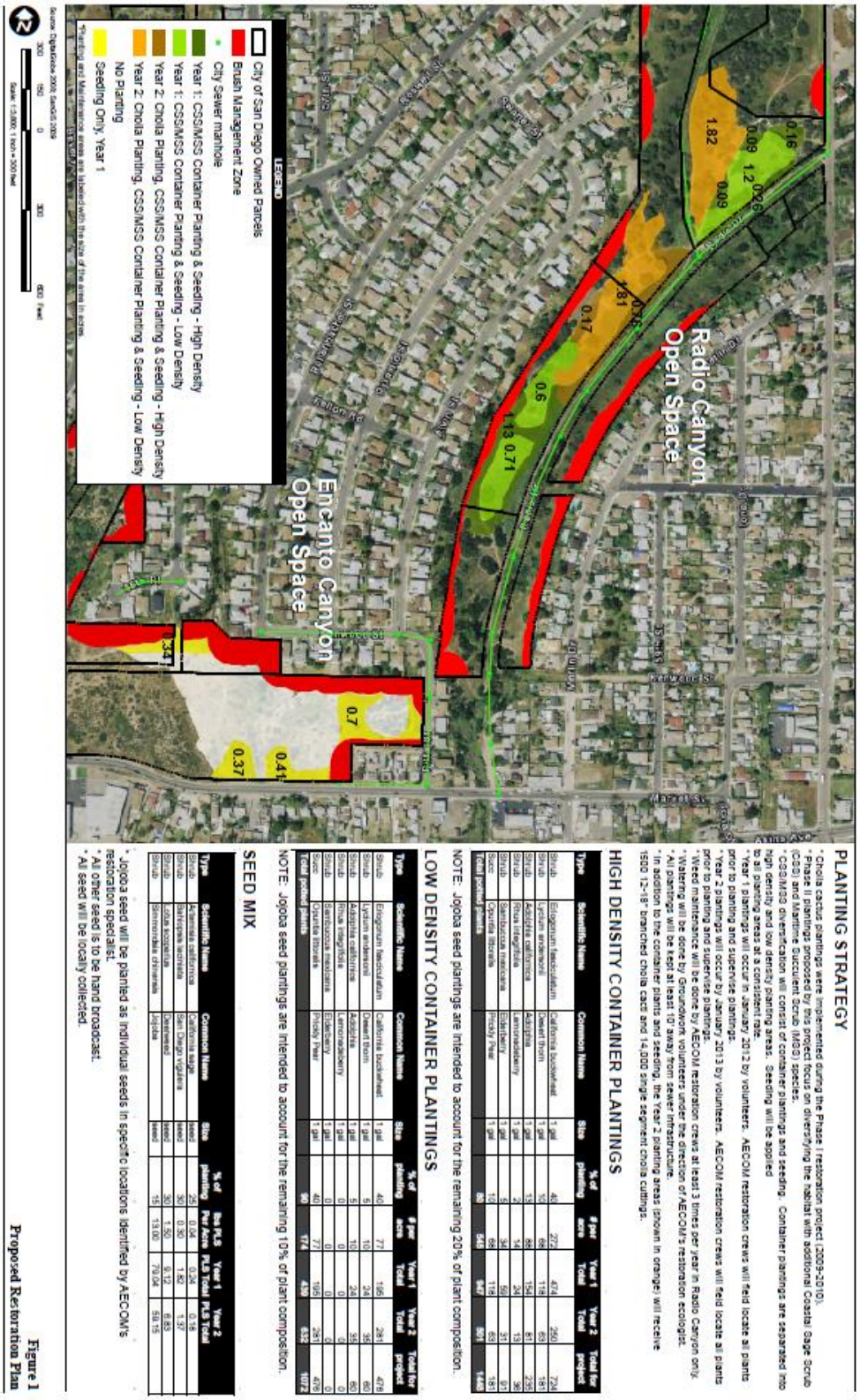
Habitat types within Radio Canyon as mapped in 2009 and 2013 were primarily non-native grassland and ornamental species. Common species identified include acacia (*Acacia* sp.), palm trees (*Washingtonia* sp., *Phoenix* sp.), and nonnative grasses and forbs such as bromes (*Bromus* sp.), wild oats (*Avena* sp.) and mustard (*Brassica* sp.). Small fragments of coastal sage scrub and maritime succulent scrub plant species are present, but degraded. The litter and large trash items were noted throughout the which further degrades the quality of the habitat. Riparian habitat known to be present in Radio Canyon has not been mapped. Individual plant and animal species observed during initial surveys can be referenced in Appendix 1 and Appendix 2 of the AECOM Final Report (2011). See Appendix A for the AECOM Final Report.

The EMP grant habitat enhancement and restoration project resulted in the planting of approximately 12 acres with cholla cactus (*Cylindropuntia prolifera*) and exotic removal on 4.69 acres, without active planting (Figure 5).

Emerald Canyon

No baseline biological work has been done in Emerald Canyon. Based on preliminary observations the Canyon is occupied by disturbed coastal sage scrub habitat. A drainage runs through Canyon and contains mature mesquite (*Prosopis* sp). trees. Mature toyon, lemonade berry, and other evergreens dominate the upper slope.

Figure 5. 2011 Habitat Restoration Areas



Source: Coastal Cactus Wren & California Gnatcatcher Habitat Restoration Project, AECOM and Groundwork San Diego, 2011.

1.4.2 General Wildlife

Open Space Areas surveys conducted in 2009 and 2011 (AECOM, 2011) under the EMP Grant documented the presence of native wildlife species: 4 species of insects and butterflies, 5 species of reptiles, 39 species of birds, and 3 species of mammals. Despite the fact that the Open Space Areas are almost surrounded by urbanization, it supports a diverse suite of wildlife species, including two threatened and endangered species: coastal California gnatcatcher and coastal cactus wren. Appendix 2 of the AECOM Final Report (2011) lists the wildlife species observed during the surveys.

Many of the wildlife species recorded are habitat generalists that use a range of habitats. The western fence lizard, coastal western whiptail, and southern alligator lizard are the most widespread reptiles. The most widespread mammal species are the California ground squirrel and coyote. Common avian species include the California quail (*Callipepla californica*), mourning dove (*Zenaida macroura)*, Anna's hummingbird (*Calypte anna)* and black phoebe (*Sayornis nigrans*). Note, no comprehensive wildlife surveys have been conducted in the Open Space Areas, thus species bats and other wildlife have not been documented.

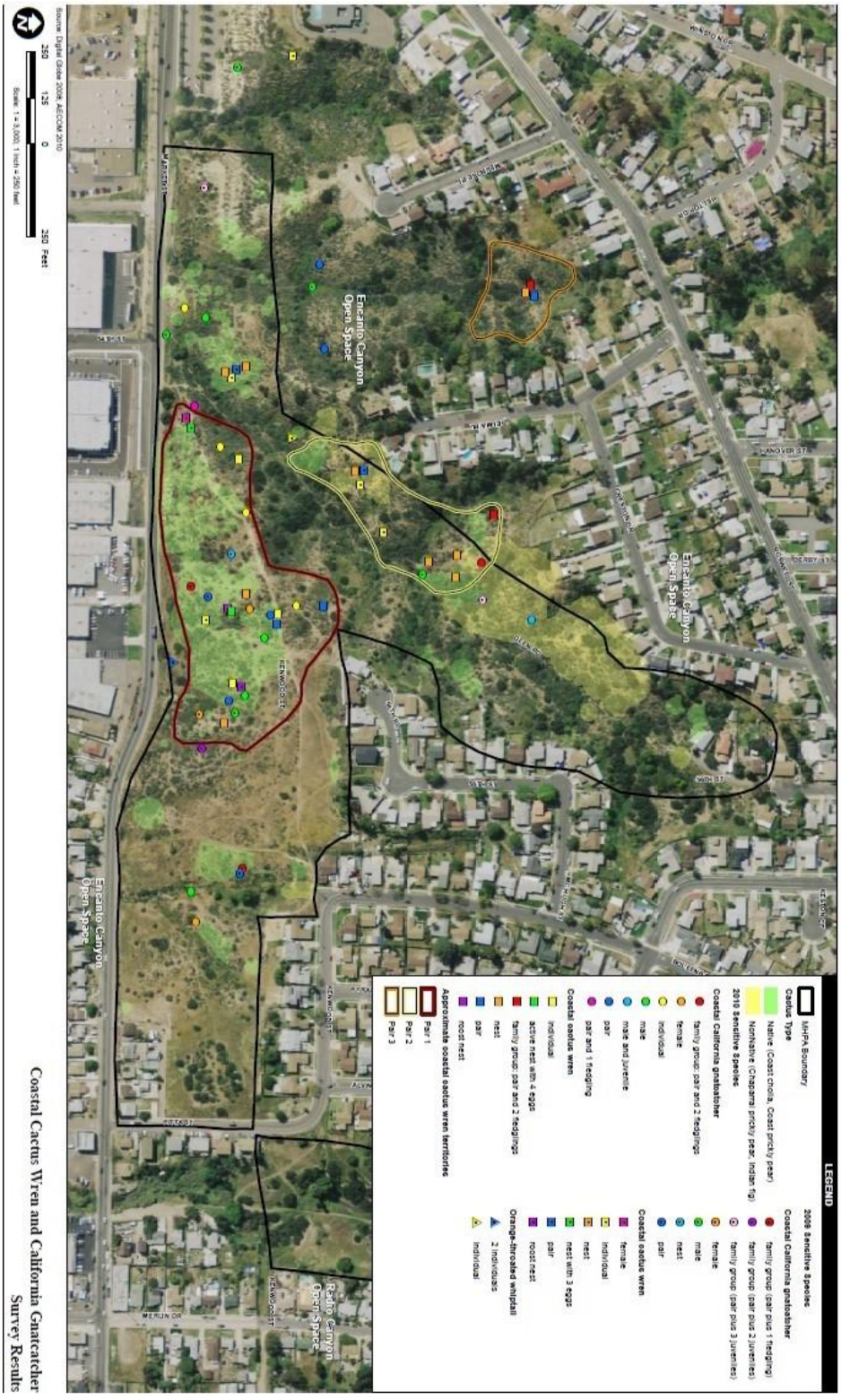
1.4.3 Sensitive Plant and Animal Species

The San Diego Barrel cactus is known to occur in Encanto Canyon. No known sensitive plant surveys have been conducted in either of Radio or Encanto Canyons. Surveys for the coastal cactus wren and the California gnatcatcher were conducted in 2009 and 2010 (AECOM, 2011). Three cactus wren pairs were observed within Encanto Canyon. California gnatcatchers were also observed in Encanto Canyon. Although not expressly counted, Encanto canyon may have 3 nesting pair (Figure 6). In addition the orange throated whiptail was also noted in Encanto Canyon. No sensitive species surveys have been conducted in Emerald Canyon.

1.4.4 Habitat Fragmentation and Wildlife Movement

The Open Space Areas are situated in a highly urbanized environment. The open space area are disconnected by Pitta Road as well as residential development. North of Encanto Canyon, the habitat has been fragmented by the Emerald Hills residential community which separate it from the open space area to the north that parallels Highway 94. Wildlife movement is restricted between the canyons as a result of these urban encroachments.

Figure 6. Sensitive Species Locations



Source: Coastal Cactus Wren & California Gnatcatcher Habitat Restoration Project, AECOM and Groundwork San Diego, 2011.

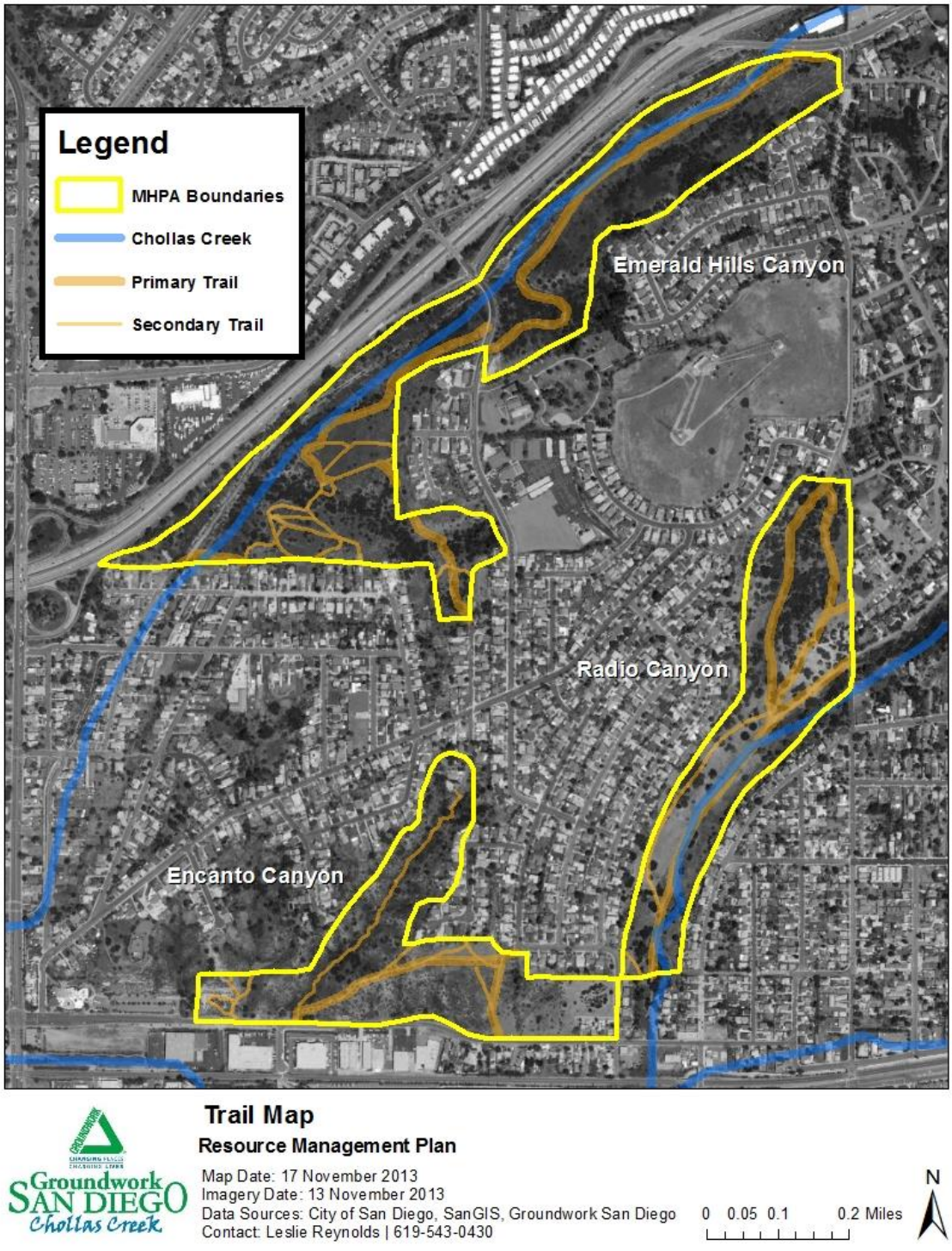
1.5 Recreational Resources

The Open Space Areas have ad-hoc trails used by the public. Three known trails within Encanto Canyon originate off of Pitta Street that traverse across and down the slopes. One non-official trail is situated near the canyon bottom in Radio Canyon (See Figure 7). Emerald Canyon trails have not been mapped. No trails are currently being maintained or managed.

1.6 Educational Programs

The restoration project offered a unique opportunity for students and residents within the surrounding canyon communities to play an important role in project planning and implementing of the restoration project in the Open Space Areas. Plants for the project were propagated at the Earthlab nursery and over the two year project habitat-based activities were developed to align with the school's model Conservation Science course enrolling 70 students per year. Students worked in cactus propagation, soil and water quality monitoring, wren monitoring, habitat restoration including cacti installation, and community education and outreach. This RMP will provide further opportunities for students and researchers to get involved in active restoration and enhancement projects within the canyons.

Figure 7. Existing Trails Map



2.0 MANAGEMENT GOALS and OBJECTIVES

Groundwork San Diego desires to maintain and enhance the biodiversity of the Open Space Areas ensuring that the land continues to be a viable habitat refugia. This section's goals and objectives relate to resource management and public use. These goals and objectives are intended to implement the Mission of the RMP as time and resources such as funding and available personnel permit. Management of the Open Space Areas will accommodate public use as a secondary objective to maintain and restore the natural resources.

2.1 Threats and Potential Impacts

The Open Space Area's key management challenges stem from its proximity to residential development, while certain issues, such as invasive plant infestations, stem from historical land uses and are intensified by current adjacent land uses. Table 1 identifies the most significant threats to the native habitat and sensitive species and lists the potential impacts that are likely to result from these threats. Habitat fragmentation, invasive plant species, the urban edge effect, public use, and erosion constitute these main threats. The RMP is designed to address these threats and minimize the impacts. Management guidelines that address these issues are provided in Section 3.0.

Table 1. Analysis of Main Threats and Potential Impacts for the Open Space Areas

Threats	Potential impacts
Habitat Fragmentation	
Wildlife corridors become increasingly important for plants and wildlife as human development encroaches upon natural areas or isolates them from other protected areas. No safe wildlife linkages allow for movement between the Open Space areas or surrounding open space areas.	• Movement of wildlife and genetic material is hindered, resulting in the extirpation or isolation of species • Habitat fragmentation contributes to the “urban edge effect”
Invasive Plant Species	
Invasive plant species are outcompeting native species in significant areas of the Open Space Areas.	• Invasive plant species degrade existing native habitat and reduce the biodiversity • Invasive plant species compete with native plants for resources and habitat and prevent seedling establishment • Invasive plant species may displace native wildlife
Urban Edge Effect	
The Open Space Areas are surrounded by urban lands along most of its boundaries, and the fuel modification required along these areas further increases the effects of the urban edge.	• Exotic plant and animal species are introduced and degrade the natural environment by outcompeting or preying on native species • Prevents native wildlife from using habitat along the periphery of the Open Space Areas or puts them at risk for predation by feral or domesticated animals • Contributes to an increase in frequency and severity of wildfires • Fragmentation caused by unauthorized trails • Ambient lighting and noise can disturb wildlife and ecosystem functioning • Artificial water sources and public feeding of wildlife disrupts the natural cycle of nature • Unauthorized collecting and harassing of wildlife • Unsecured backyards can act as artificial food sources for wildlife
Public Use	

The existing ad-hoc trail networks evolved from short cuts to other locations, which were not created with consideration of the sensitivity of the surrounding habitat. Off-trail use has facilitated the development of unauthorized trails and shortcuts degrading habitat and causing erosion problems.	• Inappropriate uses of trails [both authorized and unauthorized] contribute to erosion, alteration of natural drainage patterns, introduction of exotic vegetation, degradation of native vegetation, and increased human-wildlife interactions • Degraded trails create difficult or unsafe trail conditions for visitors • Expanding and eroding trails may contribute to habitat fragmentation
Erosion	
Unrestricted and improper land use practices have resulted in erosion threats in parts of the Open Space Areas. Lack of designed and implemented trails, and areas without vegetation on steep slopes are the most susceptible to erosion.	• Increases sedimentation in streams and watercourses • Degrades water quality • Reduces habitat value in riparian and ephemeral ecosystems as a result of siltation • May create hazardous trail conditions from erosion for users, which may then result in the creation of alternate unauthorized trails • Reduces soil productivity and water-holding capacity • Alters natural drainage patterns • Increases velocity and amount of storm water runoff • Scarred/barren areas reduce aesthetic values • Results in habitat loss

2.1.1 Invasive Plant and Animal Species

Invasive plants are a threat to open space because they colonize disturbed areas and degrade existing native habitat. The invasive plants “alter ecosystem functions such as nutrient cycles, hydrology, and wildfire frequency, outcompete and exclude native plants and animals, harbor dangerous animal invaders, and hybridize with native species” (Bossard et al. 2000). Significant disturbance in the past has permitted nonnative invasive plants to out compete natives, changing the plant community functioning. The non-natives have caused significant degradation of the habitat and have resulted in the loss of viable wildlife foraging and nesting areas. The management of the invasive plants will be an important component of the continued health and viability of the habitat.

Domestic/feral pets, particularly cats, enter the Open Space Areas to roam and forage for food. These animals prey on the native animals themselves and may compete with native animals for food.

2.1.3 Urban Edge Effect & Fuel Management Zones

Urban areas in proximity to the Open Space Areas cause negative effects of the functioning of the habitats. Some of these effects of urbanization include light and noise pollution, exotic pests, feral animals, exotic plants, diseases, fire, and trash and other pollution. These effects can deter animals from using the habitat along the edge of the Open Space Areas, which in turn reduces the overall usable acreage for wildlife. Interactions may occur along the urban edge from native wildlife venturing into the urban areas to roam and forage, including coyote, raccoon and other adaptable wildlife.

The Open Space Areas have urban development along most of its boundaries. One of the obvious effects of the urban edge is the fuel modification required along these areas. Fuel modification impacts the native habitat and reduces the overall acreage of the Open Space Areas (Figure 8). The ornamental plants in the urban areas may encroach and outcompete native habitat. Urban edge effects can be minimized through outreach to people who live along the edge of the Open Space Areas informing them of the importance of the habitat and ways they can reduce impacts to it. Dumping is also a problem within the Open Space Areas. Figure 8 provides a map of the areas where dumping is common.

2.1.4 Public Use

Human use has the potential to cause degradation of the natural resource values of open space areas. Overuse and inappropriate uses of the ad-hoc trail network can have negative environmental effects through alteration of natural drainage patterns, erosion and deposition of soil, introduction of exotic vegetation and increasing human-wildlife interactions. Degraded trails also diminish the quality of the visitor experience by creating difficult or unsafe trail conditions, promoting trail use conflicts, and impacting the scenic quality of the landscape.

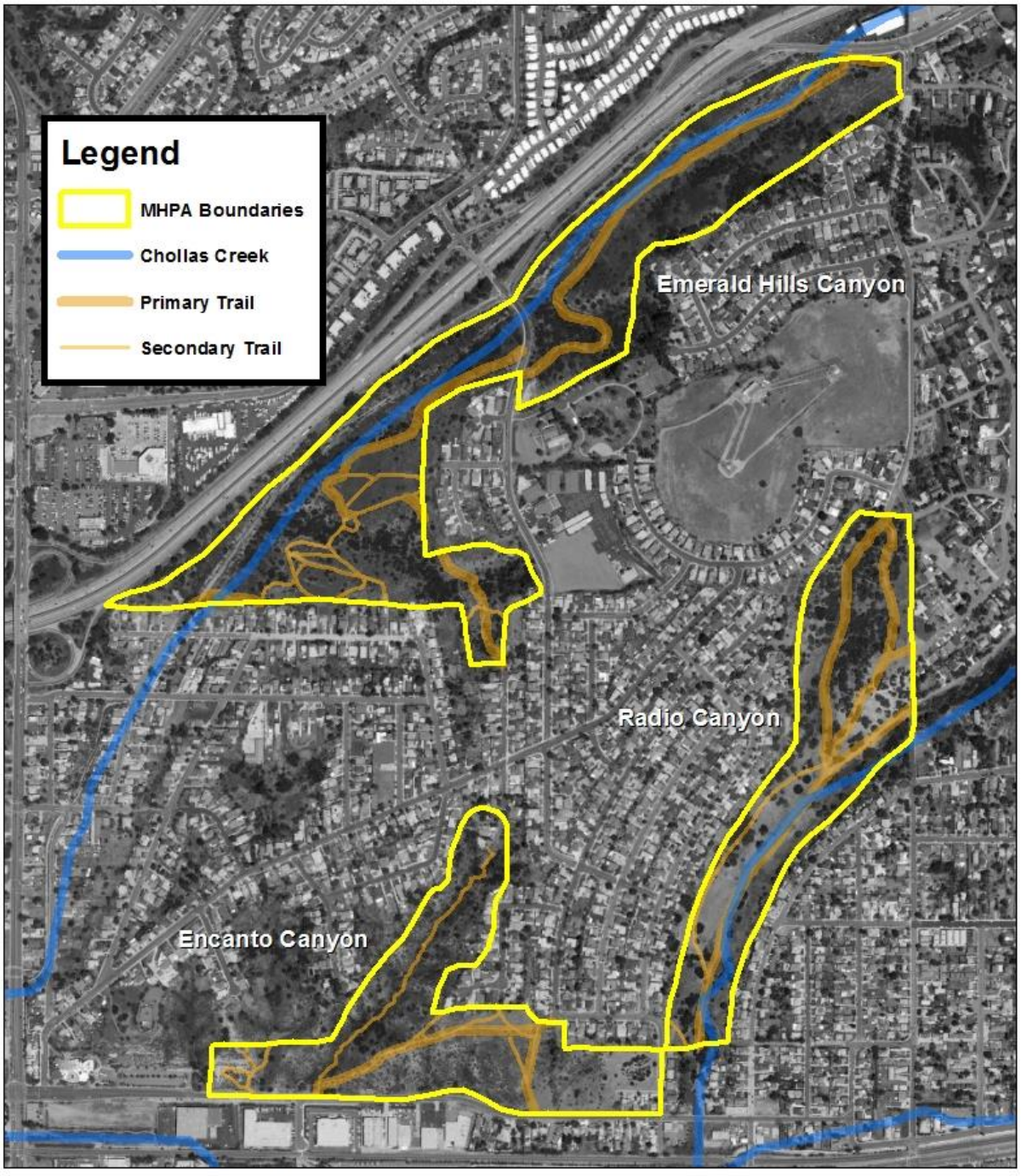
The existing trail network has evolved from short cuts and other ad-hoc use that were not constructed or maintained with sensitivity to the environment. Steep trails within Encanto Canyon without adequate ground cover are eroded, with compaction along their edges. The Radio Canyon trail sometimes concentrates flow and carries water during storm events. In addition, off-trail use by people and pets tramples native vegetation, degrades habitat, disturbs wildlife, and promotes invasive exotic species growth. Figure 7 provides a map of the existing ad-hoc trails within the Radio and Encanto Canyons.

2.1.5 Erosion

Human land use practices such as removal of vegetation or heavy repeated trampling can cause accelerated natural erosion beyond natural levels, causing degradation of the habitat. Erosion reduces soil quality and water-holding capacity by removing the nutrient-rich upper layers of the soil. Erosion can result in increased sedimentation in watercourses, degradation of water quality and reduction of water storage capacity. The extent of erosion depends on a combination of factors, including the amount and intensity of rainfall, soil type, slope length and steepness, and ground cover (vegetation, litter/mulch, rocks). Soil erodibility is a function of texture, organic matter content, structure, and permeability. In general, areas with erosive soils on long steep slopes with little or no cover will be most susceptible to erosion.

The lack of adequate trail design and implementation has resulting in ad-hoc trails that area not well positioned. The creation of unauthorized trails, particularly downhill trails in steep hillside areas, has also exacerbated conditions that are conducive to erosion through similar mechanisms. Figure 8 provides a map of erosional problem areas within the Open Space Areas.

Figure 8. Fuel Modification, Dumping & Erosion Map



Groundwork SAN DIEGO Chollas Creek

Trail Map

Resource Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

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2.2 Management Goals and Objectives

The following goals and objectives outline a management framework designed to protect and restore the natural resources of the Open Space Areas. Goals and objectives are necessary to perpetuate the important natural, scenic, and recreation values and to respond to threats to those values.

The goals and objectives are divided into Biological Resource Management, Public Use and Maintenance, and form the basis for the management and monitoring actions. A biological goal is a statement of intended outcome of management based on the feasibility of enhancing, maintaining, or restoring species populations and habitat. A public use goal is the statement of the type and level of public use compatible with biological goals. Objectives state the intended results for management actions that promote the resource, interpretation, and maintenance goals for the Open Space Areas. The management actions that follow are intended to implement these objectives. While the achievement of goals and objectives will be based on the availability of resources such as personnel and funding, priority spending of available resources will be in alignment with the Mission of Groundwork San Diego.

2.2.1 Biological Resource Element

The management guidelines for the biological resources are based on analysis of existing site-specific survey data including vegetation and wildlife surveys, to assist in the discussion of invasive plant species, sensitive species, and habitat management. The major intent of the goals and objectives is to provide a strategy by which the natural resources can be restored, managed, conserved, and enhanced, while at the same time providing educational and recreational opportunities to the public.

Section 1.0 of this document contains a summary of site assessment, survey work and habitat restoration related to the onsite natural resources. Three major vegetation types: non-native vegetation, coastal sage scrub, Maritime Succulent Scrub, in addition to disturbed/developed lands have been mapped identified within the Open Space Areas. In addition a small component of riparian habitat/ephemeral drainage is known within Radio and Emerald Canyons that has not been mapped. Of these, the non-native vegetation habitat covers the largest area, and it is dominated by nonnative annual grasses and forbs as well as invasive trees and shrubs. Control efforts will be focused toward particularly highly invasive plant species, including acacia, Brazilian peppertree, tree of heaven, giant reed and other identified "high priority" areas, which are present to varying degrees and pervasive throughout. Invasive plant species, habitat fragmentation, and the urban edge effect have threatened the viability of native habitat and wildlife and sensitive species. Section 3.2.4 provides a list and ranking of priority invasive species to be removed. As discussed in Section 1 above, at least 3 sensitive species are known to occur within the Open Space Areas. By restoring and preserving habitat and educating visitors and neighbors, viable populations can be maintained for the perpetuity of the species.

The following management goals and objectives are recommended and are intended to identify gaps in knowledge and suggest ways to eliminate them, establish sound data management and monitoring techniques, and provide the framework that will assist in making informed management decisions.

Goal: BIO-1: Identify and maintain all populations of native plants and wildlife with special emphasis on management of locally uncommon, sensitive, federally-threatened or endangered species and other sensitive resources.

Objectives

BIO-1.1 Maintain and update the plant communities map, and affected fuel management zones.

BIO-1.2 Protect and maintain all native vegetation communities, with special attention to sensitive vegetation types such as maritime succulent scrub, coastal sage scrub, and riparian communities.

BIO-1.3 Identify, protect and maintain populations of sensitive, threatened, or endangered plant species.

BIO-1.4 Identify and protect breeding populations of sensitive animal species and their habitat including coastal Cactus wren, the coastal California gnatcatcher and the orange throated whiptail.

Goal: BIO-2: Enhance and restore degraded habitats.

Objectives

BIO-2.1: Develop and prioritize habitat restoration areas within the Open Space Areas, outside of Fuel Management Zones. Determine restoration priorities based on weed and soil associations, percent slope, size of weed infestation, proximity to roads and trails, proximity to existing restoration, wildlife connectivity, etc.

BIO-2.2 Remove all unauthorized trails within the Open Space Areas to improve the quality of habitat for wildlife.

BIO-2.3 Identify and map areas needed for selective fuel reduction to increase native vegetation, maintain a diverse age structure, and restore biotic and abiotic processes to the vegetation community.

BIO-2.4 Map and monitor the spread of invasion of exotic species and develop appropriate management responses in association with restoration priorities.

BIO-2.5 Develop a invasive exotic plant removal action plan and set removal activities on a year by year basis, as funds and resources are available.

BIO-2.6 Identify offsite sources of invasive species and the landowners. Prioritize coordination for removal of those species.

Bio-2.7 Update planting plans in support of annuallyrenewed ROE application from landowner City of San Diego Parks and Recreation Open Space Division).

Goal: BIO-3: Implement monitoring programs designed to identify canyon threats and guide adaptive management by tracking the health, function, and integrity of habitats and ecological processes.

Objectives

BIO-3.1 Monitor all native and non-native habitat types to assess their condition and to document any changes that are a result of specific management recommendations.

BIO-3.2 Monitor key ecological processes to interpret biological changes and responses to management measures.

BIO-3.3 Document the status of locally uncommon, sensitive, threatened or endangered species and other sensitive or special status resources in order to prioritize management actions and to assess the effectiveness of management actions.

BIO- 3.4 Monitor the effects of urban runoff and soil deposition from surrounding areas.

BIO-3.5 Continue to implement measures to restore habitat and improve habitat quality designed to reduce nutrient loading and sedimentation potentially impacting beneficial uses in the watershed.

Goal: BIO-4: Encourage community-based, as well as university-level research, to address unanswered biological questions.

Objectives

BIO-4.1 Facilitate focused research projects.

Goal: BIO-5: Develop an in-house data storage and analysis system.

Objectives

BIO-5.1 Develop a centralized data management system that interfaces with regional and statewide biological database systems (e.g. SANDAG, BIOS).

BIO-5.2 Manage and update an in-house GIS system with maps and locations of natural resources, planned invasive removal and restoration areas, and proposed trails.

2.2.2 Public Use Element

The Open Space Areas are open to the public and permit pedestrian and bicycle access on most trails. An evaluation of the trail locations and connectors, and opportunities to implement management actions to minimize impacts on soils, water quality, native habitat, and wildlife is needed. The will focus will be on analyzing the existing trail system and evaluate limited new trail routes.

Goal: USE-1: Provide a trail system that protects natural resources of the Open Space Areas, while allowing low-impact recreational use.

Objectives

USE-1.1 Abandon roads and trails if impacts on native habitat or other resources are discovered.

USE-1.2 Locate new trails away from sensitive habitat areas.

USE-1.3 Minimize riparian crossings to decrease disturbance of sensitive natural areas.

USE-1.4 Make decisions to reconstruct or reroute existing trails and emphasize minimizing ground disturbance.

USE-1.5 Provide diverse and interesting trail experiences to minimize unauthorized trails.

USE-1.6 Use best management practices in the design, construction, and maintenance of trails, including temporarily closing trails when needed.

USE-1.7 Implement trails in partnership with public agencies, non-governmental organizations and private landowners, when feasible.

USE-1.8 Implement a trail system that is considerate of adjacent landowner interests to the extent possible, and consistent with protecting natural and visual resources.

USE-1.9 Seek methods to establish partnerships among trail interest groups to improve cooperation on trail use, volunteer maintenance opportunities, and preservation of habitat consistent.

USE-1.10 Create and maintain trails in an environmentally sustainable manner by:

- Using natural materials
- Restoring damaged areas
- Reducing the use of chemicals
- Minimizing disturbance of habitat
- Limiting runoff and grading

Goal: USE-2: Enforce protection of the varied resources and promote an enjoyable and safe environment for visitors.

Objectives

USE-2.1 Encourage uses that acknowledge the natural and scenic beauty of the Open Space Areas and facilitate enjoyment of the outdoor experience, as well as those that promote the safety of visitors. Establish rules outlining appropriate uses and restrictions on the use.

Goal: USE-3: Create and/or improve a trail system that provides a broad public benefit by accommodating diverse uses and user abilities.

Objectives

USE-3.1 Allow trail use within the Open Space Areas.

USE-3.2 Discourage the use of trails that are not part of the system of maintained trails.

USE-3.3 Prohibit the use of motorized vehicles, with authorized exceptions.

USE-3.4 Where reasonably feasible, provide access for people with disabilities within the context of the agency's purpose, policies, and legal requirements.

USE-3.5 Connect Open Space Areas trails to regional trails, where appropriate.

Goal: USE-4: Identify and accommodate parking, access points, and trail amenities that maintain the natural character of the land, enhance resource protection and contribute to the enjoyment of open space.

Objectives

USE-4.1 Rely primarily on public rights of way to provide parking capacity to serve trail users arriving by car.

USE-4.2 Seek to provide reasonable access points to eliminate excessive parking and avoid or minimize traffic to the surrounding community.

USE-4.3 Allow trail amenities such as, but not limited to:

- Informational displays and signs
- Portable restrooms in areas with group use
- Trash and recycling receptacles
- Facilities to encourage the pickup and disposal of pet waste
- Water fountains.

2.2.3. Interpretation and Education

The a long-term goal will be to create interpretive programs that educate both individuals and communities on the importance of preserving, understanding, and coexisting with the natural resources. This can be accomplished through the creation and installation of a variety of interpretive tools such as signs, kiosks, printed material, and public programs.

Goal: INTERP-1: Enhance public stewardship appreciation of the value of the Open Space Areas, conservation issues in general, and the significance within the Chollas Creek Watershed.

Objectives

INTERP-1.1 Provide high-quality educational and outdoor-learning opportunities.

INTERP-1.2 Provide opportunities for community involvement and education.

INTERP-1.3 Develop a public outreach and education program.

INTERP-1.4 Continue partnerships with other environmental and educational organizations for public outreach and education.

Goal: INTERP-2: Provide a trail system that promotes and enhances public enjoyment and appreciation of the natural, cultural and scenic resources.

Objectives

INTERP-2.1 Use signs, education and barriers to keep users on the trails.

INTERP-2.2 When feasible, produce an accurate and informative trail map for the public, with trail safety guidelines, that is accessible from the Groundwork San Diego or other website.

INTERP-2.3 Provide trail users with accurate information on trail locations.

INTERP-2.4 Provide information to trail users that facilitates orientation, natural and cultural resource interpretation, code compliance, and appropriate trail etiquette.

INTERP-2.5 Educate trail users on the potential impacts that trail uses have on wildlife, cultural resources, and the environment.

INTERP-2.6 Promote volunteer participation in trail stewardship.

3.0 BIOLOGICAL MANAGEMENT AND MONITORING IMPLEMENTATION

Recommended management and monitoring actions necessary to achieve the goals and objectives in Section 2.0 are summarized below. These management and monitoring actions should be implemented as sufficient resources become available.

3.1 Proposed Management Activities

The implementation of this RMP will move forward a range of projects and management activities relating to biological resources management, public use and interpretation, and ongoing maintenance and monitoring. The ongoing management activities will be enhanced and supplemented by these proposed management activities.

Resource Management

- Prioritize studies that provide general biological information that are not currently available, such as rare plant surveys and sensitive wildlife locations.
- Design and implement targeted studies and monitoring protocols to assist management decision-making and guide future management and monitoring activities
- Maintain a database of natural resources identified within the Open Space Areas
- Implement a habitat enhancement and restoration plan to identify areas of high, medium and low exotic removal and restoration priorities
- Manage and minimize exotic invasive plant species threatening the integrity of native habitats
- Develop planting plans for all restoration needs based on reference sites
- Develop a seed collection and plant procurement program for sensitive plant species or plant communities located within the Open Space Areas, to maintain and enhance biological diversity and for use in future restoration projects

Public Use and Interpretation

- Develop and implement the a Trail Plan, and provide kiosks, signs, or map pamphlets that clearly demarcate permitted use trails, authorized users for each trail, and summarize the rules and regulations
- Establish proposed trails and remove inappropriate trails as part of the implementation of the proposed Trail Plan to provide loop opportunities for users
- Construct proposed trailheads per the Trail Plan
- Develop a comprehensive interpretive plan and deliver interpretation and education using a wide range of methods including, but not limited to, brochures, signs and kiosks, special events and programs, and web-based strategies

- Work with local recreation groups, neighboring jurisdictions, and the public to establish programs and events that promote stewardship and increase awareness of the natural resources

Open Space Areas Maintenance

- Select and install erosion and sediment control practices where practicable and within an allocated budget such as culverts, drains, mulch, contour wattles, sediment traps, etc., as warranted
- Close and restore to natural condition any existing trails that are no longer necessary to retain and are not included in a proposed Trail Plan, as budget and resources allow
- Install fencing where appropriate to protect resources, post signs, establish permanent markers, and/or enforce boundaries and permitted access
- Maintain facilities and structures (e.g., trails and kiosks) and remove litter, trash, and debris that may attract nonnative wildlife and reduce the aesthetic values
- Provide boundary encroachment enforcement and landowner education

3.2 Biological Resource Management

The primary objective of this RMP is to identify the best way to manage, protect, and enhance the biological resource values of the Open Space Areas. The resource management guidelines proposed by the RMP include biological investigation and monitoring within an adaptive management framework, data keeping and database management, habitat enhancement and restoration, exotic plant control, seed collection and plant procurement, exotic animal control, and wildlife corridor optimization. Table 2 provides a list of monitoring and maintenance actions and recommended intervals based upon information described below.

Table 2. Summary of Long-term Monitoring and Management Tasks

Task	Purpose	Frequency
General Qualitative Site Monitoring		
Photo Monitoring	Assess overall condition of Open Space Areas to detect changes in plant communities and other physical conditions.	Annually
General biological survey and site assessment	Assess overall condition of Open Space Areas (e.g., fencing, trash, habitat degradation, etc.) and map incidental observations of sensitive native or invasive species. Note wildlife observed.	Annually in spring
Habitat Monitoring		
Vegetation mapping	Map vegetation communities to track changes in boundaries and composition over time.	Every 5 years
Invasive species mapping	Update map of infestations of invasive species, and estimate percent cover of non-native species	Annually

Task	Purpose	Frequency
Quantitative habitat monitoring	Quantitatively monitor habitat over time to assess changes in species richness, abundance, distribution, and percent cover.	Every 3-5 years in spring
Species Monitoring		
Rare plants	Survey habitats for rare plants	Every 3-5 years during spring
Rare plants	If detected, annually in spring. Count individuals and map population locations.	Annually
Cactus Wren	Assess the status and general trend of utilization of the habitat.	Every 3-5 years during spring
California gnatcatcher	Assess the status and general trend of utilization of the habitat.	Every 3-5 years during spring
Wildlife Movement	Understand wildlife utilization	Every 1-2 years
Exotic Removal and Restoration		
Set Priorities for Exotic Removal	Identify exotic removal locations and activities for the year and set dates for removal	Annually
Set Priorities for Habitat Restoration	Identify habitat restoration locations and activities for the year and set dates for removal	Annually
Seed Collection	Collect seed for restoration project that will take place in 1-2 years	Seasonally timed
Plant procurement	Grow plants for planned restoration project 3-6 months in advance of planting date	Seasonally timed
Open Space Areas Maintenance & Management		
Invasive plant control	Perform invasive species removal in specified areas as budget allows	Annually or as possible
Habitat Restoration	Restore habitat in specified areas as budget allows	Annually or as possible
Brush management	Reduce fire risk in brush management zones	As needed (City to perform), in coordination with the fire authority
Trash removal	Remove all trash and materials that have been illegally dumped	As needed
Erosion evaluation	Inspect areas for erosion problems and identify solutions. Coordinate with the City for implementation.	As needed, within one month of observation
Feral animal control	Remove feral and exotic animals that prey on native wildlife	As needed, in coordination with County Animal Control
Boundary Encroachment Enforcement	Survey and identify boundary encroachment issues and notify City.	Inspect annually
Reporting		
Reports	Prepare report summarizing all management and monitoring activities, continued threats, and other pertinent information	As needed.
Update GIS	Update GIS layers resulting from management and monitoring actions	Annually

Task	Purpose	Frequency
Update RMP	Update Resource Management Plan	Update every 5-10 years

3.2.1 Biological Monitoring

Monitoring and targeted studies should be designed to assist management decision-making. Under this approach, management moves forward in a scientifically-based way that involves monitoring, conducting targeted studies, and applying management activities as experimental treatments. The results would feed back into decision-making, thus reducing uncertainty and improving the effectiveness of the program through time.

The best available information will be used to make management decisions and also look for opportunities to learn how to better accomplish the Goals and Objectives of the RMP. Steps that may be involved in a long-term adaptive implementation program include opportunistic learning, management, monitoring, and directing the results of analysis and assessment back into the program through decision-makers. The existing biological inventory, direct observation, and empirical information are expected to inform the strategy for implementing the this plan.

A problem-focused approach that links the management objectives to causes of change and management activities are necessary for effective management and monitoring. Monitoring allows the measurement of resource condition and responses of the resource to human-induced and natural disturbances. Monitoring should identify problems early so that corrective management action can be taken as soon as it is needed. In contrast, targeted studies (at small spatial scales or in pilot studies) can be used to resolve critical questions regarding ecosystem functioning or management applications. Some management activities will have little uncertainty regarding application or outcomes such trash removal or sign posting, however other management activities will have greater uncertainty, including habitat restoration. These activities should be designed as experiments to increase our understanding of the system and the effectiveness of management, including determining the most effective way to control exotic species.

The results from monitoring and targeted studies should be evaluated and used to refine goals, improve the management program and improve monitoring methods.

Phase 1: Inventory Resources And Identifying Relationships

The main goal of Phase 1 is to determine the baseline condition of the system as a prelude to long-term monitoring program design. This involves an inventory of what species, habitats, and other resources are present, their locations, and general conditions. Much of this work has been done. However, data gaps warrant additional studies including baseline work in Emerald Canyon.

Management can and has been applied during this phase. In general, management should be limited to actions of known impact, such as weed eradication or trash removal until such management can be appropriately evaluated. This phase can also be used to develop or test relationships between species, habitats, processes, and other causes of variation such as trails or invasive species. Management questions should be developed with the goal of transforming management questions into long-term monitoring protocols.

Phase 2: Pilot Testing of Long-term Monitoring and Resolving Critical Management Uncertainties

Phase 2 is characterized by pilot testing of long-term monitoring protocols and sampling designs to select cost-effective designs with the ability to detect biologically relevant and management-relevant changes. This process of designing pilot monitoring protocols may be as simple as determining locations for photographic point monitoring or may require the development of a scientific sampling design with adequate statistical power to detect change. In addition, the pilot phase is an opportunity to conduct targeted studies to resolve critical management uncertainties.

- **Inventory sensitive species on a regular basis to keep track of the current status of the species.** Known populations of sensitive plant species are typically inventoried every year in the spring to identify status, health, threats, problems, and the trend of the populations, as possible. Suitable habitat in other areas of the Open Space Areas should be surveyed during the spring for the presence of sensitive plant species at 3-5 year intervals. The coastal California gnatcatcher and coastal cactus wren populations should be surveyed by a qualified biologist periodically (recommended every 3-5 years) to track the population and distribution of the species in the Open Space Areas, and to determine whether this threatened species is utilizing restored habitats. Survey frequency should be determined by management need. Table 2 provides potential survey frequency information for species of interest located within the Open Space Areas.

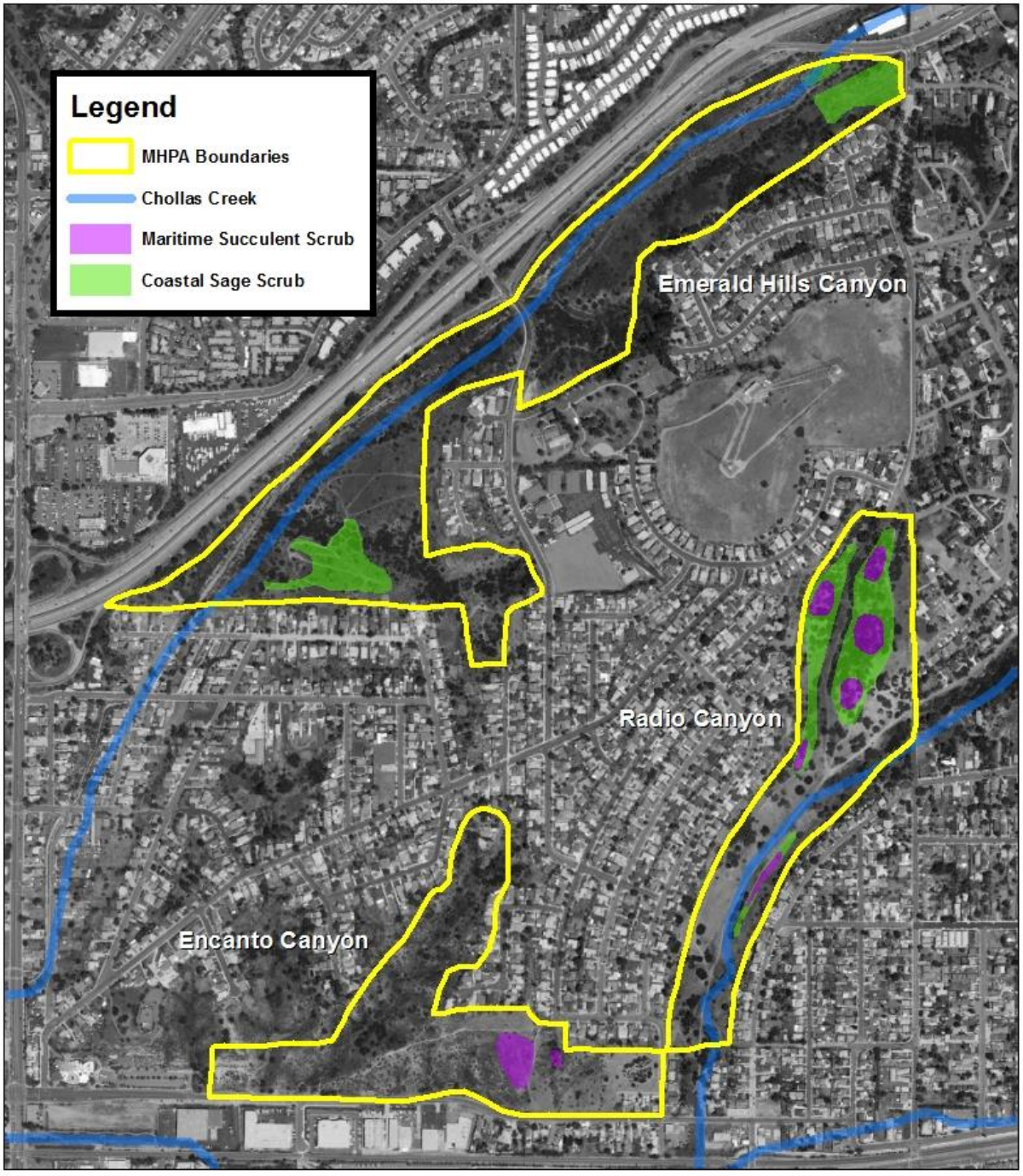
- **Update vegetation maps every five years.** This update would include habitat restoration projects and changes in invasive species locations. It is important to have updated maps for Open Space Areas management and planning. During the vegetation mapping effort, the invasive plant species discussed previously should be mapped to determine whether control of these populations should be considered a priority within certain areas of the Open Space Areas.

- **Design and implement a study to track the trends and changes in the habitat types and quality.** This study will monitor the status of the Open Space Areas and shift priorities and management methods to achieve the Open Space Areas goals. The study should be conducted at the same time each year in order to make consistent comparisons over time. Spring would allow for easier identification of the habitats and species. This will consist of setting up photo stations in various vegetation communities and tracking from year to year.

- **Perform restoration experiments utilizing different techniques to determine the most cost-effective methods for the habitats of the Open Space Areas.** Detailed methods for

restoration are should build upon the AECOM restoration work. In 2012 an updated restoration map was developed and is included as Figure 9 in this report. A longer-term restoration map that includes priorities for exotic removal and subsequent restoration has been developed as part of this effort and is included as Figure 10. developed in a Habitat Restoration Plan. Site-specific restoration plans will be developed on an as-needed basis.

Figure 9. Updated Restoration Plan Map



Proposed Restoration Areas

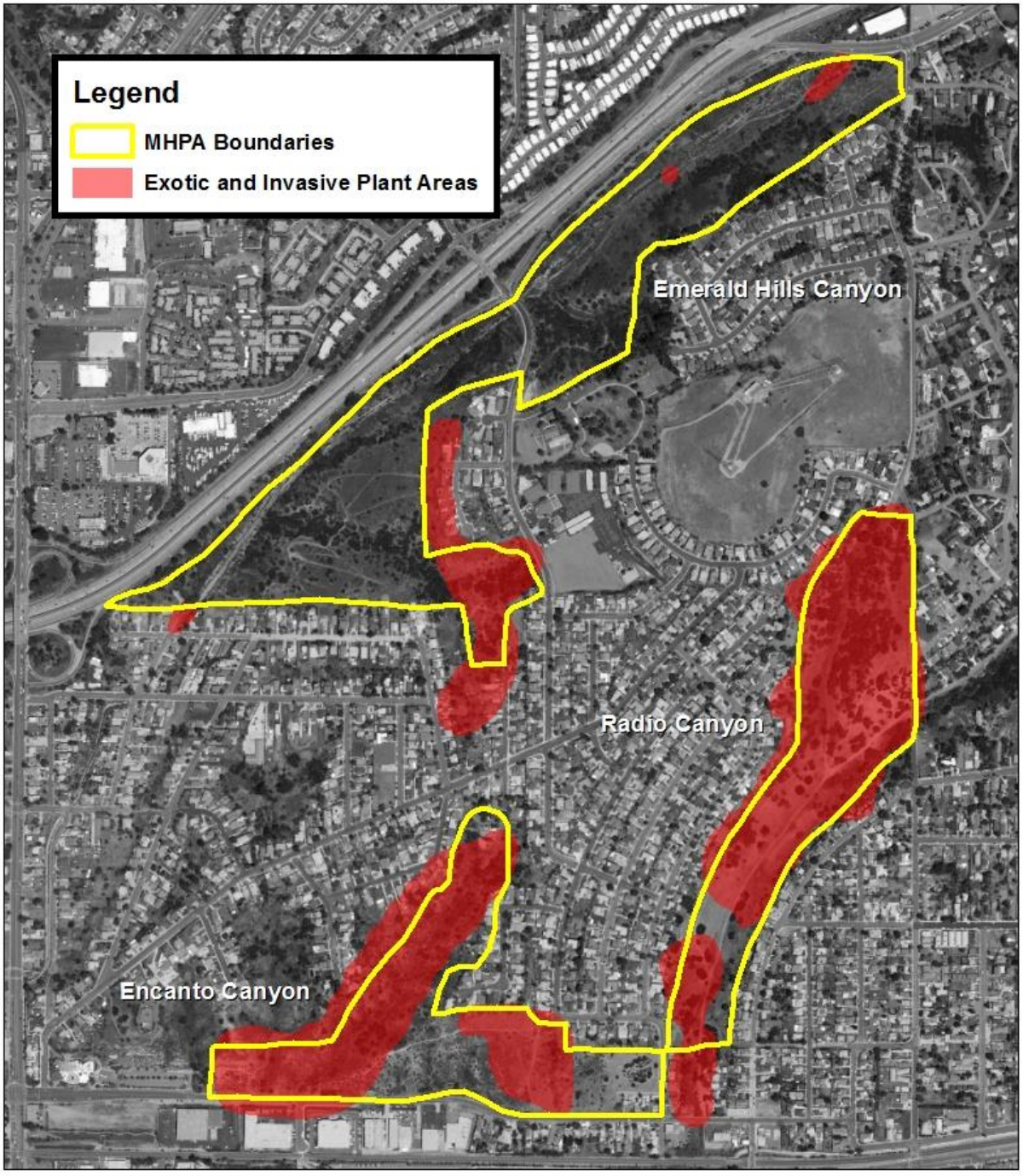
Resource Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

N

Figure 10. Long-term Exotic Removal Priorities



Groundwork San Diego Chollas Creek

Long-term Exotic Removal Priorities

Resouce Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

N

- **Conduct periodic wildlife monitoring to determine the health, quality, and functionality of different portions of the Open Space Areas.** As resources allow, general wildlife surveys should be conducted every year in the spring when seasonal migrants are present. Numbers and locations of sensitive wildlife can be identified and mapped concurrently. To understand and confirm the movement of animals across or through the Open Space Areas wildlife movement studies should be conducted every year or every other year. Wildlife cameras should be set up in key locations and photos collected for 5 days, or as budget allows. Close monitoring of the results of these investigations will allow Open Space Areas managers to redirect or focus additional studies or actions to address specific conservation or restoration needs as they are identified. Flexibility and responsiveness to changing situations will be critical to the success of this effort. Proactive monitoring and management programs conducted within the Open Space Areas will play a vital role in the conservation of natural resources within the region

- **Periodically reassess the presence of nonnative and other pest animal species to determine their effect on the Open Space Areas.** During the wildlife surveys and wildlife movement studies (camera traps), the biologist should document and track the occurrences of feral cats, European starlings, brown-headed cowbirds, and Argentine ant. As new invasive animal species are observed or reported, the number along with impacts to the Open Space Areas, should be assessed.

- **Provide opportunities for local and university-level research, particularly where research and studies would help to answer management questions or contribute to the understanding of species of interest and habitats**. Work with local schools and universities to develop projects that would provide useful information to regarding resources in the Open Space Areas. Research proposals should be submitted and evaluated on a case-by-case basis in consideration of potential impacts associated with the research.

Phase 3: Implementation of Long-Term Monitoring and Adaptive Management

Activities include implementation of long-term monitoring protocols and periodic evaluation and refinement of the monitoring program. The program continues to address uncertainties, principally by evaluating responses to management and extreme events. Emerging uncertainties are also addressed and prioritized, such as a new invasive species, pollution sources or global warming.

3.2.2 Biological Resource Data Keeping

A database and maps of plant and animal species observed in the Open Space Areas should be maintained. The geographical information system (GIS) database developed as part of this grant will provide the means to accomplish this intent. The Groundwork San Diego should share spatial and/or resource data as appropriate with statewide data warehouses such as SANDAG and BIOS.

- Regularly update the GIS database by expanding the layers associated with special status plants and animals and invasive exotic plant infestations. Incorporate new observations from

Open Space Areas personnel and from such sources as the CNDDB, the USFWS, Audubon Society bird counts, etc. Standard protocols would help to facilitate ongoing observations and monitoring using global positioning system (GPS). The use of a data dictionary to store images and other data should be incorporated into the GIS database.

- Facilitate long-term habitat restoration and management efforts in the Open Space Areas, particularly with regard to special status and invasive exotic species by maintaining current data in the GIS system for each layer. Include the following key attributes in the GIS database for each community:

Vegetation Attributes	Wildlife Attributes
Dominant overstory plant species	Common animal species
Dominant understory plant species	Observed special status animal species
Dominant ground cover	Observed exotic species
Common plant species	Introduced animal species
Observed special status plant species	Observed roosting, nesting, and burrowing sites
Potential special status plant species	Other notable species
Invasive exotic plant species	Special habitat features
Typical overstory density	
Typical understory density	
Typical ground cover density	

3.2.3 Habitat Enhancement and Restoration

The purpose of a Habitat Restoration Plan is to provide guidance on restoring degraded and disturbed habitats throughout the Open Space Areas. Large areas of degraded habitat have been infiltrated by invasive weeds. Restoration of important and sensitive habitat resources, including wetlands, riparian areas, and wildlife corridors, is essential.

While the Habitat Restoration Plan would provide a great deal of technical information on existing conditions within the Open Space Areas and on restoration methods, it also would accomplish the following:

- Identifies the range of conditions that exist in the potential restoration areas, specifically soil characteristics and weed composition;

- Provides restoration criteria and a priority evaluation on restoring the degraded and disturbed habitats;

- Provides information on the most effective restoration methods currently known and their associated costs;

- Provides basic data and recommended prescription for restoration methods for each type of potential restoration area;

- Provides guidelines for preparing more detailed, site-specific plans that will maximize the success and minimize the cost of individual restoration efforts; and

The Habitat Restoration Plan should be organized by the analyses of existing conditions (e.g., soil, slope, and exotic species), restoration criteria and priority, restoration application, restoration techniques, planting and seeding lists, and performance standards and monitoring. The Habitat Restoration Plan may be modified based on monitoring results.

- Develop specific plans for individual restoration sites, using the information and guidelines provided in the Habitat Restoration Plan as well as new information developed through adaptive management. It will be important to consult with an experienced restoration ecologist when preparing the individual specific restoration plans.

- Assess, control, manage, and eradicate invasive exotic species as appropriate and needed to protect Open Space Areas resources.

While a comprehensive restoration plan has not been prepared, as described above some preliminary work has been accomplished. A short term restoration map was developed by AECOM in 2012 that builds upon the coastal cactus wren restoration work that was completed in 2011. It sets forth a plan for the subsequent 2 years (Figure 9). The exotic removal mapping work that was accomplished under this grant also sets a foundation for setting long-term restoration priorities. Further details are in the next section.

3.2.4 Exotic Plant Control

Exotic and invasive plant species are of primary concern for the Open Space Areas. General locations were mapped by AECOM the 2009 (Figure 3). Subsequently focused exotic species mapping was accomplished in 2013 for Radio and Encanto Canyons, and exotic species were prioritized by High, Medium and Low priorities. The results of this effort is found in Figure 10. The primary objective in exotic plant control in the Open Space Areas is to reduce the abundance of invasive species, particularly around populations of sensitive plants and in riparian areas. Control can be a combination of using mechanical and chemical methods. Continued monitoring of exotic species populations, abundance, and locations will assist in determining the most appropriate management options. Site-specific measures for physical, biological, and chemical control should be developed; such measures are described further in Invasive Plants of California's Wildlands (Bossard et al. 2000). Exotic species mapping sets forth the priorities thus for exotic removal in subsequent years. Table 3 below provides the list of invasive species found and their priority status.

On an annual basis, new stands of exotic species should be mapped and prioritize for treatment. Utilize the list below and Cal-IPC list as exotic pest plants of greatest ecological concern in California as priorities for removal.

Priority Plant List for Invasive Species in Encanto and Radio Canyons

More details and plant photos can be found here: http://www.cal-ipc.org/paf/ and http://www.invasiveplantatlas.org/

Each plant on the list received an overall rating of High, Moderate or Low based on evaluation using the criteria system developed by Cal IPC.org as well as site-specific priorities.

- High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- Low – These species are invasive but their ecological impacts. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Table 3. Invasive Species and Management Priorities

Species	Common Name	General Habitat	Invasive Rating| Management Priority
Acacia melanoxylon; A. redolens◊	Black acacia; Desert Carpet	Landscaped	High
Agave americana; A. attenuata	Agave	Landscaped	Low
Ailanthus altissima¤	Tree of Heaven	Disturbed |Upland	High
Aptenia cordifolia◊	Iceplant; baby sun rose	Landscaped	High
Arundo donax◊	Giant reed grass	Riparian |Waterway	High
Atriplex semibaccata	Australian saltbush, berry saltbush	Landscaped	Moderate
Avena barbata	Wild oat	Grassland|Disturbed	Low
Brassica nigra	Black mustard	Grassland|Disturbed	Moderate
Brassica tournefortii◊	Sahara mustard	Grassland|Disturbed	High
Bromus diandrus; Bromus sp.	Rip gut brome	Grassland|Disturbed	Moderate
Carpobrotus edulis◊	Hottentog-fig	Landscaped	High
Centaurea melitensis	Tocalote	Grassland|Disturbed	Moderate

Centaurea solstitialis◊	Yellow star thistle	Grassland|Disturbed	High
Chrysanthemum coronarium◊ *Glebionis coronaria*	Crown-daisy	Grassland|Disturbed	High
Cotoneaster franchetii; C. lacteus; C. pannosus	Cotoneaster	Landscaped	Moderate
Crassula argentea	Jade	Landscaped	Low
Cynara cardunculus	Artichoke thistle	Grassland|Disturbed	Moderate
Cyperus involucratus◊	African umbrella plant	Riparian |Waterway	High
Erodium cicutarium	Red-stemmed filaree	Grassland|Disturbed	Low
Fraxinus uhdei	Ash	Riparian |Waterway	High
Foeniculum vulgare	Fennel	Grassland|Disturbed	High
Magnolia grandiflora	Southern magnolia	Landscaped	Low
Malephora crocea var. *crocea*◊	Crocea iceplant	Landscaped	High
Marrubium vulgare	Horehound	Grassland|Disturbed	Low
Meloleuca sp.	Myrtle	Landscaped	Low
Nicotiana glauca	Tree tobacco	Riparian |Waterway	Moderate
Opuntia ficus-indica	Mission prickly pear	Landscaped	Low
Pennisetum setaceum	African fountain grass	Grassland|Disturbed	Moderate
Piptatherum miliaceum *Stipa miliacea var. miliacea*	Smilo grass	Riparian |Waterway	Moderate
Phoenix canariensis¤	Canary island date palm	Riparian |Waterway	Moderate
Plumbago auricultata	Cape leadwort	Landscaped	Low
Raphanus sativus	Wild Radish	Grassland|Disturbed	Low
Ricinus communis	Castor bean	Grassland|Disturbed	Low
Rumex crispus	Curly dock	Riparian |Waterway	Low
Salsola tragus	Tumbleweed	Grassland|Disturbed	Low
Schinus molle¤	Peruvian Pepper tree	Grassland|Disturbed	Low
Schinus terebinthifolius¤	Brazilian Pepper tree	Grassland|Disturbed	High
Urtica urens	Dwarf nettle	Riparian |Waterway	Low
Washingtonia robusta¤	Mexican date palm	Riparian |Waterway	Moderate

¤*Warrants mapping of individual(s)*

◊*Warrants specific mapping of entire area per specie or plant form such as "iceplant"*

3.2.5 Seed Collection and Plant Procurement

Develop a seed collection program for some of the sensitive species and communities located within the Open Space Areas to ensure that the genetic diversity of the on-site populations is

not lost, and for restoration projects. Collect seed in conjunction with other management measures to maintain or improve habitat quality and in a manner that does not impact existing populations. Seed should be collected from a percentage of all populations on the property in order to Open Space Areas the full genetic spectrum. A take authorization will be necessary for the collection of seed from listed species if such species are found within the Open Space Areas in the future. A Seed Collection and Propagation Manual was prepared by Sharon Muczynski, a SDSU Graduate Student specific to the Open Space Areas in 2012 (see Appendix B). This manual should be used as a guide for seed and plant procurement.

• Collect seed from within the Open Space Areas for restoration efforts, wherever feasible. All shrub species and herbaceous species used in the restoration efforts will offset impacts from the exotic species present within the Open Space Areas. With proper planning efforts, seed collection should be initiated 1–2 years in advance of the restoration to allow for the collection of seed from species that flower at different times throughout the year.

• Grow collected seed in a local procurement facility for restoration purposes. Seed should be available for restoration, enhancement, or reintroduction efforts, as determined necessary. Seed should be used for restoration within three years of collection.

3.2.6 Exotic Animal Control

The presence of exotic species is inconsistent with the goals of maintaining native species and natural systems. Dogs and cats and other domesticated and feral animals that live near the Open Space Areas are potential predators to native species.

- Educate homeowners and Open Space Areas visitors about keeping pets indoors at night and keeping pet food indoors or in a secure location that does not attract wildlife from the Open Space Areas.

- Establish and enforce existing Open Space Areas rules and regulations regarding dogs. When hiking with dogs at the Open Space Areas, owners should be required to keep dogs on leash, stay on trails, and pick up waste.

- Identify and control, to the extent possible, feral cats.

4.0 PUBLIC USE

Public access is secondary to the primary goal to protect and enhance the natural resources of the Open Space Areas. A Trail Plan should be designed and implemented to:

- Improve the proposed network of authorized trails and ensure that there are minimal impacts to natural resources;

- Close and restore unauthorized and other existing trails to native habitat;

- Evaluate the potential for new trail routes that provide loop opportunities and connections between other trails to prevent additional unauthorized trails from forming; and

- Initiate management actions to minimize trail impacts to the natural and cultural resources of the Open Space Areas.

A comprehensive interpretative program should be developed to convey information about the Open Space Areas. Trail use can be enhanced by educating trail users about the local environment and history. An Interpretive Plan should be developed that integrates interpretive trails, interpretive displays and public programs into the already existing activities that the Open Space Areas allows.

4.1 Access and Trails

A trail network created by historical uses has provided an ad-hoc trail system to accommodate public use. However, it has also left the Open Space Areas with a legacy trails that were not constructed or maintained with sensitivity to the environment. The creation and ongoing use of these trails destroys and fragments habitat and causes erosion. In particular, trails on steep hillsides exacerbate conditions that lead to erosion because they compact soils, remove ground cover, and concentrate runoff flows.

The challenge for the Open Space Areas is to ensure that public access and recreational use are consistent with habitat protection. As such, as funding becomes available a Trail Plan will be developed that focuses on the following.

- Prioritizing resource protection

- Relocating or decommissioning trails if impacts on native habitat or other resources are discovered

- Locating new trails away from sensitive habitat areas

- Eliminating duplication of trails

- Reconstructing existing trails rather than rerouting the trail is positioned ecologically

- Providing diverse and interesting trail experiences to minimize unauthorized trail use

- Using best management practices in the design, construction, and maintenance of trails

- Formulating seasonal trail guidelines including possible rotation of access points to protect sensitive species from significant adverse user impacts during nesting season or other sensitive periods

There has been no Trail Plan developed to date, thus ad-hoc trails contribute to erosion, habitat fragmentation, alteration of natural drainage patterns, introduction of exotic vegetation,

degradation of native vegetation, and increased human-wildlife conflicts. To be consistent with the mission and intent of the Open Space Areas, public access must be restricted in areas that are unsafe or inappropriate for users. Such areas include sites where conflicts with wildlife may occur, where conditions are degraded, and where it is necessary to minimize impacts to sensitive habitat for conservation or restoration. In addition, temporary closure of trails or other facilities may be necessary to effect a beneficial change in a significant habitat.

Authorizing official trails and closing or abandoning selected trails within the Open Space Areas and subsequently restoring these areas will improve the quality of habitat for wildlife and be consistent with the primary goal of resource protection. Trail decommissioning and restoration priority should be given to trails in the more biodiverse areas of the Open Space Areas. Before restoration activities take place, closing may be accomplished by covering the trails with leaf litter and blocking them with physical barriers, or by posting signage and delivering citations as necessary to discontinue any additional human disturbance. Each trailhead in the Open Space Areas should have an informational kiosk or sign that contains a map with the authorized trails; permitted user groups; a summary of the trail safety guidelines, rules and regulations; and a description of the benefits of using the designated system of roads and trails and the detriments of non-system trail use and construction.

4.2 Interpretive Themes

Interpretation provides the means to deepen an appreciation of the landholdings and to provide lasting benefits to individuals and the local communities. Interpretive services can introduce visitors to the intrinsic values of the property and educate about the appropriate management of natural and cultural resources.

The Open Space Areas contains intact native habitat and remnants of Southern California's historic landscape. Interpretation will include the significance of the historical use of the land, the local wildlife and their habitat still present, and the need for preservation of the land to instill in visitors the sense of place and stewardship.

- Follow interpretive themes that establish the overall interpretive direction and tone, as outlined below. A unifying theme must relate to the resources, the goals of the Open Space Areas, and the interests of visitors. Primary and supporting interpretive themes elaborate and further describe the unifying theme.

Suggested Unifying Theme: Natural forces, plants, animals, and people continually change the fragile habitat. Through conservation and sustainable practices, the Groundwork San Diego and their partners endeavors to provide permanent protection for the Open Space Areas resources.

- **Primary Theme:** The Open Space Areas contains a richly diverse collection of plant and animal species, all dependent on the native habitat.

- **Secondary Theme:** The biological diversity of the lands it is crucial that there be a biological corridor present to support exchange of genetic materials by the wildlife to other existing natural areas.

- **Secondary Theme:** Because of the urban edge effects to wildlife and the native habitat, it is important and beneficial to humans to learn coexistence techniques.

- **Secondary Theme:** Because of the diverse ecosystem present within the Open Space Areas, recreational use must be balanced to provide long-term preservation.

Primary Theme: The Open Space Areas contains landscape that is rich in both history and culture.

- **Secondary Theme:** Early indigenous peoples' traditional use of the natural resources and cultural harmony with the land give the people of today an insightful look into how to coexist with and care for the natural resources around them.

- **Secondary Theme:** Early explorers and settlers helped to shape the communities that are present today.

4.3 Interpretive Goals and Implementation Actions

Interpretive goals and guidelines provide the basis to prepare interpretive plans that expand upon the interpretive themes, and detail methods, media, and programs. Specific project interpretive plans and exhibit plans that focus on more detailed interpretation may then follow in future documents. Three main goals are identified for the interpretive programs:

1. Visitors will understand and appreciate the importance of Southern California's native habitats

2. Visitors will learn about and understand how humans both past and present have affected Southern California's native habitats

3. Visitors will understand the need for ongoing protection and enhancement of the natural, cultural, and recreation resources for present and future generations

To realize these goals, the following actions should be implemented, when feasible:

- Develop a Comprehensive Interpretive Plan that reflects the unifying theme and primary themes outlined above. The Plan should articulate strategies to implement the goals and objectives for interpretation, including interpretive trails, interpretive displays, and interactive programming. The Plan should also enhance interpretive techniques for public programs, self-guided tours, brochures, maps, and school programs.

- Align interpretive and educational programs for K-12 age groups with the California Department of Education's frameworks and content standards.

- Focus interpretation and educational efforts on developing stewardship practices among visitors, neighbors, and neighboring jurisdictions. These elements could include urban edge effects, urban wildlife coexistence, wildfire risk and prevention, and trail safety.

- Deliver interpretation and education using a wide range of methods including, but not limited to, brochures, signs, special events, and web-based strategies.

- When feasible, use Habitat Authority staff and the expertise of other agencies and organizations and volunteers in developing and implementing Open Space Areas interpretive and education programs.

- Support youth and adult educational, research, and interpretive opportunities. Foster and support ongoing relationships with local school districts, colleges, and universities.

- Implement the following interpretive programs:

    - Interpretive hikes based on existing themes for adults, families, or organized groups

    - Interpretive and educational lectures and events for the public and local communities o Interpretive and educational programs for K–12 students

        - Volunteer and Docent training programs

        - Community and wildlife coexistence programs

- Continue the partnership with other agencies for funding, research and support

- Provide interpretive kiosks at key points within the Open Space Areas.

4.4 Public Information

Groundwork San Diego maintains a strong community relations. With that relationship it should foster a positive visitor experience with minimal adverse impacts on neighbors to the Open Space Areas. A number of both formal and informal partnerships already exist and provide for the continued exchange of information. Partnerships provide Open Space Areas management and local community leaders the opportunity to meet the environmental and recreational needs of the public. Opportunities exist to form new partnerships and to address specific issues such as trail design or to solidify new traditions such as restoration planting volunteer days.

- Maintain ongoing liason and communications between Groundwork and the City, County, as well as State, federal agencies, other community organizations, and elected officials to maximize the potential benefits and opportunities.

- Surveying visitors periodically will identify trends in activities, use, or attitudes. If feasible, adjust services, educational outreach, and/or operations to accommodate trends. Work

with neighboring jurisdictions to provide a unified delivery of services in response to public safety emergencies and utilize the training and expertise of all personnel.

- Work with local recreation groups, neighboring jurisdictions, and the public to establish programs and events that promote Open Space Areas stewardship and increase awareness of the natural resources.

- Provide relevant information for local residents about living near the Open Space Areas through vehicles such as the Groundwork website, press releases or other local coverage.

5.0 OPEN SPACE AREAS MAINTENANCE

Ongoing maintenance promotes the successful implementation of resource management activities. Routine operations and maintenance efforts in the Open Space Areas would also keep the Open Space Areas safe, functional, and attractive for residents and visitors.

5.1 Erosion Control

Erosion control is critical for maintaining natural drainage patterns, water and soil quality, healthy aquatic ecosystems, and safe trail conditions. Recommended erosion control guidelines are listed below.

- Evaluate the site. On-site areas that are subject to severe erosion should be evaluated. Trees and vegetation to be preserved should be located and flagged, with access areas identified. Figure 8 depicts known locations of erosion problems within the Open Space Areas that need to be addressed.

- Select and install erosion/sediment control practices. A qualified professional should determine the specific practices needed and direct installation as appropriate. All BMPs should be chosen carefully, located and installed correctly, and maintained well to be effective in controlling erosion and sediment. Ensure that sediment-trapping devices and erosion control measures are accessible for maintenance and removal. The following BMPs should be considered in design and implementation on a site-specific basis:

    - Properly designed culverts and drains that avoid concentration of runoff

    - Vegetation

    - Mulch (wood chips, erosion control blankets, all native material based)

    - Wattles to reduce slope and trail runoff

- Develop a practice maintenance program. Maintenance of BMPS is essential for proper functioning. As possible, they should be inspected regularly, particularly after major rainfall events

- Control surface runoff. Divert and disperse surface water runoff originating upslope of exposed areas to reduce erosion and sediment loss.

5.2 Trail Maintenance

The following general guidelines will focus on trail maintenance, once a trail plan is developed and implemented. Figure 7 depicts the exiting trail network in Radio and Encanto Canyons.

Environmental Considerations

- In special status species habitat areas, trail use levels should be limited, as appropriate to ensure the protection of resources. Techniques for limited use may include physical access control, seasonal or intermittent closures, and/or the exclusion of domestic pets.

- Biological resource assessments should be conducted before specific trail routes are planned and implemented. Assessments should be conducted by a qualified biologist and include focus surveys for sensitive wildlife and habitat. These assessments should include recommendations to align existing trails where impacts to sensitive species and habitat may occur

- Removal of native vegetation should be avoided, to the extent possible. The appropriate resource agencies should be contacted regarding any trail alignments that may impact sensitive habitat or species.

Trail Amenities

- Standard signs should designed and implemented to be consistent throughout.

- Each trailhead should have an informational kiosk. Information kiosks should include a copy of the most recent trail map. The kiosks should provide a summary of the rules and regulations regarding the use of trails and describe the benefits of using the designated trail system and detriments of off-trail use.

- When developing trailhead facilities, design the trail head access points to meet both user and manager needs.

- Interpretive and protective signs should be located, where applicable. Interpretive and protective signs should indicate natural resource points of interest or sensitive areas. Signs should be designed to identify habitat types or particular plant species.

Trail Closure

Decommissioning. The goal of decommissioning is to restore natural topography and native habitat as much as possible so that maintenance work is no longer needed and to prevent future environmental impacts. Shortcuts and unauthorized trails should be eliminated. If left uncorrected, these unauthorized trails will encourage additional use and lead to damaged vegetation, soil erosion, and drainage problems. A key component of any trail closure plan is to create a practical and sustainable alternative.

- In areas where the old trail is being relocated or abandoned, effort should be made to erase the old trail and restore it to as natural a condition as possible. This will avoid confusion as to which trail to use, eliminate sources of erosion, restore it to a more natural appearance, and help eliminate shortcutting. Depending on the terrain, the use signs, rock, brush, fallen timber, and transplanted vegetation is appropriate. The construction of temporary fencing to prevent use may be needed.

- Compacted soil in the old trail tread should be broken up or scarified to allow the seeds and roots of new plants to penetrate.

- Surface drainage on abandoned routes needs to be addressed so that it is self-maintaining, adequately serves the area it drains, and prevents sediment loss. Abandoned trails should be stabilized to prevent further erosion and natural revegetation promoted. Trails break natural drainage patterns and collect and concentrate surface water flows. Restoring the natural contour of the slope reestablishes the local drainage patterns and reduces the likelihood of erosion. Recontouring usually eliminates any temptation to use the old trail and facilitates revegetation efforts.

- Starting plants on the old trail is the best way to restore the landscape. Disturbed soil often provides an opportunity for invasive plant species to take hold. Only native species should be planted in these areas.

- The most effective manner to reduce or eliminate closed trail use is to erase its footprints. The goal is to eliminate the visual corridor, including the airspace above the old trail. Depending on the terrain, logs and branches may be dragged across the abandoned trail to block the corridor at eye level. Leaves and other organic matter should be raked over the tread as the final step to complete the disguise and aid new plants. A sign posting "trail closure for restoration purposes" may also discourage users.

Trail Maintenance

- **Prepare a Trail Maintenance Plan.** Priorities for trail maintenance tasks are to:

    - Address trail conditions

    - Repair trail and other environmental damage

- Restore the trail to desired conditions

- Trail work should be planned and implemented with the objective of providing for resource protection and public access. Operating within budget and staffing constraints, the trail maintenance program should include:

    - Periodic trail monitoring

    - Trail work aimed towards preventing erosion or other serious damage

    - emergency repair work and signage to eliminate or identify possible safety hazards.

- Practice environmentally sound maintenance and use techniques appropriate for the type of trail.

- Guidelines for trail maintenance include:

    - Clear windfalls and dangerous trees from the trail bed for safety and to prevent detouring

    - Remove loose rocks and debris from the trail surface.

    - Repair erosion damaged trails and information kiosks promptly to prevent further damage. Check for erosional effects after spring runoff. Check and repair BMPs. Construct additional drainage structures if needed. Corrective work for drainage or erosion problems should be performed within a reasonable period of time. Where necessary, barriers to prevent further erosion should be erected until problems are corrected.

    - Remove new plant growth on the trail annually. Clear in the outside the nesting bird season and outside of areas where known sensitive wildlife occur. Vegetation on the sides of the trail should be pruned to allow passage, but should be preserved, as much as possible, to protect the aesthetic quality of the trail. Typically, vegetation is cleared to a height of 7 ft to accommodate hikers. Good pruning practices must be followed, including cutting branches almost flush with the limb and cutting stumps at ground level or below. Large limbs should be pruned almost flush with the trunk. Dead and dying limbs and snag that may fall on the trail should be removed. Groundcover plants and low shrubs should not be removed except on the actual trail tread.

    - Level the trail tread as necessary and restore the tread grade to the original slopes. Use local material to fill ruts, holes, low spots, or muddy areas.

    - Check, repair, or replace signs and trail markers.

    - Maintain trailhead facilities such as waste containers.

Trail Monitoring

- An inventory of all trail maintenance, including drainage, vegetation clearing, signage, surfacing, need for graffiti removal and repair of structures, gates, fences, and barriers may be pursued if there are adequate resources. Based on maintenance reports, trails should be subject to seasonal closures or repair as warranted.

5.3. Boundary and Encroachment Control

Numerous entry points from adjacent neighborhoods allow for entry into the Open Space Areas. Boundaries should be periodically surveyed in order to protect the natural resources and public safety. Backyard encroachment into the Open Space Areas destroy natural vegetation and should not be permitted. Enforcement of boundaries by maintaining property fencing and access points and by posting signs signifying the property boundary should be instituted. Illegal encroachment should be addressed.

Enforce boundaries by maintaining site fencing and access points.

- Identify portions of the boundaries where fencing may be needed. Fencing should be installed or reinforced in areas adjacent to residential lots, roads, and other level areas. Fencing should be maintained as needed and monitored annually.
- Establish property signs along the boundary and at each access points, identifying the area as a boundary and providing directions for access and contact information.
- Maintain all existing fencing and locked gates and establish a list of persons with keys to the site.
- Establish permanent marker of the boundary, where appropriate.

6.0 REPORTING

An report summarizing the status of the Open Space Areas, results of the surveys, and all major actions taken since the last assessment should be prepared appropriately. This report should include a discussion of the following:

1. Summary of management and monitoring tasks and issues addressed during the previous time period;
2. Overall health of the Open Space Areas, including any changes to the health or distribution of sensitive species, hydrological changes, damage resulting from natural or anthropogenic causes, problems with invasive species, trespass, dumping, etc.
3. Results of qualitative and quantitative biological monitoring, including photographs taken from fixed photo points;
4. Funds generated, expenses incurred in performing management tasks, and years-end balance; and
5. Problems encountered, and recommendations for management and monitoring identified for the upcoming year.

7.0 REFERENCES

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This plan is adapted from LSA Puente Hills Habitat Authority Final Resource Management Plan, 2007.

APPENDIX A: TRANSNET FINAL REPORT FOR ENCANTO & RADIO CANYON RESTORATION. 2011

APPENDIX B: SEED COLLECTION & PROPAGATION MANUAL. 2012

APPENDIX 3

Urban Greening Grant Application

1. Application Form

PROJECT APPLICATION FORM **[CONCEPT ID NUMBER 157]**

State of California - The Strategic Growth Council
URBAN GREENING GRANT PROGRAM

APPLICANT (Agency and address - including zip) Urban Corps of San Diego County 3127 Jefferson Street San Diego, CA 92110	**Grant Amount Requested:** $ 856,549.76 **Estimated Date of Completion** May 2017 **Estimated Total Project Cost:** $ 1,016,909.76 (including State Grant, other funds and In-Kind donations)
Check all that apply: Non-Profit: X City: County: JPA: Special District: Applying for targeted Disadvantaged communities Grant:	**County** San Diego **Nearest City to Project** San Diego **Project Address** Approx. 5800 Market Street Nearest Cross Street Radio Drive **Senate District No.** 39 **Assembly District No.** 79
Project Name Neighborhood Canyons Access and Enhancement Project	

Applicant's Representative Authorized in Resolution

Name: Robert Chavez — Title: Chief Executive Officer

Phone: (619) 235-6884 — Email Address: rchavez@urbancorps.org

Person with Day to Day Responsibility for Project (if different from Authorized Representative)

Name: Ty Sterns — Title: Environmental Services Manager

Phone: (619) 235-6884 — Email Address: tsterns@urbancorps.org

Brief Description of Project

(Summarize major activities to be funded by this Grant)

Restore 20 acres of habitat in Radio Canyon and Emerald Hills Canyon; refurbish 3.3 miles of existing eroded trails in Radio, Emerald Hills, and Encanto Canyons; install trail amenities; conduct outreach and canyon stewardship program.

Latitude	**Longitude**
32 42' 57.546" N	117 4' 31.030" W

Coordinates Represent: Rough center of area

Coordinates Determined Using: itouchmap.com

(See next page for instructions and choices)

	STATUTORY REQUIREMENTS - check all that apply to your project
X	Uses Natural Systems or Uses Systems that Mimic Natural Systems
X	Creates, Enhances or Expands Community Green Spaces
	Provides the Following Multiple Benefits
X	Decreases Air and Water Pollution
X	Reduces the Consumption of Natural Resources and Energy
	Increases the Reliability of Local Water Supplies
X	Increases Adaptability to Climate Change
X	List Other Multiple Benefits not identified above:
	URBAN GREENING PRIORITIES
X	Uses Interagency Cooperation and Integration
X	Uses Existing Public Lands and Facilitates Use of Public Resources and Investments, including Schools
X	Is Proposed by an Economically Disadvantaged Community
X	Improves Public Health
X	Is Innovative or Unique
X	Is Proposed by a Community Vulnerable to Climate Change

	Project Data: Please enter the quanitity (to nearest 0.1 unit) on all the following measures that apply to your Project
	Acres of Habitat to be Acquired
	Acres of Green/Open Space to be Acquired
20	Acres Green Space to be Restored/Enhanced/Managed
20	Acres of Habitat to be Created/Enhanced/Restored
20	Acres of Invasive Species to be Eradicated/Treated
	Acres of Wetland to be Created/Preserved
	Acre Feet of Stormwater to be Captured
	Acres of Park and/or Community Garden to be Created or Enhanced
3.3	Miles of Recreation Trail to be Created/Enhanced
	Metric Watt Hours (MWH) Usage to be Reduced
	Trees to be planted
	Miligrams per Liter (Mg/L) of Pollutant Reduced
	Other:
	Other:
	Other:

I certify that the information contained in this project application, including required attachments, is complete and accurate.

Signature: _____ Date: 10/25/13

Applicant's Authorized Representative as shown in Resolution

Print Name and Title: Robert Chavez, Chief Executive Officer

2. Project Summary Statement & Project Cost Summary

Project Summary Statement

Purpose: San Diego's urban canyons provide open space which can be enhanced to create safe, sustainable green space corridors. This project will enhance native habitat while improving trails in three canyons in the Encanto neighborhood owned by the City of San Diego. This will bring benefits to the community and environment ranging from improved air and water quality to increased access to nature, promoting physical and mental health.

Objectives:

1) Habitat Enhancement: enhance 20 acres of habitat in Radio Canyon and Emerald Hills Canyon by removing non-native plants and planting native coastal sage scrub and maritime succulent scrub.
2) Trail Rehabilitation: refurbish 3.3 miles of existing eroded social trails to provide safe access in Radio, Emerald Hills, and Encanto Canyons.
3) Trail Amenities: install educational kiosks at key locations on trails, and install wayfinding signage in street rights-of-way to increase awareness of the trail system.
4) Outreach and Stewardship: partner with Groundwork San Diego-Chollas Creek to conduct outreach in the local disadvantaged community and coordinate a volunteer canyon stewardship program.

Public Access:
A key benefit of this project is enhanced public access to existing urban green space by improving 3.3 miles of open space trails and installing wayfinding signage.

Project Cost Summary

Project Category	Requested Funds	Other Funding Sources	Total Cost
1. Planning, Pre-Implementation, and Non-Construction	$100,500.00	$ -	$100,500.00
2. Canyon Stewardship Program	$22,000.00	$153,760.00	$175,760.00
3. Habitat Enhancement (20 acres)	$373,862.80	$3,300.00	$377,162.80
4. Trail Improvements (3 miles), Amenities, Signage	$282,318.80	$3,300.00	$285,618.80
5. Contingency	$77,868.16	$ -	$77,868.16
TOTAL	**$856,549.76**	*$160,360.00*	**$1,016,909.76**

3. Project Questions

Project Questions

Statutory Requirements

1. Describe the project, how it uses natural systems, and how it enhances community green space.

San Diego's canyons provide open space in urban areas which can be enhanced to create safe, sustainable, and walkable community green space corridors. Three canyons in the Encanto neighborhood offer excellent opportunities for restoring native habitat while improving trails for passive recreation and nature appreciation. Existing informal trails in Emerald Hills, Encanto, and Radio Canyon are steep, unsafe, and cause water quality problems through erosion. The proliferation of social trails shows clear community demand for using these canyons both for recreation and as shortcuts to local destinations. Unfortunately, these unofficial trails lead to trampling of vegetation, habitat fragmentation, and unsafe trail conditions.

Our proposed project will restore natural systems while enhancing public access to this existing community green space. Local native ecosystems are threatened by invasive plants such as acacia and non-native grasses. Exotic invasive plants such as acacia, *Arundo*, palms, iceplant, mustard, and non-native grasses such as bromes and wild oats will be removed from 10 acres in Radio Canyon and 10 acres in Emerald Hills Canyon. These areas will be replanted with native, drought-tolerant maritime succulent scrub and coastal sage scrub which are adapted to local climate and soil conditions, thus restoring natural systems for vegetation, hydrology, soils, and wildlife. The canyons' habitat value will be increased, while erosion and water pollution will be reduced.

The second component of the project will improve approximately 3.3 mi. of open space trails. Proper surfacing, alignment, and erosion control will improve safety, enhance air and water quality, and provide non-motorized local connectivity to schools, neighborhood parks, Malcolm X Library, the Euclid Avenue Transit Center, and other local destinations. Stairs and puncheon bridges will allow safe access through steep canyon areas and over streams. Wayfinding signage in the street rights-of-way will create approximately 3 mi. of urban trail connections to the open space. Closure of redundant trails will direct travel onto designated trails and preserve habitat.

Urban Corps (UCO) is partnering with Groundwork San Diego – Chollas Creek, a local nonprofit which conducts outreach and volunteer events to encourage environmental awareness and conservation. Groundwork will be coordinating outreach and education in the local economically disadvantaged community through six neighborhood workshops, three school assemblies, and four Community Planning Group presentations. These efforts will create a dialogue about our project, helping us understand the community's needs and priorities for their local open space while allowing us to share information with stakeholders about the benefits of locally adapted native plants, trail consolidation to preserve habitat, environmental education for youth, and water quality improvements through properly designed and maintained trails. Our strong relationship with the landowner, the City of San Diego, has allowed us to refine the project to meet their open space habitat management and recreation goals while keeping the community involved in decision-making.

As an added benefit, the project will create the opportunity for 20 at-risk youth to receive paid work experience and a life-changing second chance to earn a high school diploma at Urban Corps Charter School. As a local conservation corps, UCO hires young adults 18-25 and helps them obtain a diploma while gaining green job skills and connecting with the outdoors. Youth will have access to UCO's Corps-to-Career Department which will help them translate the skills they learn into jobs in the workforce. The youth will be more likely to work in and appreciate nature, contributing to long-term conservation goals.

2. How was the project site selected and/or prioritized?

The site was selected because it presents a perfect opportunity to address multiple social and environmental factors simultaneously. Through previous participation in community planning activities and stakeholder research, the surrounding community has demonstrated strong interest in the creation of a high-quality trail system for both recreation and connectivity to local destinations. The Encanto neighborhood

canyons already contain the basis for this trail system, and our project will improve the safety of these trails while linking residential areas with public uses, shopping, and transit destinations based on stakeholder involvement in project planning and design. The project also offers excellent opportunities to increase environmental awareness through workshops, wayfinding signage, and educational kiosks at key points on trails. At the same time, combining habitat enhancement with well-managed trails will improve air and water quality and enhance conditions for threatened local bird species. With the support of the community, local nonprofits, and the City of San Diego which owns and manages the land, the project site is ideal for meeting multiple goals and strengthening a valuable community resource.

Multiple Benefits

3. The Neighborhood Canyons Access and Enhancement Project offers the following benefits:

☒ Decrease in air and water pollution
☒ Reduction in the consumption of natural resources and energy
☐ Increase in the reliability of local water supplies
☒ Increased adaptability to climate change
☒ Other: Access to open space
☒ Other: Non-motorized transportation alternative
☒ Other: Improved physical and mental health
☒ Other: Wildlife habitat
☒ Other: Train and employ local disadvantaged youth

a) Decrease in air and water pollution

1. How will the project decrease air pollution?

The project will provide safe, convenient pathways through the canyons to popular neighborhood destinations such as shopping, schools, a branch library, and a transit center. Residents will be able to use these pedestrian corridors to reach their destinations without relying on cars, leading to a decrease in vehicle miles traveled. This will result in lower emissions of air pollutants such as hydrocarbons, particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides, and greenhouse gases such as carbon dioxide. According to the Federal Highway Administration[1], nearly half of all vehicle trips in the U.S. are three miles or less, and with so many popular destinations near the canyon system, the project is optimally located to reduce vehicle trips and improve local air quality. This is particularly important because of the high asthma rates in the local area.

2. How will the project decrease water pollution?

Both the trails and habitat enhancement components of the project will decrease water pollution. By properly surfacing trails and planting native vegetation, the project will protect the canyon slopes from soil erosion, reducing the amount of sediment pollution reaching the South Branch of Chollas Creek. This creek is currently listed as impaired under the Clean Water Act for toxic levels of copper, zinc, and lead, and a TMDL for bacteria is in the process of being approved by EPA. The San Diego Regional Water Quality Control Board reports that the main source of these toxins in the creek is storm water runoff, making it vital to take all available actions to increase the infiltrative capacity of the canyons and reduce water pollution. [2] Better trails and native vegetation will slow urban storm water runoff and allow it to infiltrate the soil, filtering and absorbing pollution before it reaches Chollas Creek, which flows into San Diego Bay.

[1] Federal Highway Administration (2009). National Household Travel Survey.
[2] San Diego Regional Water Quality Control Board (2008). Chollas Creek Metals TMDLs Basin Plan Amendment.

b) Reduction in the consumption of natural resources and energy

1. How will the project reduce consumption of natural resources?

The native plantings and improved trail conditions will conserve soil by preventing erosion. Deep-rooted native plants will increase soil stability on steep slopes while increasing infiltration of runoff. Soil conservation is extremely important in this landscape because soil takes much longer to form than to wash away during a rain event. Our project will also seek to minimize consumption of natural resources during implementation by using recycled, reused, or eco-friendly materials to the extent feasible. For example, we will strive to use FSC-certified lumber and reclaimed materials for construction of kiosks, signage, and fencing. We will also reuse non-native vegetative materials removed during habitat enhancement as mulch, unless it contains seeds which would contribute to re-colonization by invasive plants.

2. How will the project reduce energy consumption?

Energy consumption will be reduced primarily through the project's trail improvement component. By providing convenient neighborhood shortcuts through the canyons, the project will reduce vehicle trips and their attendant energy consumption. The trails will help connect residential areas with the Euclid Avenue Transit Center's bus and trolley (light rail) systems, making it easier to complete longer-range trips without using a personal vehicle. Wayfinding signage in the street rights-of-way will also help residents become familiar with the new pedestrian facilities and encourage non-motorized transportation alternatives. To further reduce energy use, project activities will emphasize the use of hand tools over power tools when possible.

3. How will the project reduce water consumption?

The project will incorporate planting of native, drought tolerant plants to reduce water consumption. Maritime succulent scrub and coastal sage scrub are well-adapted to local semi-arid climate conditions, resulting in no need for additional water following the plant establishment phase. Plantings on slopes will be surrounded by watering wells to catch rain water and will be mulched to retain moisture. Drip irrigation systems will be designed by a landscape architect to maximize benefits while minimizing water use. Recycled or reclaimed water will be used as feasible. In addition, by replacing weedy, fire-prone annual grasses with perennial succulents, the project will reduce on-site fire hazards, potentially saving water that would be used for fire suppression.

c) Increase in the reliability of local water supplies

1. How will the project specifically increase the reliability of local water supplies?

Not applicable to this project.

d) Increased adaptability to climate change

1. How will the project specifically increase adaptability to climate change?

Coastal sage scrub habitat is particularly threatened by replacement with weedy, non-native grassland under climate change models[3]. Through the habitat enhancement component of this project, we will remove invasive grasses and increase the footprint of valuable native habitat, protecting the local ecosystems against climate change. Light-colored decomposed granite will be used for trail surfaces, which will reflect light and heat to mitigate the urban heat island effect and keep the surrounding area cooler. Finally, adaptation to climate change is ultimately going to rely on robust local knowledge and decision-making processes. By strengthening community processes and stakeholder engagement during the design and implementation of our project, we will help keep the community involved in defining their values and shaping locally acceptable solutions. The social capital generated during these activities will be invaluable as the community addresses climate change and other problems in the future.

[3] Intergovernmental Panel on Climate Change (2007). IPCC Fourth Assessment Report, Section 4.4.4 Mediterranean ecosystems.

e) Other benefits

1. Describe other benefits the project will provide that contribute to sustainable communities.

The Neighborhood Canyons project will provide multiple benefits including safe access to natural open space, non-motorized transportation alternatives, wildlife habitat, improved physical and mental health, and training and hiring local disadvantaged youth. The **safety** benefits will be derived from refurbishing of trails and installation of stairs to accommodate safe passage on steeper slopes. This will allow community members to enjoy their park space and learn more about the environment around them. It will also provide **pedestrianized alternative routes** between residences, businesses, and public services.

Access to open space and pedestrian opportunities will improve **physical and mental health** for local residents, both by encouraging physical activity (walking, jogging, etc.) and through the mental health benefits of enjoying and recreating in nature. Many of the invasive plants threatening the canyons produce large quantities of pollen which trigger allergies and asthma, so replacement of these plants with low-pollen local cacti and scrub species will also benefit susceptible individuals, including children, living nearby.

The native plants installed during the project will enhance vital **habitat for wildlife**, including the coastal cactus wren, a California bird species of special concern, and the coastal California gnatcatcher, federally listed as threatened. Wildlife habitat is restricted by urban development, making the canyons important protected habitat patches. Finally, the project will benefit local **disadvantaged youth** who will gain outdoor work experience enhancing habitat and trails through this project while earning their high school diplomas.

4. Describe how the project is consistent with the State's planning priorities.

Promote infill development and invest in existing communities

The Neighborhood Canyons project will invest in creating safe, accessible, enjoyable open space amenities on existing public lands, which will benefit the surrounding Encanto urban community. Enhancements in the canyons will also make nearby neighborhoods more attractive, promoting infill development.

Protect, preserve, and enhance environmental, agricultural, and recreation resources

Our project will preserve and enhance local environmental and recreation resources. Non-native invasive plants will be removed and replaced with locally-adapted natives, increasing habitat value for wildlife and protecting the biodiversity of the less common habitats present at the site, such as coastal sage scrub. Other environmental resources that will be protected include soil, water, and air. Trail enhancements, along with educational signage and kiosks, will increase the recreational value of the canyon system.

Encourage location and resource efficient new development

New development in the surrounding neighborhoods will be poised to take advantage of the trail system's non-motorized transportation opportunities and connections to public transit. This will encourage efficient use of energy and resources for development and transportation. Local land use plans call for more dense development in the area, and the enhanced green space amenities will benefit new and current residents.

5. Describe how the project is consistent with any applicable regional plan.

The project is consistent with several regional plans relating to open space, habitat conservation, and non-motorized transportation connectivity. It meets goals of the **Chollas Creek Enhancement Program** through enhancing natural habitat, maintaining natural drainage patterns, improving water quality, and controlling erosion through appropriate trail design. [4] It builds on extensive stakeholder outreach conducted for the **Encanto Neighborhoods Pedestrian and Bicycle Network Plan**, which showed broad support for improved trails in the canyons.[5] Our project will help meet this plan's goals of pedestrian connectivity to

[4] City of San Diego (2002). Chollas Creek Enhancement Program.

[5] N. Calavita & Estrada Land Planning, Inc. for City of San Diego (2003). Encanto Neighborhoods Pedestrian and Bicycle Network Plan.

community facilities, reduced car-related pollution and noise, and promoting exercise and good health. Consistent with the local **Southeastern San Diego Community Plan**, our project will increase opportunities for public enjoyment of open space by improving trails through the canyons.[6] This local plan builds on **San Diego's General Plan**, which calls for creating walkable communities where walking and biking are viable travel options. [7] The General Plan recommends providing public access through multi-use trails in urban canyons, and using best practices for erosion control, water and energy conservation, safety, and low-maintenance native plantings. We will also contribute to the goals of the **Multiple Species Conservation Plan** by protecting and enhancing habitat for the California gnatcatcher and coastal cactus wren.[8] Finally, our project will help meet goals listed in the **Euclid + Market Land Use and Mobility Plan**, such as improving canyon trails for passive recreation, establishing a multi-modal mobility system that includes trails for transportation, and connecting public facilities like Malcolm X Library to existing open space.[9] Much of the qualifying urban area shown on the housing density map provided for this application falls within the Euclid + Market plan area, and the project's close proximity to this dense urban area will allow residents to access and enjoy the project easily.

6. Describe how your project will help meet California's GHG emission reduction targets.

By improving the availability of safe, convenient trails, our project will encourage pedestrians to use the canyons not only for recreational hiking but for easy ways to access neighborhood amenities like schools, shopping, and public facilities. This will help reduce GHG emissions by lowering the number of vehicle trips needed and vehicle miles traveled. In addition to encouraging "active transportation" through the canyons, residents can use the trails to access the Euclid Avenue Transit Center's bus lines and trolley (light rail) services to travel to a broader range of destinations, which will result in lower overall GHG emissions compared to driving to these destinations. Furthermore, while habitat enhancement will not directly prevent GHGs from being emitted, the vegetation planted in the 20-acre enhancement area will help remove and sequester CO_2 from the air.

7. How did you determine the impacts of your project on GHG emissions?

According to the Rails-to-Trails Conservancy, despite about half of all vehicle trips in the US being three miles or less, 78% of these trips are taken in cars. [10] Our trail improvements will put many popular local destinations within easy walking distance, providing an appealing alternative to driving. The EPA estimates the annual GHG emissions from a passenger vehicle to be around 5.48 metric tons when traveling an average of 12,000 miles per year.[11] This means that for each three-mile trip during which a person chooses to walk or bike instead of driving, emissions will be reduced by about 3.02 lbs. of CO_2-equivalent.

8. Are there available green space or vegetation assessments in your community?

The nonprofit American Forests examined land use in San Diego and found that within the Encanto Planning Area, where our project is located, 51% of the land is covered with impervious surfaces compared to the citywide average of 39%.[12] They further noted that between 1985 and 2002, San Diego lost 7% of its shrub lands, including important but uncommon habitats like coastal sage scrub and maritime succulent scrub. These trends make greening projects especially critical in our area. The Encanto Neighborhoods

[6] City of San Diego Planning Department (2009). Southeastern San Diego Community Plan.
[7] City of San Diego (2008). General Plan Mobility Element and 2010 Amendments to Recreation Element.
[8] City of San Diego Community and Economic Development Department (1997). Multiple Species Conservation Program: City of San Diego MSCP Subarea Plan.
[9] City of San Diego (2013). Euclid + Market Land Use and Mobility Plan.
[10] Rails-to-Trails Conservancy (2008). Active Transportation for America.
[11] US Environmental Protection Agency (2005). Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle.
[12] American Forests (2003). Urban Ecosystem Analysis, San Diego, CA: Calculating the value of nature.

Community Plan Update analyzes open space and canopy coverage, recommending preservation of existing habitat while supporting a well-connected system of trails for non-motorized use.[13]

Urban Greening Priorities

Interagency Cooperation and Integration/Collaboration

1. Describe partnerships with other entities and their roles in the project.

Urban Corps is partnering with **Groundwork San Diego-Chollas Creek**, a local nonprofit dedicated to benefitting the environment and communities in the Chollas Creek watershed. Groundwork will be working on project design, community outreach, and coordinating the ongoing stewardship program for habitat enhancement and maintenance. This will build on previous work they have done in the canyon complex including vegetation mapping and running volunteer programs.

We are working closely with the **City of San Diego** Park & Recreation Department's Open Space Division and Transportation & Stormwater Department's Street Division for advice and consultation on project design and permitting. Open Space Division will provide input on restoration ecology, trail alignments, and observed visitor use to help guide the design process. Street Division will assist with the installation of the wayfinding signage in the street rights-of-way. The City has also provided a commitment letter for long-term maintenance of the improvements to City-owned property.

Other major collaborators and supporters include the **US Fish & Wildlife Service**, which will provide technical assistance with biology and permitting, and the **Encanto Community Planning Group**, which will provide a public forum for project design, outreach, and volunteer recruitment.

2. What steps have been taken to foster interagency relationships and blend jurisdictional responsibilities?

Our project design process has fostered interagency relationships by bringing stakeholder agencies together to discuss plans, forecast potential impacts, and identify opportunities for collaboration. The project will require permits and approvals from multiple entities at the City of San Diego, such as Open Space Division and Street Division. By bringing these partners in at an early stage to understand the project as a whole, we can help blend jurisdictional responsibilities. Similarly, we have been consulting with the US Fish & Wildlife Service and the City's Multiple Habitat Conservation Program staff to identify best practices for habitat management, and we intend to continue this partnership throughout the grant period and beyond.

3. Describe community involvement and support for the project.

Previous planning and outreach work in the project area has shown support for restoration and trail improvements. The community has shown support through the attached letters of commitment from the Encanto Neighborhood Planning Group, San Ysidro Health Center, local schools, and others. A major component of the project is the Canyon Stewardship and Outreach Program, which will involve six neighborhood workshops, four Community Planning Group presentations, and three school assemblies. At these events, the community will have the opportunity to get involved in project design, provide feedback on proposed plans, and join volunteer efforts for project implementation.

4. How will the project increase community interaction and cooperation?

Community members will be able to interact during the project's design, implementation, and operation phases. Residents will help with project design during the workshops and meetings mentioned previously. There will also be opportunities for the community to volunteer to assist with enhancing canyon habitat, which will help them get to know their local flora and fauna, benefit the environment, and meet their neighbors. Volunteer events will educate the local population about the need for restoration, benefits to water and air quality, health improvements from hiking and outdoor activities, and sensitive species sharing

[13] Dyett & Bhatia (2013). Encanto Neighborhoods Community Plan Update: Existing Conditions Report for City of San Diego.

the canyons. Once the project is operational with safe, convenient trails, we expect that the community will have even more opportunities to meet and interact while using the trails for recreation and local travel. Having worked on both planning and implementation, we anticipate that the community pride in these open space resources will result in continued cooperation in keeping the project area clean and well-maintained.

Use of Existing Public Lands and Facilitating Use of Public Resources and Investments

1. Is this project an acquisition?

No, this project is not an acquisition.

2. What other private and/or non-profit financial resources have been obtained for this project?

Our partner, Groundwork San Diego-Chollas Creek, is contributing $30,000 of in-kind services including volunteer labor and plant propagation. They are also committing $100,000 of their Transnet habitat conservation grant for professional work and reporting, including maintenance of habitat enhancement areas and monitoring of sensitive species. UCO has also identified $30,360 of in-kind match in the form of volunteer hours for community service volunteer events and safety gear.

Project is Proposed by an Economically Disadvantaged Community

1. Identify where the project will be located in relationship to the economically disadvantaged community.

The project spans several disadvantaged and severely disadvantaged communities. According to the attached printout from the California State Parks Community Fact Finder, the median household income (MHI) within a 0.5-mile radius of the southwest portion of the project area is only $31,696. This is less than 60% of the statewide annual MHI ($35,956), making the community "severely disadvantaged" and creating economic hardships in many homes. Other locations in and adjacent to the project area are similarly disadvantaged. The project area will be accessible from multiple neighborhoods due to the trailheads and access points developed throughout the canyon system as well as the wayfinding signage installed along local streets. The project is served by public transportation including local bus lines and two trolley stops. The Euclid Avenue Transit Center, directly adjacent to the project site, serves eight bus lines. Residents may use the canyon trail system to access the transit center and points beyond, and visitors to the community will also be able to locate the trails using the wayfinding signage near the transit center.

2. Identify how the project will expand acreage and/or access to green space in the economically disadvantaged community.

The project area consists of existing public open space lands owned by the City of San Diego. The public is currently able to access these lands, but access is limited due to unsafe trails. The trails often traverse steep, slippery canyon slopes, and redundant parallel trails show where users have attempted to find alternative safer routes. Our project would expand access to the canyon green space by installing proper trail tread surfacing, erosion control measures, and stairs for accessing steep areas safely. The project will get the local community involved in project design, creating a two-way dialogue about what is best for the canyon and neighborhoods. Residents will become familiar with the improved trails, their destinations, and the benefits of walking, encouraging use of the open space amenities. Because the project area is within walking distance of several low-income neighborhoods, is well-served by mass transit, and is free to the public, economic status will not be a barrier to anyone wishing to enjoy the canyons and trails.

3. Discuss how the economically disadvantaged community has been and will continue to be engaged and participatory in the development and implementation of the project.

The outreach conducted previously, as well as canyon stewardship outreach and activities undertaken for the project, have been and will continue to be open to all members of the community, encompassing a wide variety of economic and social backgrounds. The neighborhood workshops, well-attended Community Planning Group meetings, and volunteer events will create opportunities for the economically disadvantaged community to participate in the project's design and implementation. The goal is to empower the local community to feel pride and ownership in their urban green space. The role of the public

is critical to this inclusive, open planning process. Furthermore, the main source of project labor will be disadvantaged local youth hired to carry out on-the-ground trail and habitat enhancement activities. These Corpsmembers will participate in implementation of the project, learning about the benefits of conservation and the rewards of giving back to their community.

Program Objectives

Improves Public/Community Health

1. Indicate which of the following apply to the project and explain how the selected benefits will be achieved:

Improved mental health (social networking, overall wellbeing): The project will provide direct, physical access to natural open space, which is known to have a "restorative" effect, benefitting mental health by helping people relax and respond better to the challenges and stresses of daily life.[14] The trail network will also provide a venue for positive socialization with neighbors, improving wellbeing.

Increased physical activity (effects on obesity, diabetes, heart disease, etc.): Our project will improve pedestrian connections for everyday use as well as creating safe, inviting trails for hiking and jogging for recreation and health. Increased physical activity has shown clear benefits for maintaining and improving health. Public input received so far regarding trail improvements has shown that children are an important user group in the canyons, both for recreation and travel to school and other destinations. By making the canyons safer for children, we can encourage more participation in outdoor activities and walking for health at an earlier age.

Decreased pollen and other allergens (allergy or asthma contributors): The project's habitat enhancement component will involve removing acacia, non-native grasses, and other invasive plants from the canyons. Wind-pollinated plants, such as grasses, tend to produce copious amounts of pollen which can trigger allergies and asthma. We will be removing these plants and replacing them with native cacti and sage scrub, which are typically pollinated by insects and birds and do not contribute large amounts of pollen to the surrounding area.

Reduced risk of skin cancers: Not applicable. The native vegetation in the canyon habitat we are working to enhance is typically composed of shrubs and smaller plants, rather than large shade-providing trees, due to local climate and soil conditions.

Increased access to locally grown/sustainable food sources: Not applicable.

Increased access to nature: The project will promote public enjoyment of natural green space through passive recreation and use of trails for transportation. The more people come to know and love their canyons, the more they will appreciate the benefits of these open space resources and work together to conserve them. The wayfinding signage installed on streets in the vicinity of the project area will raise public awareness of the nearby trails, encouraging people to seek out these alternative natural pathways through their community.

Other co-benefits to public health: By improving 3.3 miles of trails, we will help increase safe, active transportation for everyone from the casual birdwatcher to families traveling to the library or a local school. Users will benefit from the physical activity as well as the reduced vehicle exhaust emissions that come from taking a trip on foot rather than by car. The project serves a high density population, with even higher densities being discussed in the current community plan update. Finally, the project will directly benefit local disadvantaged youth through Urban Corps' job experience and education programs. This project will give 20 local youth the chance to earn a high school diploma while gaining tangible, transferable job skills through our work programs. Corpsmembers from the local area will be employed to carry out project activities from building stairs to planting cacti. Our Corps-to-Career department helps graduating

[14] T. Sugiyama et al. (2008). Associations of neighborhood greenness with physical and mental health. *Journal of Epidemiology and Community Health* 62:e9; doi 10.1136/jech.2007.064287

Corpsmembers translate their skills and interests into job and college placements for a bright future. Corpsmembers will also learn more about caring for the local environment and will be able to carry that spirit of stewardship with them and spread that awareness throughout their neighborhoods.

2. Identify specific strategies to ensure that economically disadvantaged communities will realize these health benefits.

The project area is located in the midst of several economically disadvantaged communities, so the primary users are anticipated to be residents of these low-income areas. We know from current trail use (and unapproved social trail construction) that residents use the canyons as shortcuts to local destinations, and we expect use to expand once the trails are made safer. We also intend to use the outreach component of our project to keep up a two-way exchange of information – residents will be able to provide input on project design, and we will also have a forum for educating the community about the benefits of the project, from improved public health to enhancing habitat for threatened species.

Innovative and/or Creative

1. Describe how the project is innovative and creative.

UCO uses a creative approach to habitat restoration and open space improvements through providing paid environmental work experience and high school education to local disadvantaged youth. This is not a side benefit, but rather an integral part of our mission to support both youth and the environment. UCO actively engages young adults in conservation and community improvements while linking the job program with their high school studies. The project's innovative partnership model brings together community-based organizations like UCO and Groundwork to work on City-owned property for the betterment of the people and ecosystems of Encanto.

2. Discuss how this project required an approach that is "out of the box" (paradigm shift).

The major paradigm shift at work in our project is seeing disconnected young people as part of the solution. Youth are considered to be "disconnected" when they are not in school or employed. Communities often consider these youth to be problematic, potential trouble-makers and don't have a clear picture of how to reengage them positively. UCO's transformational program seeks to support these young adults in overcoming the challenges that prevented them from thriving in a traditional high school environment. Nearly 100% of our Corpsmembers meet Federal Poverty levels, and over 80% have additional barriers to employment such as lack of transportation, need for child-care, language barriers, homelessness, previous incarceration, and gang involvement. Dr. Jayne Smith, former Program Manager for Urban Corps' Assessment and Counseling Clinic, focused her dissertation for her doctoral program on the process of change that Corpsmembers experience from the point of dropping out of high school to up to 3 years post-graduation from Urban Corps: her work showed clearly that participation in the program lowered the incidence of gang involvement and recidivism. Our projects place participants in positive working roles in their own neighborhoods, and youth in the program feel empowered by seeing the difference they can make. In turn, the community can see that given support and opportunity, even previously disconnected young people can make valuable contributions to solving community problems.

3. Describe how this project might be used as a model or easily transfer to other communities, or explain the unique conditions in the community that make this project a good fit.

There are 13 local conservation corps in California in addition to the state-run California Conservation Corps, a department of the California Natural Resources Agency. Our Neighborhood Canyons project includes many features that could be replicated by other corps around the state, such as involving youth in canyon habitat restoration, collaborating with other nonprofits, and soliciting community feedback on open space improvements. We strongly believe that extensive dialogue among stakeholders – from USFWS biologists to local hikers to City of San Diego Park Rangers to children walking to school – is the best way to develop a project that meets the needs of the landowner, residents, visitors, and ecosystems of our

canyons. We hope that by combining habitat enhancement with trail improvements, we can show that conserving habitat does not mean fencing out all human activity, and inviting the public to hike and explore the canyons does not mean trampling all the native vegetation. Directing use onto designated, well-defined trails will diminish habitat fragmentation and degradation while at the same time creating a more welcoming atmosphere for trail users, encouraging them to learn about and cherish the environment.

4. Identify unique design parameters, performance measures, or potential outcomes planned for the project.
The Neighborhood Canyons project is designed to enhance uncommon habitat types while increasing public access to green space. For example, maritime succulent scrub and coastal sage scrub provide habitat for the California gnatcatcher and coastal cactus wren, but these ecosystems are rare and often fragmented. In particular, maritime succulent scrub is considered very threatened with fewer than six viable occurrences in the state of California.[15] San Diego has met 61% of its coastal sage scrub and 87% of its maritime succulent scrub conservation targets under the Multiple Species Conservation Program, but protecting this land from development must be combined with effective restoration to ensure the continued existence of high-quality habitat. [16] Our project is designed to facilitate communication with biologists to ensure adequate protection for sensitive species and habitats, with positive outcomes expected for wildlife, plant communities, and people.

Communities More Vulnerable to Climate Change

1. Is the project proposed in an area that is especially vulnerable to climate change, including sea level rise?
The project area is located just over three miles from San Diego Bay and is not considered at risk from the impacts of sea level rise. In general, San Diego is expected to face increased extreme heat events, wildfires, and infrequent but intense storms as a result of climate change. While the Encanto neighborhoods are not predicted to experience these stresses more frequently than other parts of San Diego, it is important to recognize that social and economic factors can make responding to these challenges more difficult.[17] In particular, heat waves are likely to have the most impact on populations in the project area. Encanto is particularly vulnerable to climate change because of its high proportion of households in poverty, households with no access to vehicles, and lack of air conditioning or insufficient income to afford using their air conditioning during a heat wave.

2. What effects of climate change are likely to impact the community (e.g. physical, ecological, economic)?
Ecologically, the project area contains habitat that is particularly vulnerable to climate change, such as coastal sage scrub and maritime succulent scrub that provide habitat for threatened and sensitive bird species. Cacti and other succulents often grow slowly, leaving these ecosystems more susceptible to invasion by fast-growing non-native grasses. Within Encanto's human communities, extreme heat events are likely to have the largest impact. With over half of the Encanto Planning Area covered by impervious surfaces, the urban heat island effect can be very intense, and economically disadvantaged residents have fewer resources to cope with extreme heat.

3. Does the project include elements that respond directly to the negative impacts of climate change? How do the project elements mitigate the climate change effect through the project design?
The project's restoration component will increase vegetative cover in eroded areas, helping to counteract the urban heat island effect through the cooling influence of increased evapotranspiration. Furthermore, the project will enhance rare and sensitive habitats, increasing their acreage to provide a larger buffer against climate impacts. Wildfire risk will also be reduced by replacing highly flammable invasive plants, such as

[15] L.A. Hierl et al. (2008). Assessing and prioritizing ecological communities for monitoring in a regional habitat conservation plan. *Environmental Management* 42:165-179.
[16] Ibid.
[17] Pacific Institute (2012). Social Vulnerability to Climate Change in California. A White Paper from the California Energy Commission's Climate Change Center. CEC-500-2012-013.

non-native grasses, with less flammable natives such as succulents. The outreach component will help the community build the social capital necessary to direct their own responses to climate change issues as they arise. Through involving the public in project design, we expect to expand their familiarity and enthusiasm for local planning processes, which can carry over to addressing other emerging challenges. Frequent interaction with other residents on the improved trail system will also help people build strong social ties. This type of support network enhances community resilience to environmental pressures; for example, people could spread messages to their neighbors about cooling center locations during a heat wave.

4. **Does the project include elements that can themselves be impacted by climate change? Are the project elements specifically chosen to be adaptable to climate change including sea level rise?**

The plant palette for the project will consist of drought-tolerant plants which are well-adapted to our semi-arid climate, and will be most likely to tolerate the higher temperatures and more variable precipitation predicted by climate change models. Our project site is not threatened by rising sea levels.

Projects that Address Environmental Justice Issues

1. **Describe how the project addresses or reaches out to communities with less canopy coverage than surrounding communities.**

Only about 7% of the Encanto planning area is covered by tree canopy.[18] Street trees are scattered unevenly throughout the area. Additional trees are located in local parks and open space areas. While this figure seems low, and there is certainly room for improvement, it is also important to note that the landscape here is naturally more arid, and more shrubs and small plants thrive in areas where trees would require irrigation to survive. Plants native to the area are well-adapted to seasonal drought conditions. Our project design may incorporate some trees as appropriate, such as at trailheads. These trees, together with smaller vegetation, will play a role in mitigating the urban heat island effect in the area.

2. **Does the project address or reach out to communities with more air and/or water pollution than surrounding communities?**

The Neighborhood Canyons project is located in the Chollas Creek watershed, a highly urbanized watershed with some of the highest levels of water pollution in San Diego. The California Regional Water Quality Control Board has identified Chollas Creek as an impaired water body under Section 303(d) of the Clean Water Act. Approximately 75% of the watershed is developed with residential areas, roads, and highway, creating large impervious surfaces which shed polluted urban runoff into the canyons and creek during storm events. TMDLs for dissolved copper, lead, and zinc have been approved by EPA, and a TMDL for bacteria is currently being finalized. In addition, other measures of pollution such as total suspended sediment, turbidity, surfactants (methylene blue active substances), biological and chemical oxygen demand, and trash, have been identified as exceeding water quality objectives. Pyrethroid pesticides, plastics, and polystyrene are conveyed through the waterways into San Diego Bay and out to the Pacific Ocean. Large portions of the creek bed are dominated by invasive plants, the presence of illegally dumped trash and large refuse items, and generally degraded habitat. The project's enhanced stewardship effort will control the incidence of homeless encampments and illegal dumping while enhancing filtration urban runoff containing bacteria and pollutants subject to TMDLs before it reaches the creek. Habitat enhancement efforts will reduce creek nonnative infestations and control erosion, improving water quality.

Air pollution in the Chollas Creek watershed has been caused largely by the construction of the freeways that dissect the neighborhoods. Hospitalization and emergency room discharge rates for asthma (triggered

[18] Dyett & Bhatia (2013). Encanto Neighborhoods Community Plan Update: Existing Conditions Report for the City of San Diego.

by air pollution) are up to three times higher for the project area than for other parts of San Diego County.[19] The death rate from asthma in the project area is more than double that of San Diego County and much higher than the state or national rate. Park deficiencies in the watershed and the absence of creek and canyon trails restrict non-motorized and passive recreation activities, contributing to automobile use and air pollution. Our project will help reduce this pollution source by providing viable alternatives to driving for accessing neighborhood facilities, and increasing tree and plant coverage.

3. Will the project offer a community greater access to parks, green spaces, and/or trails that has had lesser access to these amenities in the past?

While San Diego's General Plan Recreation Element calls for 2.8 acres of usable, population-based park land per 1,000 residents, the Encanto Planning Area has only about 1.3 acres per 1,000 residents.[20] The neighborhood park closest to our project location is the 9.6-acre Emerald Hills Park which is adjacent to Emerald Hills Canyon and near Radio Canyon, both City-owned open spaces. Emerald Hills Park contains active recreation facilities such as tennis and basketball courts, while the canyons offer passive recreation opportunities like hiking and bird watching. While our project would not create new park land, the trail improvements would significantly enrich public access to over 140 acres of open space throughout the three canyon areas.

4. How does the project contribute to fairness and equity in the community?

Our project contributes to equitable access to open space, making it easier and safer for residents to enjoy the natural amenities near their neighborhoods. Community input will be a vital part of project planning and design, ensuring that all stakeholders' voices will be heard. There will also be opportunities for interested members of the public to participate in project implementation through volunteer canyon stewardship activities. The project will strive to create a fair balance between competing needs, such as balancing typical car-oriented transport with the needs of pedestrians, and considering the need for preservation of natural habitat along with people's needs for transportation and recreation.

Project Readiness

1. Identify and describe the steps to be taken immediately following the grant award.

Our design plans are in the preliminary phase, and we are focusing on building strong partnerships with community-based organizations, the City of San Diego, and agencies such as US Fish & Wildlife which will play a role in project permitting. Upon award of grant funds, we will begin conducting outreach at neighborhood workshops to solicit community input about project design. We will use community feedback, input from the City as landowner, and technical reports from biologists and other consultants to develop precise trail alignments, plant palettes, and other project design elements. With a solid plan in place, we will seek an access-granting License Agreement from the City, and apply for a Site Development Permit for the engineered trail improvements such as stairs and puncheon bridges. As Lead Agency, the City of San Diego will initiate formal CEQA review with an Initial Study based on the attached CEQA checklist to ensure minimization of impacts to biological, archaeological, and other resources. We anticipate that this process will result in the issuance of a Mitigated Negative Declaration. Once the CEQA process is complete and permits have been issued, we will begin implementation of the trail improvements and habitat enhancement. We will continue to keep the public updated and involved throughout this phase with meetings and volunteer opportunities.

[19] County of San Diego Health and Human Services Agency (2010). Community Health Statistics: Asthma Hospitalization Rates 2008 by Subregional Area in San Diego County.

[20] Dyett & Bhatia (2013). Encanto Neighborhoods Community Plan Update: Existing Conditions Report for the City of San Diego.

2. **Have performance measure standards been established to quantify the success of the project? If not, what steps are being taken to develop standards prior to the completion of the project?**

Trails and engineered structures will be constructed to meet City of San Diego standards for open space trails. For example, trails will be four feet wide and have tread surfaces (natural, decomposed granite) appropriate to the terrain. We will follow the City's engineering standards and performance measures regarding stair locations based on soils and slope. We will also comply with US Fish and Wildlife and Army Corps of Engineers standards; for example, we will seek to avoid impacts to wetlands through installing puncheon bridges over crossings of intermittent streams. Performance measure standards for habitat enhancement will be developed in consultation with a biologist and the City of San Diego as part of the process for obtaining a License Agreement. Standards will adhere to the City of San Diego's Landscape Standards in the Land Development Code. We will take local ecology and plant physiology into account to design standards that will show clear positive impact and be realistic and achievable.

3. **Provide the status of each of the following.**

Preliminary design plans including plant palettes: Draft resource management plans have been created for Encanto and Radio Canyons, and the plan for Emerald Hills Canyon will be developed next. Our collaboration with biologists and the US Fish and Wildlife Service will help us create a clear, coordinated project plan with specific plant palettes for each of the canyons. We have strong City buy-in because we are helping to achieve their Open Space goals through this project.

CEQA compliance: Our preliminary discussions with biologists and City staff indicate that the project will most likely require a Mitigated Negative Declaration. Our partner biologist will be preparing a biological resource report for use in this process. A draft CEQA checklist is attached to this application. This checklist was completed by UCO and reviewed by City staff because of our strong cooperative relationship. A full Initial Study will be undertaken by the Lead Agency, City of San Diego, upon award of grant funds.

Commitments from project partners including land access, easements, encumbrances, and operations & maintenance agreements: The City of San Diego has provided a letter of commitment showing their intent to grant access to the land for the purpose of completing this project. They have stated their commitment to operating and maintaining the project for 20 years and beyond using their existing open space park maintenance activities. UCO and Groundwork are committed to assisting the City in maintaining the project as needed.

For acquisition projects: detailed appraisal and/or comparable sales data; preliminary title report; negotiations with a willing seller: Not applicable to this project.

4. **What other factors may affect the project's timeline and completion? How will these factors be addressed?**

Permitting and CEQA compliance could affect the project's timeline. While preliminary discussions with City staff suggest that this process can be completed within 8-10 months, there could be a delay if technical studies reveal previously unknown resources requiring protection. We are prepared to work with the City of San Diego, US Fish and Wildlife Service, and other agencies to resolve any resource or permitting issues that arise during the project. To ensure efficient use of time, money, and staff resources, we have already begun meeting with City and USFWS staff to discuss potential impacts, mitigation, and permits needed in advance of full project approval and funding. This has helped us refine the budget from our concept proposal and develop a realistic budget and plan which should allow us to complete the project on schedule. For example, our revised budget shows more complete costs for environmental compliance documentation, biological and archaeological monitoring during construction, and added 10% contingency.

5. **List all other sources of funding and amounts already committed to the project and expected timing of all funds.**

Our partner Groundwork San Diego is committing $100,000 of their existing Transnet habitat restoration maintenance grant towards this project. This grant funding will be available through September 2015 and can be used for professional work, reporting, and restoration area maintenance, such as weeding and

herbicide application. They are also donating $30,000 worth of in-kind services over the course of the project, including volunteer coordination and plant propagation. Urban Corps is donating $30,360 worth of in-kind volunteer labor and personal protective equipment.

Organizational capacity

1. What is your organization's experience in completing this type or similar project?

Urban Corps has extensive experience with trail rehabilitation and habitat enhancement. As a local conservation corps formed in 1989, we have been providing disadvantaged youth with job opportunities on environmental projects similar to this one throughout our history. A recent example is our highly successful partnership with the City of San Diego staff at Mission Trails Regional Park to refurbish 1.5 miles of trail on Cowles Mountain in early 2013. Under the direction of the Park Rangers, UCO crews performed trail tread rehabilitation and sloping, constructed rock walls and steps, installed fencing and erosion control measures, and implemented social trail closure and brushing.

In 2009-2010, UCO partnered with Groundwork on "Operation Save the Cactus Wren," a habitat enhancement project in Radio Canyon funded by Proposition 84 through the California Conservation Corps-Local Conservation Corps grant program. Our current project will build upon the success of this smaller project in which we removed two acres of invasive acacia to allow revegetation with native habitat. Through the previous project, we gained experience in enhancing habitat specifically to benefit the California gnatcatcher and coastal cactus wren as well as experience managing Proposition 84 funds. We will be able to use this expertise to plan and implement our proposed project efficiently.

In addition to our habitat restoration experience, UCO serves as habitat manager at five open space preserves located in Rancho Santa Fe, Santee, Carlsbad, Oceanside, and San Marcos. We actively collaborate with and meet jurisdictional requirements of the US Fish and Wildlife Service, California Department of Fish and Wildlife, Army Corps of Engineers, and others involved in open space management. We have an in-house licensed landscape architect, hold a C-27 Landscape Contractor license, and work to plan, implement, and monitor the preservation of sensitive plant and wildlife habitats.

Groundwork San Diego-Chollas Creek was formed to implement the City's Chollas Creek Enhancement Program, and has been working to restore the project canyons since 2009. Their work has included habitat restoration to benefit the coastal cactus wren and coastal California gnatcatcher. They have successfully conducted outreach and volunteer programs for all ages from elementary school to adults. Their involvement in this project has allowed us to use canyon-specific, biologically sound resource management plans to prioritize our habitat restoration work in the project area.

2. Explain how you plan to keep the community informed and involved in the project.

As mentioned previously, community involvement is a valuable component of the Neighborhood Canyons project. Through our Canyon Stewardship and Outreach Program, our partner Groundwork will conduct outreach at six neighborhood workshops, four Community Planning Group presentations, and three school assemblies. These events will help us involve the community in project design, keep people updated about progress, and provide a platform for interested residents to join volunteer teams supporting project implementation. Volunteer opportunities will range from canyon clean-ups removing trash and debris to propagating native plants for use in the restoration areas. We will strive to integrate community feedback into project planning along with the needs of sensitive species and jurisdictional requirements.

3. Who will perform long-term maintenance? Describe their experience in maintaining this type of project. How will ongoing maintenance be funded beyond the grant timeline?

Long-term maintenance will be provided by the City of San Diego because the project is located on City-owned Open Space property. The project area will be maintained through a combination of City Park and Recreation Department programs, including the Open Space Canyons Ranger Program, Multiple Habitat

Planning Area, and other Open Space, Right of Way, park and canyon maintenance programs. The City's Park and Recreation Department has experience managing and maintaining nearly 40,000 acres of developed and undeveloped open space and more than 340 parks. The City has provided a letter of commitment stating their intention to continue providing existing levels of service for operating and maintaining the project area, budget permitting.

As the landowner, the City will own all facilities improved during the proposed project and will be responsible for maintaining them beyond the project period. Nonetheless, UCO fully intends to continue our strong partnership with the City, including assistance with stewardship and maintenance of habitat areas and trails. Through our canyon stewardship programs, UCO and Groundwork have worked to benefit habitat in the project area in the past, and we expect to continue doing so in the future. If the City's budget is inadequate to maintain the project, UCO and Groundwork will work to provide the City with volunteer resources and additional grant funding to help the City fulfill its maintenance obligations. The community involvement and pride built up during the project planning and implementation process will be invaluable in ensuring that the project is maintained for public enjoyment and habitat preservation.

4. Please describe how your proposed project will be sustained. Who or what institutions will take responsibility for plantings?

The City of San Diego has maintenance programs for open space canyons which will be used to sustain the project throughout the 20-year maintenance period and beyond, budget permitting. Urban Corps intends to continue our partnership with the City, including finding or providing additional resources during budget shortfalls. During the initial plant establishment phase, UCO will be responsible for plantings and will ensure their success through irrigation and monitoring. Following the grant period, irrigation will be removed, and the plantings will become the responsibility of the City of San Diego. UCO and Groundwork's community-based stewardship programs have been successful in maintaining similar restoration areas in the past, and we believe that with the community involvement and support generated for this project, volunteer stewardship activities will make valuable contributions and help to maintain the project area.

5. How will the project be protected from vandalism and deterioration?

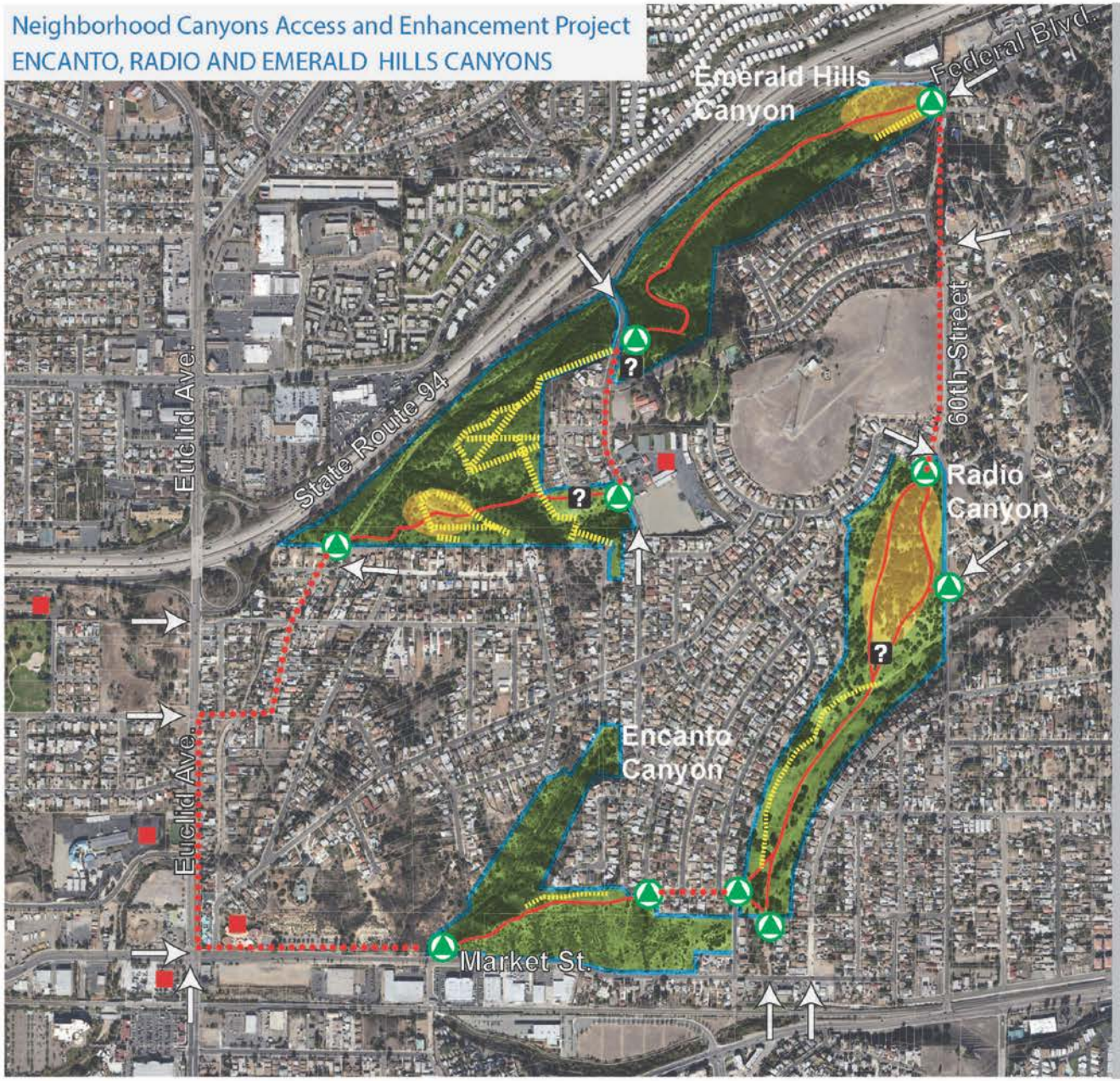
The project will be inspected and maintained throughout the grant period by UCO and during the 20-year maintenance period by the City of San Diego. Native vegetation will be maintained until it is well established and can survive on its own. Weeds will be managed and vegetation along trails will be trimmed to ensure that the trails remain accessible. Stairs and bridges will be repaired as needed. Graffiti will be identified and painted out by the City of San Diego and UCO graffiti abatement programs.

6. If the project goes over budget, explain your contingency plans to cover the excess costs.

Our budget has been revised from our concept proposal to include a 10% contingency allocation which is expected to be adequate to cover any unanticipated costs. In the event that this amount is insufficient, we will seek additional funds from organizations with which we have strong relationships, such as the San Diego Foundation and the US Fish and Wildlife Service's Partners for Fish and Wildlife Program.

4. Site Plan

Neighborhood Canyons Access and Enhancement Project
ENCANTO, RADIO AND EMERALD HILLS CANYONS



PROPOSED IMPROVEMENTS

1. Public Access Points
(11 Qty.) Proposed Signage and Low Impact Development Improvements.

2. Open space Trail
(3 Miles) Improved Trail tread and demarcation.

3. Urban Trail
(3 Miles) Way-finding signage in R.O.W.

4. Trail Closure
Install fencing and native plants to direct trail use onto designated trails.

5. Kiosks
(3) Educational Signage

6. Habitat Enhancement
(20 Acres) Remove Invasive Plants and Establish new Native Plantings.

7. Public Schools, Transit Center and Library
Johnson Elementary, Horton Elementary, Millennial Tech Jr. High, Malcolm X Library, and Euclid Ave. Transit Center.

8. Pedestrian Connection
Surrounding neighborhoods with access to open space improvements.

October 23, 2013
Drawn by: Ty Sterns, ASLA

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Groundwork SAN DIEGO Chollas Creek

URBAN CORPS SAN DIEGO COUNTY
3127 Jefferson Street
San Diego, CA 92110
(619) 235-6884
Certified Conservation Corps and Charter School
Learning, Earning and Conserving Since 1989

5. Plant Palette

Plant Palette

Maritime Succulent Scrub – container plants

Scientific Name	Common Name	Size	# per Acre
Artemisia californica	California sagebrush	1 gallon	150
Eriogonum fasciculatum	California buckwheat	1 gallon	150
Lycium andersonii	Desert thorn	1 gallon	88
Adophia californica	California adolphia	1 gallon	88
Opuntia littoralis	Prickly pear cactus	1 gallon	68
Cylindropuntia prolifera	Chollas cactus	Cuttings or 1 gallon	1700

Maritime Succulent Scrub – seed mix

Scientific Name	Common Name	Bulk Lbs/acre	Minimum Purity/ Germination
Artemisia californica	California sagebrush	3	30/60
Bahiopsis laciniata	San Diego viguiera	2	30/40
Eriogonum fasciculatum	California buckwheat	6	50/10
Eriophyllum confertiflorum	Golden yarrow	2	30/60
Plantago ovata var. *insularis*	Plantain	10	95/90
Salvia mellifera	Black sage	4	80/50
Simmondsia chinensis	Jojoba	4	95/50

Coastal Sage Scrub – container plants

Scientific Name	Common Name	Size	# Per Acre
Artemisia californica	California sagebrush	1 gallon	250
Baccharis sarothroides	Broom baccharis	1 gallon	75
Eriogonum fasciculatum	California buckwheat	1 gallon	250
Rhus integrifolia	Lemonade berry	1 gallon	20
Malosma laurina	Laurel sumac	1 gallon	8
Heteromeles arbutifolia	Toyon	1 gallon	16
Sambucus nigra ssp. *caerulea*	Blue elderberry	1 gallon	8
Opuntia littoralis	Prickly pear cactus	1 gallon	75
Cylindropuntia prolifera	Chollas cactus	Cuttings or 1 gallon	100

Coastal Sage Scrub – seed mix

Scientific Name	Common Name	Lbs/acre	Minimum Purity/ Germination
Acmispon glaber	Deerweed	4	95/80
Artemisia californica	California sagebrush	3	30/60
Bahiopsis laciniata	San Diego viguiera	2	30/40
Encelia californica	California encelia	2	40/60
Eriogonum fasciculatum	California buckwheat	6	50/10
Eriophyllum confertiflorum	Golden yarrow	2	30/60
Isocoma menziesii	Coastal goldenbush	3	10/40
Lupinus bicolor	Miniature lupine	4	98/85
Stipa pulchra	Purple needle grass	4	90/70
Plantago ovata var. *insularis*	Plantain	10	95/90
Salvia apiana	White sage	2	80/30
Salvia mellifera	Black sage	3	80/50
Simmondsia chinensis	Jojoba	4	95/50

NOTE: These are sample plant lists only. A final containerized and seeding planting list will be determined by the consulting biologist upon project initiation and approved by the City of San Diego. Planting lists and densities shown here are based upon known nearby reference sites. Additional reference sites may be added, and sites may be revisited during the spring flowering season and the lists amended accordingly.

6. Cost Estimate

Neighborhood Canyons Access and Enhancement Project

			Unit Price	Unit of Measure	Quantity	Total Amount	SGC Prop 84 Grant	Funding Source 1 - Urban Corps of San Diego County	Funding Source 2 - Groundwork San Diego-Chollas Creek
Task 1	Planning, Pre-Implementation, Non-Construction								
Management, Permits, Design and Government Reviews									
1.1	Project Management		$ 49,500.00	FTE	0.5	$ 24,750.00	$ 24,750.00		
1.2	CEQA Application, review and preparation (Initial Study/MND)		$ 18,000.00	ea	1	$ 18,000.00	$ 18,000.00		
1.3	CAGN & Cactus Wren surveys		$ 10,000.00	ea	1	$ 10,000.00	$ 10,000.00		
1.4	Jurisdictional Wetland Delineation		$ 2,800.00	ea	1	$ 2,800.00	$ 2,800.00		
1.5	Bio Technical Report		$ 7,000.00	ea	1	$ 7,000.00	$ 7,000.00		
1.6	Archaeo/Paleo Survey & report		$ 5,000.00	ea	1	$ 5,000.00	$ 5,000.00		
1.7	0.5' Topo map / Surveying		$ 5,000.00	ea	1	$ 5,000.00	$ 5,000.00		
1.8	Regulatory Permitting and Application Fees		$ 8,000.00	ea	1	$ 8,000.00	$ 8,000.00		
1.10	Annual Reports for Agencies (2)		$ 5,000.00	ea	1	$ 5,000.00	$ 5,000.00		
1.11	Habitat enhancement plan and plant palette		$ 5,000.00	ea	1	$ 5,000.00	$ 5,000.00		
Community Outreach									
1.12	Neighborhood Workshops (6 workshops)		$ 1,200.00	ea	6	$ 7,200.00	$ 7,200.00		
1.13	School Outreach (3 assemblies)		$ 250.00	ea	3	$ 750.00	$ 750.00		
1.14	Planning Group Presentations (4 presentations)		$ 500.00	ea	4	$ 2,000.00	$ 2,000.00		
		12.91%	***of total grant***		***sub total***	***$ 100,500.00***	$ 100,500.00		
Task 2	Canyon Stewardship Program								
Canyon Stewardship Events and Restoration									
2.1	Canyon Stewardship Program Coordination		$ 44,000.00	FTE	0.5	$ 22,000.00	$ 22,000.00		
2.2	Habitat Maintenance grant / Transnet leveraged funds		$ 100,000.00	ea	1	$ 100,000.00			$ 100,000.00
2.3	Volunteer labor and in-kind donations		$ 53,760.00	ea	1	$ 53,760.00		$ 23,760.00	$ 30,000.00
		2.83%	***of total grant***		***sub total***	***$ 175,760.00***	$ 22,000.00	$ 23,760.00	$ 130,000.00
Task 3	Habitat Enhancement								
3.1	Labor - Corpsmember		$ 21,991.20	FTE	10	$ 219,912.00	$ 219,912.00		
3.2	Labor - Supervisor		$ 36,573.60	FTE	1	$ 36,573.60	$ 36,573.60		
3.4	Bio/Archaeo Monitoring during Construction		$ 7,500.00	ea	1	$ 7,500.00	$ 7,500.00		
3.5	Transportation		$ 0.56	mi	6000	$ 3,360.00	$ 3,360.00		
3.6	Personal Protective Equipment		$ 300.00	ea	11	$ 3,300.00		$ 3,300.00	
3.7	Supplies - power tools, hand tools, etc.		$ 3,500.00	ea	1	$ 3,500.00	$ 3,500.00		
3.8	Fuel for Chainsaws / Bobcat		$ 16.00	day	50	$ 800.00	$ 800.00		
3.9	Equipment Use - Chainsaws		$ 3.17	hr	200	$ 634.00	$ 634.00		
3.10	Equipment Use - Bobcat		$ 27.08	hr	40	$ 1,083.20	$ 1,083.20		
3.11	Supplies - Dumpster (green waste)		$ 350.00	ea	30	$ 10,500.00	$ 10,500.00		
3.12	Supplies - Plants, Seed and Mulch		$ 75,000.00	ea	1	$ 75,000.00	$ 75,000.00		
3.13	Supplies - Irrigation and watering		$ 15,000.00	ea	1	$ 15,000.00	$ 15,000.00		
		48.01%	***of total grant***		***sub total***	***$ 377,162.80***	$ 373,862.80	$ 3,300.00	$ -
Task 4	Trail Improvements								
4.1	Labor - Corpsmember		$ 21,991.20	FTE	10	$ 219,912.00	$ 219,912.00		
4.2	Labor - Supervisor		$ 36,573.60	FTE	1	$ 36,573.60	$ 36,573.60		
4.3	Bio/Archaeo Monitoring during Construction		$ 7,500.00	ea	1	$ 7,500.00	$ 7,500.00		
4.4	Transportation		$ 0.56	mi	6000	$ 3,360.00	$ 3,360.00		
4.5	Personal Protective Equipment		$ 300.00	ea	11	$ 3,300.00		$ 3,300.00	
4.6	Supplies - power tools, hand tools, etc.		$ 3,000.00	ea	1	$ 3,000.00	$ 3,000.00		
4.7	Fuel for Bobcat / Powertools		$ 16.00	day	50	$ 800.00	$ 800.00		
4.8	Equipment - Bobcat		$ 27.08	hr	40	$ 1,083.20	$ 1,083.20		
4.9	Supplies - Trail building, fencing, signage, kiosks, wayfinding		$ 10,000.00	ea	1	$ 10,000.00	$ 10,000.00		
4.10	Supplies - Prop. 84 Urban Greening required signage		$ 30.00	ea	3	$ 90.00	$ 90.00		
		36.26%	***of total grant***		***sub total***	***$ 285,618.80***	$ 282,318.80	$ 3,300.00	
					TOTAL	$ 939,041.60	$ 778,681.60	$ 30,360.00	$ 130,000.00
					10% CONTINGENCY		$ 77,868.16		
					TOTAL WITH 10% CONTINGENCY	$ 1,016,909.76	**$ 856,549.76**		

7. Other Sources of Funds

Other Sources of Funds

Urban Corps of San Diego County is providing donated in-kind volunteer services including 960 Corpsmember volunteer labor hours at four community service events, valued at $23,760, and the cost of personal protective equipment, valued at $6,600. These amounts are shown in our cost estimate. The total amount of in-kind services and supplies is $30,360, which is 3% of the total project funding.

Groundwork San Diego-Chollas Creek is committing $100,000 of their Transnet habitat grant as a match. This funding will be used for habitat restoration and maintenance in the project canyons. In addition, Groundwork is committing $30,000 worth of in-kind volunteer labor and donated in-kind services such as stewardship events and restoration. This support is shown in the attached letter of commitment from Groundwork. Overall, Groundwork's support is 13% of the total project funding.

8. Land Acquisitions Form (NOT APPLICABLE)

9. Assessor's Parcel Maps

10. Photographs

Photograph 1: Encanto Canyon, facing southwest. Photo shows steep, unsafe social trail down to Market Street to be realigned and resurfaced. Stars show popular neighborhood destinations accessed by the trail: Euclid Avenue Transit Center on the left and Malcolm X Library on the right.

Photograph 2: Emerald Hills Canyon, facing southwest. Photo shows eroded social trail towards Lenox Drive trail head in red. Redundant social trails will be closed, and bare areas will be revegetated with native plants.

Photograph 3: Radio Canyon, facing north. Photo shows social trail and non-native plants to be removed.

Photograph 4: Radio Canyon, facing north. Photo shows social trail to be refurbished and non-native plants in foreground.

Photograph 5: Emerald Hills Canyon, facing southwest toward bend in the trail up to Bethune Court trail head. Photo shows very steep, eroded trail to be refurbished.

11. Project Timeline

PROJECT TIMELINE

Neighborhood Canyons Access and Enhancement Project

	FY 2014-15				FY 2015-2016				FY 2016-2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Non-Construction (Planning, Permitting, Outreach, etc.)												
Community Outreach												
Technical Studies (biological, archaeological, etc.)												
Final Designs (trail alignments, construction drawings, etc.)												
City of San Diego environmental review process												
License Agreement and Site Development Permit												
Install Prop. 84 Signage												
Habitat Enhancement (20 acres)												
Removing invasive species; native plantings												
Maintenance/plant establishment period												
Trail Refurbishment (3.3 miles)												
Radio Canyon												
Emerald Hills Canyon												
Encanto Canyon												
Trail Amenities and Wayfinding Signage												
Kiosks along with trail improvements												
Install wayfinding signage in street R.O.W.												
Canyon Stewardship Program												
Opportunities for volunteer involvement												

12. Property Data Sheet

APPENDIX N - PROPERTY DATA SHEET

Complete the Property Data Sheet, listing all parcels included in the proposed project, as well as the owner(s) of each parcel. Indicate and attach all required documents* including any clarifying comments below. Attach additional sheets if necessary.

No	Owner Name	Assessor Parcel Number(s)	Acreage	If parcel(s) owned by applicant(s), indicate type of ownership			For all parcels, indicate *document used to demonstrate ownership and attach a copy of each document-clearly labeled with the APN-to this document	If parcel(s) not owned by applicant(s) indicate *document verifying long-term Permission to Develop and maintain **and attach**					Entity to perform O&M	# of years O&M to be performed
				Fee Simple	Easement	Other (describe)	Proof of Ownership (tax bill, grant deed, etc.)	O&M Agreement	Lease	JPA	Letter from Owner	Other (describe)		
1	City of San Diego	54233316	29.17				Grant deed 84-143015				X	ROE	City of San Diego	20
2	City of San Diego	54233320	1.17				Grant deed 84-143015				X	ROE	City of San Diego	20
3	City of San Diego	54233336	1.06				Grant deed 71-136149				X	ROE	City of San Diego	20
4	City of San Diego	54233337	3.57				Grant deed 84-143015				X	ROE	City of San Diego	20
5	City of San Diego	54233338	4.04				Grant deed 84-143015				X	ROE	City of San Diego	20
6	City of San Diego	54233339	2.10				Grant deed 84-143015				X	ROE	City of San Diego	20
7	City of San Diego	54246120	0.32				Grant deed 88-179007				X	ROE	City of San Diego	20
8	City of San Diego	54246121	0.33				Grant deed 88-550645				X	ROE	City of San Diego	20
9	City of San Diego	54246122	0.34				Grant deed 88-019313				X	ROE	City of San Diego	20
10	City of San Diego	54246123	0.35				Grant deed 88-019313				X	ROE	City of San Diego	20

Comments:
Page 1 of 3. 25 total parcels. Proof of ownership documents are listed by document number on recorded land documents as attached. Attached letter of intent is the document demonstrating permission to develop/maintain area, but long-term O&M legal instrument will be a Right of Entry (ROE) permit or License Agreement.

Total Number of Parcels: 25 **Total Number of Acres:** 129.17

APPENDIX N - PROPERTY DATA SHEET

Complete the Property Data Sheet, listing all parcels included in the proposed project, as well as the owner(s) of each parcel. Indicate and attach all required documents* including any clarifying comments below. Attach additional sheets if necessary.

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				Fee Simple	Easement	Other (describe)	Proof of Ownership (tax bill, grant deed, etc.)	O&M Agreement	Lease	JPA	Letter from Owner	Other (describe)		
1	City of San Diego	54246124	0.42				Grant deed 87-716241				X	ROE	City of San Diego	20
2	City of San Diego	54246125	0.47				Grant deed 88-550645				X	ROE	City of San Diego	20
3	City of San Diego	54265024	5.15				Grant deed 80-179283				X	ROE	City of San Diego	20
4	City of San Diego	54310117	0.12				Grant deed 89-316712				X	ROE	City of San Diego	20
5	City of San Diego	54310118	0.83				Grant deed 89-316712				X	ROE	City of San Diego	20
6	City of San Diego	54324222	1.38				Grant deed 79-338835				X	ROE	City of San Diego	20
7	City of San Diego	54326005	4.18				Order of condemnation 83-017856				X	ROE	City of San Diego	20
8	City of San Diego	54326008	4.89				Order of condemnation 83-017856				X	ROE	City of San Diego	20
9	City of San Diego	54326011	2.39				Order of condemnation 83-017856				X	ROE	City of San Diego	20
10	City of San Diego	54326012	6.13				Order of condemnation 83-017856				X	ROE	City of San Diego	20

Comments:
Page 2 of 3. 25 total parcels. Proof of ownership documents are listed by document number on recorded land documents as attached. Attached letter of intent is the document demonstrating permission to develop/maintain area, but long-term O&M legal instrument will be a Right of Entry (ROE) permit or License Agreement.

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				Fee Simple	Easement	Other (describe)	Proof of Ownership (tax bill, grant deed, etc.)	O&M Agreement	Lease	JPA	Letter from Owner	Other (describe)		
1	City of San Diego	54326013	5.79				Order of condemnation 83-017856				X	ROE	City of San Diego	20
2	City of San Diego	54333008	33.65				Grant deed 80-208065				X	ROE	City of San Diego	20
3	City of San Diego	54334019	6.01				Order of condemnation 83-017856				X	ROE	City of San Diego	20
4	City of San Diego	54806001	13.53				Grant deed 79-338835				X	ROE	City of San Diego	20
5	City of San Diego	54902401	1.78				Order of condemnation 83-017856				X	ROE	City of San Diego	20
6														
7														
8														
9														
10														

Comments:

Page 3 of 3. 25 total parcels. Proof of ownership documents are listed by document number on recorded land documents as attached. Attached letter of intent is the document demonstrating permission to develop/maintain area, but long-term O&M legal instrument will be a Right of Entry (ROE) permit or License Agreement.

Total Number of Parcels: 25 **Total Number of Acres:** 129.17

13. Adequate Site Control/Land Tenure

14. Operations & Maintenance

THE CITY OF SAN DIEGO

April 9, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Subject: Urban Corps of San Diego County's Urban Greening Project Grant

Project Name: Neighborhood Canyons Access and Enhancement Project

To Whom it May Concern:

The City of San Diego's Park and Recreation Department, Open Space Division ("City"), is pleased to submit this letter of intent to participate in and support Urban Corps of San Diego County's ("Urban Corps") "Neighborhood Canyons Access and Enhancement Project" Urban Greening Project proposal for funding by the Strategic Growth Council's Sustainable Communities Urban Greening Project Grant Program ("Grant"). It is the City's intent, provided all necessary permits and approvals are acquired by Urban Corps, to support and participate in the Project as outlined in the Grant application. The City of San Diego is committed to the broad objectives of the California Strategic Growth Council and the State's planning priorities, and it is our hope that the Neighborhood Canyons Access and Enhancement Project will serve as a model for other projects within the City of San Diego's urban canyons and open spaces.

Permits and Approvals

If Urban Corps is awarded the proposed Grant funds, the City will require and process Urban Corps' application for a Site Development Permit ("SDP") as a project through the City of San Diego's Development Services Department. In addition to a SDP, Urban Corps will be required to secure all necessary project related permits and discretionary approvals including environmental approvals, maintenance agreements, and rights-of-entry with the City.

Long Term Access

If Urban Corps is awarded the proposed Grant funds, the City will work to process and grant a twenty (20) year License Agreement or Right of Entry Agreement ("ROE") to Urban Corps whereby Urban Corps will have permission to develop, operate, and maintain the proposed Project on the City-owned parcels and rights of ways specified in the Grant application.

DIVERSITY BRINGS US ALL TOGETHER

Open Space Division • Park and Recreation
202 C Street, 5th Floor, MS 5D • San Diego, CA 92101-4215
Tel (619) 685-1350 Fax (619) 685-1362

Operations and Maintenance

The combination of the City's Open Space Canyons Ranger Program and Urban Corps' volunteer/canyon stewardship programs have proven to be a sustainable, efficient, and successful model for several years, and it is our intent to continue this relationship with Urban Corps. Budget permitting, the City also intends to continue providing the existing levels of service for maintaining the Project area for the grant period and beyond for a total of 20 years.

Urban Corps currently assists the City with tree planting, habitat restoration, trail maintenance, and native shrub planting within urban Maintenance Assessment Districts ("MAD's") and other urban open spaces. The Project also falls within the City of San Diego's Multiple Habitat Planning Area ("MHPA"), other open space areas, rights of ways, or community parks. The City has maintenance programs for these areas as well.

CEQA Lead Agency

If Urban Corps is awarded the Grant funds, the City of San Diego intends to act as the lead agency for any necessary CEQA compliance for the proposed project.

Recommendation and Support

The City of San Diego Park and Recreation Department, Open Space Division strongly supports the goals of Urban Corps' proposed Neighborhood Canyons Access and Enhancement Project to create new urban trails, restore habitat, and develop trail linkages in the Encanto neighborhood of San Diego. The City will also work to secure the necessary access and development permits for Urban Corps in order to implement the Project including a Site Development Permit ("SDP") and other required permits including CEQA approval in order to perform the work outlined in the Grant and secure long term maintenance and access to the Project area.

Please call me if you have any questions at 619-685-1323. We thank you for your consideration of Urban Corps' application and urge your support.

Sincerely,

Chris Zirkle
Deputy Director
City of San Diego Park and Recreation Department
Open Space Division

15. Permit/Approval Status

APPENDIX O - PROJECT PERMIT/APPROVAL STATUS

List is not all inclusive. It is Grantee's responsibility to comply with all applicable permits.

Permitting Agency	Type of Requirement	Required ?	Applied ?	Acquired ?	Date Anticipated
State Agencies:					
California Department of Fish and Game	Streambed Alteration Agreement Permit (Section 1600)	☐	☐	☐	
California Department of Fish and Game	Incidental Take Permit	☐	☐	☐	
CalTrans					
Coastal Commiss					
Coastal Commiss					
Regional Water C Control Board					
State Water Resc Control Board					
State Water Resc Control Board					
Central Valley Flo Protection Board	Waterways within Designated Floodways	☐	☐	☐	
State Lands Commission	Permit required if using State owned property	☐	☐	☐	
State Office of Historic Preservation	Cultural Resources-Submission of findings to State Historic Preservation Officer (National Historic Preservation Act, Section 106)	☐	☐	☐	
Federal Agencies					
U.S. Fish and Wildlife Service (USFWS)	Section 7 consultation if federal nexus (see ACOE), or Section 10 Permit	☐	☐	☐	
U.S. Army Corps of Engineers (ACOE)	Clean Water Act, Section 404 Permit, will consult w/USFWS & NMFS Section 7	☐	☐	☐	
U.S. Army Corps of Engineers	Rivers and Harbors Act, Section 10 Permit	☐	☐	☐	
U.S. Coast Guard / U.S. Army Corps of Engineers	Rivers and Harbors Act, Section 9 Permit	☐	☐	☐	
U.S. National Resources Conservation Service	Consultation	☐	☐	☐	
National Marine Fisheries Service (NMFS)	Section 7 consultation if federal nexus see ACOE, or Section 10 Permit	☐	☐	☐	
Local and Regional Planning Agencies					
City/County	Grading Permit	☐	☐	☐	
City/County	Environmental Health Department	☐	☐	☐	
San Francisco Bay Conservation and Development Commission	Any relevant permit	☐	☐	☐	
Tahoe Regional Planning Agency	Any relevant permit	☐	☐	☐	
Local Resource Conservation District	Consultation	☐	☐	☐	
Flood Control Districts	Floodway & Hydrological	☐	☐	☐	

Note:
This project is not anticipated to require any of the listed permits. Engineered structures such as stairs and puncheon bridges will require a Site Development Permit from the City of San Diego Development Services Department. We will apply for this permit in conjunction with a Right-of-Entry or License Agreement upon project approval and funding, and anticipate receiving the permit within the first year of the grant agreement while CEQA compliance documents are being prepared.

16. Willing Seller Letter (NOT APPLICABLE)

17. Signed Authorizing Resolution from Governing Body

URBAN CORPS
SAN DIEGO COUNTY

Resolution No: 07-13

Resolution of the Board of Director of the Urban Corps of San Diego County approving the application for grant funds for the Urban Green Grant Program under the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84)

WHEREAS, the Legislature and Governor of the State of California have provided funds for the program shown above; and

WHEREAS, the Strategic Growth Council has been delegated the responsibility for the administration of this grant program, establishing necessary procedures; and

WHEREAS, said procedures established by the Strategic Growth Council require a resolution certifying the approval of applications by the Applicants governing board before submission of said applications to the State; and

WHEREAS, the applicant, if selected, will enter into an agreement with the State of California to carry out the project.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors

1. Approves the filing of an application for the Neighborhood Canyons Access and Enhancement Project;
2. Certifies that applicant understands the assurances and certification in the application, and
3. Certifies that applicant or title holder will have sufficient funds to operate and maintain the project consistent with the land tenure requirements; or will secure the resources to do so, and
4. Certifies that it will comply with the provisions of Section 1771.5 of the State Labor Code regarding payment of prevailing wages on Projects awarded Proposition 84 funds, and
5. If applicable, certifies that the project will comply with any laws and regulations including, but not limited to, legal requirements for building codes, health and safety codes, disabled access laws, environmental laws and, that prior to commencement of construction, all applicable permits will have been obtained, and
6. Certifies that applicant will work towards the Governor's State Planning Priorities intended to promote equity, strengthen the economy, protect the environment, and promote public health and safety as included in Government Code Section 65041.1, and
7. Appoints the Chief Executive Officer, or designee, as agent to conduct all negotiations, execute and submit all documents including, but not limited to applications, agreements, payment requests, and so on, which may be necessary for the completion of the aforementioned project.

Approved and adopted the 26th day of September 2013. I, the undersigned, hereby certify that the foregoing Resolution Number 07-13 was duly adopted by the Board of Directors of the Urban Corps of San Diego County by the following roll call vote:

Ayes: 5
No's: 0
Absent: 4

Daniel Morales, Board Secretary

18. Eligibility for Nonprofit Applicants

IRS Department of the Treasury
Internal Revenue Service
P.O. Box 2508
Cincinnati OH 45201

In reply refer to: 0248206070
Jan. 24, 2013 LTR 4168C E0
33-0352148 000000 00
00015567
BODC: TE

URBAN CORPS OF SAN DIEGO
PO BOX 80156
SAN DIEGO CA 92138-0156

014561

Employer Identification Number: 33-0352148
Person to Contact: Mrs. Turner
Toll Free Telephone Number: 1-877-829-5500

Dear Taxpayer:

This is in response to your Jan. 14, 2013, request for information regarding your tax-exempt status.

Our records indicate that you were recognized as exempt under section 501(c)(3) of the Internal Revenue Code in a determination letter issued in March 1994.

Our records also indicate that you are not a private foundation within the meaning of section 509(a) of the Code because you are described in section(s) 509(a)(1) and 170(b)(1)(A)(vi).

Donors may deduct contributions to you as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to you or for your use are deductible for Federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

Please refer to our website www.irs.gov/eo for information regarding filing requirements. Specifically, section 6033(j) of the Code provides that failure to file an annual information return for three consecutive years results in revocation of tax-exempt status as of the filing due date of the third return for organizations required to file. We will publish a list of organizations whose tax-exempt status was revoked under section 6033(j) of the Code on our website beginning in early 2011.

0248206070
Jan. 24, 2013 LTR 4168C E0
33-0352148 000000 00
00015568

URBAN CORPS OF SAN DIEGO
PO BOX 80156
SAN DIEGO CA 92138-0156

If you have any questions, please call us at the telephone number shown in the heading of this letter.

Sincerely yours,

Richard McKee, Department Manager
Accounts Management Operations

State of California
Secretary of State
CERTIFICATE OF STATUS

ENTITY NAME:

URBAN CORPS OF SAN DIEGO COUNTY

FILE NUMBER:	C1560528
FORMATION DATE:	04/25/1989
TYPE:	DOMESTIC NONPROFIT CORPORATION
JURISDICTION:	CALIFORNIA
STATUS:	ACTIVE (GOOD STANDING)

I, DEBRA BOWEN, Secretary of State of the State of California, hereby certify:

The records of this office indicate the entity is authorized to exercise all of its powers, rights and privileges in the State of California.

No information is available from this office regarding the financial condition, business activities or practices of the entity.

IN WITNESS WHEREOF, I execute this certificate and affix the Great Seal of the State of California this day of August 22, 2012.

Debra Bowen

DEBRA BOWEN
Secretary of State

MAL

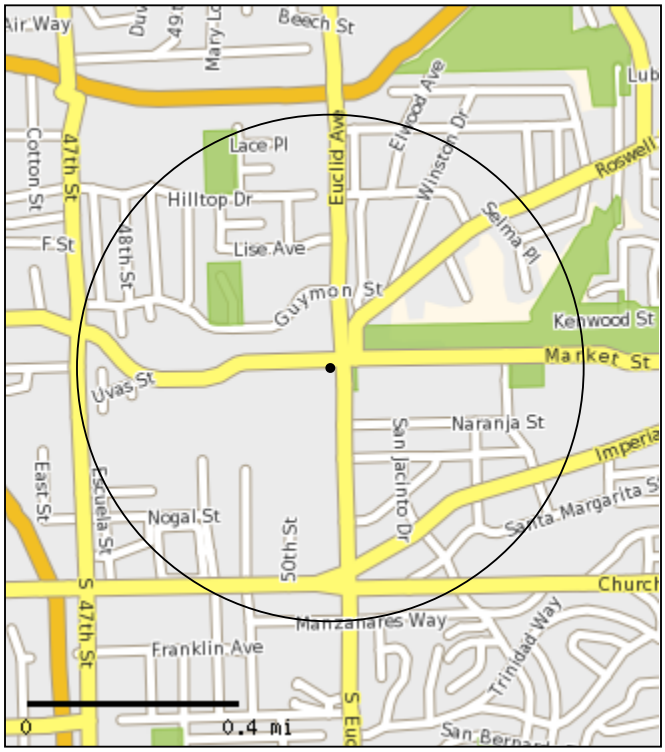
19. Disadvantaged Community

California State Parks
Community Fact Finder Report

ROUND TWO

This is your Community FactFinder report for the project you have defined. Please refer to your Project ID in any future communications about this project.

Project ID:	**27215**
Date created:	**April 3, 2013**
County:	**San Diego**
City:	**San Diego**
Coordinates:	**32.709997, -117.085376**
Total Population:	**8,012**
Median Household Income:	**$31,696**
Number of people below poverty line:	**2,814**
Park acreage:	**31.96**
Park acres per 1,000 population:	**3.99**



Project Site

All numbers above have been calculated based on a ½ mile radius from the point location of your project. Demographics are figured by averaging population numbers over selected census block groups and using the percent of the block group within the project circle to determine the actual counts.

Parks and park acres are based on best available source information but may not always contain exact boundaries or all parks in specific locations. Parks acreage does not include major lakes or ocean. Users can send update information to: parkupdates@parks.ca.gov

Data Sources:
Demographics - Claritas Pop-Facts, block group level (2010)
Parks - Calif. Protected Areas Database v. 1.6 (Feb. 2011)

Community FactFinder is a service of the California Department of Parks and Recreation
www.parks.ca.gov

Community FactFinder created by GreenInfo Network
www.greeninfo.org

20. Collaboration

Groundwork SAN DIEGO Chollas Creek

5106 Federal Boulevard, Suite 203
San Diego, CA 92105

T 619 543 0430
F 619 677 2748
Leslie@groundworksandiego.org

http://www.groundworksandiego.org

October 12, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To whom it may concern:

Groundwork San Diego-Chollas Creek is pleased to submit this letter of intent to support and participate in the planning and implementation of Urban Corps of San Diego County's Prop. 84 Urban Greening Grant Proposal, the "*Neighborhood Canyons Access and Enhancement Project."* Through this project the Urban Corps, in partnership with Groundwork San Diego-Chollas Creek, will improve 3.3 miles of open space trails and restore 20 acres of canyon habitat in the Encanto Neighborhood Planning Area. We remain committed to the broad objectives of the SGC goals and the State's planning priorities.

Groundwork San Diego-Chollas Creek was formed at the request of the City of San Diego to lead the implementation of the City's Chollas Creek Enhancement Program. This planning document, vetted over a two-year period through extensive stakeholder engagement, serves as a watershed management and urban greening plan for the Chollas Creek Watershed. It establishes habitat restoration, monitoring, and management guidelines, and provides design guidelines and concept plans for park/bicycle/pedestrian trails and connectivity throughout the watershed. It establishes a twenty year timeline and work program to accomplish these goals. Its natural resource and passive recreation/mobility objectives are included in the community plans of the neighborhoods through which the creek flows (Encanto and Southeastern San Diego).

The "*Neighborhood Canyons Access and Enhancement Project"* site is located at the far eastern end of the watershed, and will serve as the starting point for a trail system that will ultimately be a linear regional park for the Chollas Creek Watershed (a regional park designation is being secured). Groundwork is currently working with the City, using SANDAG Active Transportation and County of San Diego Neighborhood Enhancement funding, to develop a trail connecting Chollas Creek communities to the San Diego Bayshore Bikeway. The "*Neighborhood Canyons Access and Enhancement Project"* will create another critical link in this trail system.

Groundwork San Diego-Chollas Creek has also worked over the past four years on the Radio/Encanto Canyon Cactus Wren and Gnatcatcher Habitat Restoration Program. Groundwork is completing a Resource Management Plan for these canyons, and is funded to maintain the canyon habitat improvements that have been completed over the past few years. Local residents and nearby schools have participated in the restoration activities.

While these efforts have produced significant invasive plant removal and revegetation outcomes, and have furthered the cactus wren and gnatcatcher goals of the California Natural Communities Conservation Program, much work remains to be done. In particular, the far northern end of Radio Canyon, and some areas of Emerald Hills and Encanto Canyons, are in critical need of restoration. Additionally, no trail improvements have been made in any of the canyons, thereby undermining community use and stewardship goals.

Groundwork San Diego-Chollas Creek looks forward to working closely with our long-time Chollas Creek collaborator, the Urban Corps of San Diego County, on this project. We will integrate our site control, resource management, habitat experience/expertise, and other canyon assets into the Urban Corps work plans, and will facilitate the Canyon Stewardship and Outreach Program. This will include conducting outreach and soliciting feedback on project design and implementation at six neighborhood workshops, three school assemblies, and four Community Planning Group meetings. Volunteer labor and donated in-kind services for stewardship events and restoration are valued at $30,000. In addition, Groundwork will commit $100,000 of the habitat maintenance funds we have secured as a match. Urban Greening funding for the "*Neighborhood Canyons Access and Enhancement Project*" will build upon the four year public/private investment we have made in the canyons, completing the work and activating these natural resources for communities who so desperately need them.

Should you have further questions about our partnership with Urban Corps and commitment to this project, please contact Leslie Reynolds, Executive Director of Groundwork San Diego-Chollas Creek, at (619) 543-0430.

Sincerely,

Leslie Reynolds

Leslie Reynolds

THE CITY OF SAN DIEGO

April 9, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Subject: Urban Corps of San Diego County's Urban Greening Project Grant

Project Name: Neighborhood Canyons Access and Enhancement Project

To Whom it May Concern:

The City of San Diego's Park and Recreation Department, Open Space Division ("City"), is pleased to submit this letter of intent to participate in and support Urban Corps of San Diego County's ("Urban Corps") "Neighborhood Canyons Access and Enhancement Project" Urban Greening Project proposal for funding by the Strategic Growth Council's Sustainable Communities Urban Greening Project Grant Program ("Grant"). It is the City's intent, provided all necessary permits and approvals are acquired by Urban Corps, to support and participate in the Project as outlined in the Grant application. The City of San Diego is committed to the broad objectives of the California Strategic Growth Council and the State's planning priorities, and it is our hope that the Neighborhood Canyons Access and Enhancement Project will serve as a model for other projects within the City of San Diego's urban canyons and open spaces.

Permits and Approvals

If Urban Corps is awarded the proposed Grant funds, the City will require and process Urban Corps' application for a Site Development Permit ("SDP") as a project through the City of San Diego's Development Services Department. In addition to a SDP, Urban Corps will be required to secure all necessary project related permits and discretionary approvals including environmental approvals, maintenance agreements, and rights-of-entry with the City.

Long Term Access

If Urban Corps is awarded the proposed Grant funds, the City will work to process and grant a twenty (20) year License Agreement or Right of Entry Agreement ("ROE") to Urban Corps whereby Urban Corps will have permission to develop, operate, and maintain the proposed Project on the City-owned parcels and rights of ways specified in the Grant application.

DIVERSITY BRINGS US ALL TOGETHER

Open Space Division • Park and Recreation
202 C Street, 5th Floor, MS 5D • San Diego, CA 92101-4215
Tel (619) 685-1350 Fax (619) 685-1362

Operations and Maintenance

The combination of the City's Open Space Canyons Ranger Program and Urban Corps' volunteer/canyon stewardship programs have proven to be a sustainable, efficient, and successful model for several years, and it is our intent to continue this relationship with Urban Corps. Budget permitting, the City also intends to continue providing the existing levels of service for maintaining the Project area for the grant period and beyond for a total of 20 years.

Urban Corps currently assists the City with tree planting, habitat restoration, trail maintenance, and native shrub planting within urban Maintenance Assessment Districts ("MAD's") and other urban open spaces. The Project also falls within the City of San Diego's Multiple Habitat Planning Area ("MHPA"), other open space areas, rights of ways, or community parks. The City has maintenance programs for these areas as well.

CEQA Lead Agency

If Urban Corps is awarded the Grant funds, the City of San Diego intends to act as the lead agency for any necessary CEQA compliance for the proposed project.

Recommendation and Support

The City of San Diego Park and Recreation Department, Open Space Division strongly supports the goals of Urban Corps' proposed Neighborhood Canyons Access and Enhancement Project to create new urban trails, restore habitat, and develop trail linkages in the Encanto neighborhood of San Diego. The City will also work to secure the necessary access and development permits for Urban Corps in order to implement the Project including a Site Development Permit ("SDP") and other required permits including CEQA approval in order to perform the work outlined in the Grant and secure long term maintenance and access to the Project area.

Please call me if you have any questions at 619-685-1323. We thank you for your consideration of Urban Corps' application and urge your support.

Sincerely,

Chris Zirkle
Deputy Director
City of San Diego Park and Recreation Department
Open Space Division

THE CITY OF SAN DIEGO

September 18, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To whom it may concern:

The City of San Diego Planning and Neighborhood Restoration Division is pleased to submit this letter of intent to support and participate in the Urban Corps' Prop. 84 Urban Greening Grant Proposal, the "*Neighborhood Canyons Access and Enhancement Project.*" Through this project the Urban Corps, in partnership with Groundwork San Diego-Chollas Creek, will improve 3.3 miles of open space trails and restore 20 acres of canyon habitat in the Encanto Neighborhood Planning Area.

The City of San Diego Planning Division has worked for many years with Encanto residents, NGOs, businesses, and others in the development of a shared vision for the built and natural environments in Encanto. Although this and other neighborhoods of Southeastern San Diego are amongst the most park and open space deficient in the region, Encanto is fortunate to be adjacent to the Encanto/Radio Emerald Hills Canyon complex. In fact, the Planning Division led an inclusive and exhaustive stakeholder outreach process that resulted in the Encanto Neighborhoods Pedestrian and Bicycle Network Plan. That plan, which called for the improvement of the open space and trails as represented in this Urban Greening grant proposal, has become the basis for a portion of the Encanto Neighborhoods Community Plan update, a process currently being conducted with dozens of workshops and stakeholder meetings.

The Planning Division works closely with Groundwork San Diego-Chollas Creek on issues ranging from creek restoration to park development to transportation corridor planning and improvement. We are currently working with Groundwork San Diego-Chollas Creek under a Memorandum of Agreement in the co-management of a SANDAG Active Transportation Grant. This grant is completing a trail engineering design and environmental review for a proposed trail segment connecting the southern reaches of Chollas Creek to the Bayshore Bikeway. The Planning Division will be pleased to support the Urban Corps and Groundwork San Diego in stakeholder outreach. We will also seek future funding to extend the Urban Greening trail and habitat improvements southwest through the watershed, realizing our Creek-to-Bay urban greening vision.

Sincerely,

Bill Fulton, Director
Planning and Neighborhood Restoration

cc: Karen Bucey, Associate Planner

Encanto Neighborhood Community Planning Group

Urban Greening for Sustainable Communities Program
C/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To whom it may concern:
Please accept the strong endorsement of the Encanto Neighborhood Planning Group for the Urban Corps' Prop. 84 Urban Greening Grant Proposal, the "*Neighborhood Canyons Access and Enhancement Project."* Through this project the Urban Corps, working in partnership with Groundwork San Diego-Chollas Creek, will improve 3.3 miles of open space trails and restore 20 acres of canyon habitat in the Encanto and Emerald Hills neighborhoods.

The Encanto Neighborhood Planning Group is currently working with the City of San Diego Planning Division to complete our community plan update, a monumental task spread out over many months and engaging many hundreds of stakeholders. Our plan update recommends physical and policy actions related to improved mobility, economic development, and quality of life. Chollas Creek, and its upland canyons, are a critical component of our planning efforts. The "*Neighborhood Canyons Access and Enhancement Project"* is consistent with our goals, plans, and priorities.

Specifically, the Urban Greening "*Neighborhood Canyons Access and Enhancement Project"* would restore and return to our community open space assets and creek tributaries within our plan area that will contribute to our vision and address our park and passive recreation needs. The trail improvements proposed through this effort will begin to fill the gaps in the trail network we are recommending, and will connect our communities to the trail networks being proposed in neighboring Southeastern San Diego's Community Plan update.

Benefits from the "*Neighborhood Canyons Access and Enhancement Project"* to our community will include:

1) Increased accessibility to places people might not have access to, thus providing opportunities for a more active and economically vibrant community.
2) Reduced need for the automobile in an area of the City where car ownership is limited by lower incomes.
3) Reduced pollution and noise.
4) Safer neighborhoods by increasing the chances for informal surveillance and "eyes on the street, the creeks and the canyons."
5) Increased walking and bicycling, thus promoting exercise and good health.
6) Greater social interaction in public places.

Thank you in advance for your consideration of this worthy project.

Sincerely,

Kenneth Malbrough

COUNCILMEMBER MYRTLE COLE

FOURTH DISTRICT

CITY OF SAN DIEGO

September 18, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resource Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To Whom it May Concern,

I am writing to express my support for Urban Corps' Prop. 84 Urban Greening Grant Proposal, the *"Neighborhood Canyons Access and Enhancement Project."* The Urban Corps will improve 3.3 miles of open space trails and restore 20 acres of canyon habitat in Council District Four. These improvements will benefit the densely populated communities of Encanto and Emerald Hills.

San Diego's canyons offer valuable open space in urban areas throughout our city. The canyons in these partial communities contain a vast number of informal trails which are steep, unsafe, and cause water quality problems through erosion. The proliferation of these trails has led to the trampling of native vegetation and habitat fragmentation. Native ecosystems are threatened by invasive plants which create a fire hazard in the summer, and trigger health concerns.

The proposed project would contribute to the sustainability of this trail system, while making it safer, more accessible, and more enjoyable for area residents. Proper surfacing and alignment will improve safety, control erosion and enhance water quality in our region. In addition, the removal and replanting of native, drought-tolerant maritime succulent scrub and coastal sage scrub will enhance and sustain the canyon's habitat.

I am most excited about the fact that a new-and-improved trail system would create a safe, walkable path to the Malcolm X Library and the Euclid Avenue Transit Center.

An additional benefit is the training and employment of local disadvantaged youth participating in the Urban Corps job training and education program. As a local conservation corps, Urban Corps hires young adults 18-25 and helps them obtain a high school diploma while gaining green job skills and learn about the importance of civic engagement.

Council District Four strongly supports the activities and goals in Urban Corp's Urban Greening Grant Proposal. I urge you to give every consideration of funding to this project as the benefits will improve San Diego's environment and provide opportunities for our youth.

Sincerely,

Myrtle Cole

Councilmember Myrtle Cole
City of San Diego, District Four

202 C STREET • SAN DIEGO, CALIFORNIA 92101
(619) 236-6644 • FAX (619) 236-7273 • EMAIL: MYRTLECOLE@SANDIEGO.GOV

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0079
(916) 319-2079
FAX (916) 319-2179

DISTRICT OFFICE
1350 FRONT STREET, SUITE 6046
SAN DIEGO, CA 92101
(619) 531-7913
FAX (619) 531-7924

Assembly
California Legislature

SHIRLEY N. WEBER
ASSEMBLYMEMBER, SEVENTY-NINTH DISTRICT

COMMITTEES
APPROPRIATIONS
BANKING
EDUCATION
HIGHER EDUCATION
RULES

CHAIR: SELECT COMMITTEE
ON HIGHER EDUCATION IN
SAN DIEGO

October 22, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To Whom It May Concern:

I am writing in support of the Urban Corps' Prop. 84 Urban Greening Grant Proposal, the "Neighborhood Canyons Access and Enhancement Project."

Through this project the Urban Corps, in partnership with Groundwork San Diego-Chollas Creek, will improve 3.3 miles of open space trails and restore three valuable canyon habitats in the heart of San Diego. The project will benefit the residents of Encanto and Emerald Hills, where there is a critical shortage of open space and passive recreation opportunities.

These limited canyon areas are under both public and private ownership, and suffer from a lack of planning and support. As a result, they are generally under-utilized given public safety concerns. The canyons are overgrown with nonnative infestations, threatening the ecosystem and posing fire dangers. The "Neighborhood Canyons Access and Enhancement Project" would improve what is currently an informal trail system, adding pet waste stations, directional and interpretive signage, kiosks, and other amenities. Canyon users will become valuable stewards of these canyons and their natural resources.

Serving as outdoor classrooms to the thousands of students within walking distance, these canyons also offer a unique and invaluable learning experience for our youth. Our schools, working with partners that include San Diego State University; University of California, San Diego; and Groundwork San Diego, will use the canyon ecosystems to engage students in STEM-related hands-on science and service learning. The canyons also offer small islands of rich bio-diversity from which the students can learn and excel.

It is imperative that we work together with our near-by canyon residents in the development of a strong and sustainable community stewardship program. I urge you to give every consideration to funding this project as the benefits will improve San Diego's environment while providing the double impact of strengthening our youth.

Sincerely,

SHIRLEY N. WEBER, Ph.D.
California State Assemblymember, 79th District

Millennial Tech Middle School
Home of the Future Scientific Innovators...
1110 Carolina Lane San Diego, CA 92102
ph: 619.527.6933 fx: 619.527.5138

Willie L. Neil, Principal
wneil@sandi.net

James Smith, Vice Principal
jsmith9@sandi.net

October 16, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To whom it may concern,

I am writing to express support of Urban Corps' Prop. 84 Urban Greening Grant Proposal, the "*Neighborhood Canyons Access and Enhancement Project.*" Through this project the Urban Corps, working with Groundwork San Diego-Chollas Creek, will improve 3.3 miles of open space trails and approximately twenty acres of canyon habitat for the benefit of the densely populated communities of Encanto and Emerald Hills.

Millennial Tech Middle School, along with three other schools, is located within .5 mile (walking distance) of the project canyons. These canyons, once improved, will offer unique opportunities for our students to enjoy safe and healthy walks to school. They will also serve as an outdoor classroom in support of the STEM and Conservation Science centers of excellence we are developing in our neighborhood schools. In particular, we embrace the unparalleled learning opportunities the canyons provide related to biodiversity and species of concern such as the cactus wren. Currently, the canyons are overgrown with vegetation, and are home to homeless encampments and hide unwanted activities. They contain informal trails which are steep and unsafe. Nonnative vegetation causes fire hazards in the summer, and triggers allergies and asthma.

Out teachers, parents, and students are excited about using the restored canyons for science, passive recreation, service learning, and stewardship activities. We look forward to working with Groundwork San Diego in these and other canyon projects and activities. An additional benefit is the training and employment of local disadvantaged youth participating in the Urban Corps job training and education program. As a local conservation corps, Urban Corps hires young adults 18-25 and helps them obtain a high school diploma while gaining green job skills and learning about the importance of civic engagement. This is a very valuable program in our community.

Please give every consideration to funding this project as the benefits will improve San Diego's environment while providing the double impact of improving the quality of life and educational outcomes of our residents.

Sincerely,

Willie Neil,
Principal

CIVIC
san diego

October 16, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To whom it may concern:

Civic San Diego is pleased to submit this letter of support for the Urban Corps of San Diego County's Proposition 84 Urban Greening Grant Proposal, the "*Neighborhood Canyons Access and Enhancement Project.*" Through this project the Urban Corps, in partnership with Groundwork San Diego-Chollas Creek, will create critical open space trails for Encanto residents. Many areas of the Encanto neighborhoods contain canyons and hillsides or a suburban development pattern that lacks the connectivity to allow residents to walk to neighborhood destinations. These open space trails will connect neighborhoods to public facilities such as the Malcolm X Library and the Euclid Trolley and Bus Station. They will also connect to and complement the Civic San Diego Market Green Street Link-to-Trolley Urban Greening project. Both projects connect the neighborhoods to Market Street and the surrounding public facilities and services; the *Neighborhood Canyons Access and Enhancement Project* connects the neighborhoods north and northeast of Market Street and the Market Green Street Link to Trolley connects the neighborhoods on the south and southeast areas of Market Street.

Civic San Diego, formerly Southeastern Economic Development Corporation, has a long and successful history of partnering with both the Urban Corps of San Diego and Groundwork San Diego. These two organizations offer our communities, and our natural resources, comprehensive solutions to difficult environmental justice challenges that include pollution, park and tree canopy deficiencies, gang violence, and under employment in southeastern San Diego. Together we have delivered multi-benefit projects that have addressed blight abatement, tree planting, restoration, job training, environmental education, and other community needs. The *Neighborhood Canyons Access and Enhancement Project* will be no exception, as Civic San Diego works to connect its green infrastructure design and implementation projects and resources to street- and mixed-use developments within walking distance of the canyon complexes.

401 B Street, Suite 400, San Diego, CA 92101-4298 Phone 619-235-2200 Fax 619-236-9148 www.CivicSanDiego.com

Together we will realize the community vision for safe, sustainable, and walkable neighborhoods.

Sincerely,

Jeff Graham
President

San Diego Canyonlands

◆ 3552 Bancroft Street San Diego, CA 92104 ◆ 619-284-9399 ◆
◆www.sdcanyonlands.org◆

October 11, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To whom it may concern,

The Mission of San Diego Canyonlands is to promote, protect and restore the natural habitats in San Diego County canyons and creeks by fostering education and ongoing community involvement in stewardship and advocacy, and by collaborating with other organizations.

San Diego Canyonlands expresses its full support for Urban Corps' Prop. 84 Urban Greening Grant Proposal, the "*Neighborhood Canyons Access and Enhancement Project."*

As a past Urban Greening grantee with extensive experience working in and advocating for San Diego's canyons, we commit to assisting with project planning by sharing best practices and action steps in order to integrate this project with the Canyon Enhancement Planning (CEP) Program, a plan designed to help facilitate a systems approach for implementing a regional vision that weaves San Diego's natural open spaces with the fabric of the urban environment. We remain committed to the broad objectives of the SGC goals and the State's planning priorities.

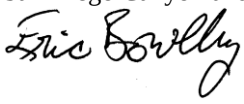
Through this project the Urban Corps will improve 3.3 miles of open space trails and restore 20 acres of canyon habitat. This work will greatly benefit the densely populated communities of Encanto and Emerald Hills, and bring our region closer to its goal of widespread canyon access, restoration, preservation, environment-based education and ecologically sensitive recreation. An additional benefit is the training and employment of local at-risk youth participating in the Urban Corps job training and education program.

There are over 150 canyons in urban San Diego. They provide residents with valuable open space that provides a range of benefits. Their "green infrastructure" provides valuable ecosystem services, including filtering our urban runoff as well as mitigating the urban heat island effect to cool our city. They also provide an escape to nature from an otherwise paved and urbanized environment. These precious open spaces are in dire need of enhancements, including safe and enjoyable access, and wetland and upland habitat restoration. The CEP, established by a committee of urban design visionaries, professional landscape architects, and other community leaders and stakeholders, is designed to achieve these goals.

San Diego Canyonlands has partnered with Urban Corps in the past and looks forward to assisting in any way we can on the Urban Corps' Prop 84 "*Neighborhood Canyons Access and Enhancement Project."*

Sincerely,

Eric Bowlby, Executive Director
San Diego Canyonlands



Eric Bowlby
Executive Director
San Diego Canyonlands
eric@sdcanyonlands.org
619-284-9399

ADMINISTRATIVE OFFICES

1275 30th Street
San Diego, CA 92154

619.662.4100
www.syhc.org

PRIMARY CARE CLINICS

CHULA VISTA FAMILY CLINIC
865 3rd Avenue, Suite 133
Chula Vista, CA 91910

NATIONAL CITY FAMILY CLINIC
1136 D Avenue
National City, CA 91950

OTAY FAMILY HEALTH CLINIC
1637 3rd Avenue
Chula Vista, CA 91911

SAN YSIDRO HEALTH CENTER
4004 Beyer Blvd.
San Ysidro, CA 92173

DENTAL CLINICS

SOUTH BAY FAMILY DENTAL CLINIC
2 Euclid Avenue
National City, CA 91950

SAN YSIDRO HEALTH CENTER
4004 Beyer Blvd.
San Ysidro, CA 92173

September 26, 2013

Urban Greening for Sustainable Communities Program
c/o The Strategic Growth Council
The California Natural Resources Agency
Attn: Bonds and Grants Unit
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

To whom it may concern,

San Ysidro Health Center (SYHC) is a full service federally qualified health center offering high quality affordable health care in a number of locations, including the Encanto communities of Southeastern San Diego. SYHC is dedicated to providing accessible medical, dental, behavioral health and special support services. On behalf of San Ysidro Health Center, I am pleased to support of Urban Corps' Prop. 84 Urban Greening Grant Proposal, the "*Neighborhood Canyons Access and Enhancement Project.*" Through this project the Urban Corps, partnering with Groundwork San Diego-Chollas Creek, will I improve open space trails and restore valuable canyon habitat, thereby providing needed outdoor passive recreational opportunities for the densely populated communities of Encanto and Emerald Hills.

SYHC Patients suffer from a high incidence of obesity, diabetes, high blood pressure, and other conditions related to life style choices. SYHC educates patients on how to manage their conditions, improve their health, and stay healthy. Access to natural open spaces in our near-by creeks and canyons will encourage walking, bicycling, safe routes to schools for our children, and numerous other benefits associated with passive recreation. Urban Greening funds will transform our canyons from their current degraded and under-utilized conditions to a valuable asset for our families.

We urge your support of these vital quality of life improvements in our communities.

Sincerely,

Kevin Mattson
President and CEO

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ENCANTO, RADIO AND ENCANTO CANYONS
Resource Management Plan

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Acknowledgements:
Special thanks to Groundwork San Diego Interns: Danny Ong, Robert Wheeler and Margarita Martinez for field work and GIS Support.

Thanks also to Nicole Schott and Dick Rol for additional data and field work assistance.

1.0 INTRODUCTION

1.1 Mission

Groundwork San Diego-Chollas Creek (Groundwork) is an independent, not-for-profit, environmental business that works within San Diego's Chollas Creek Watershed to improve the environment, economy, and quality of life in the area through local community projects.

The Groundwork is dedicated to the enhancement, restoration, and management of open space in the Chollas Creek watershed for preservation of the land to protect the biological diversity, as well as providing recreational opportunities and raising environmental awareness. It has taken the lead in many environmental projects in the Chollas Creek Watershed, and is the recipient of a SANDAG Transnet Environmental Mitigation Program (EMP) grant, for which has funding this Resource Management Plan (RMP). One of Groundwork's priorities is to protect and Open Space Areas the habitat integrity of Encanto and Radio Canyons through habitat restoration and management, while also seeking opportunities for low-impact recreational use and environmental education.

1.2 Open Space Areas Overview

Encanto, Radio and Emerald Canyons are located in the community of Encanto in southern San Diego, California, north of Market Street between Euclid Avenue and Merlin Drive (Figures 1 and 2). Encanto Canyon consists of 37.24 acres and Radio Canyon consists of 36.38 acres. All three canyons (Open Space Areas) are within the City of San Diego's Multi-Habitat Planning Area (MHPA). The canyons are owned by the City of San Diego and are designated as open space and are situated in an urbanized environment surrounded by residential and industrial development. The Open Space Areas fall within the Chollas Creek watershed.

1.3 Purpose of this RMP

This Resource Management Plan (RMP) builds on the restoration efforts already accomplished under this grant, and provides a framework for future restoration activities, as well as recreational and educational opportunities, as funding and staffing become available. This document will serve as a guideline for long-term planning and project implementation as it pertains to the management of these open space areas.

This RMP is designed to allow changes and refinements to the approach for open space management as more is learned about the habitats and the responses of these habitats to environmental stressors, including human use. The objective of this RMP is to identify the best framework to implement, manage, protect, and enhance the natural resource values of the Open Space Areas while providing safe recreational and educational

Figure 1. Regional Map

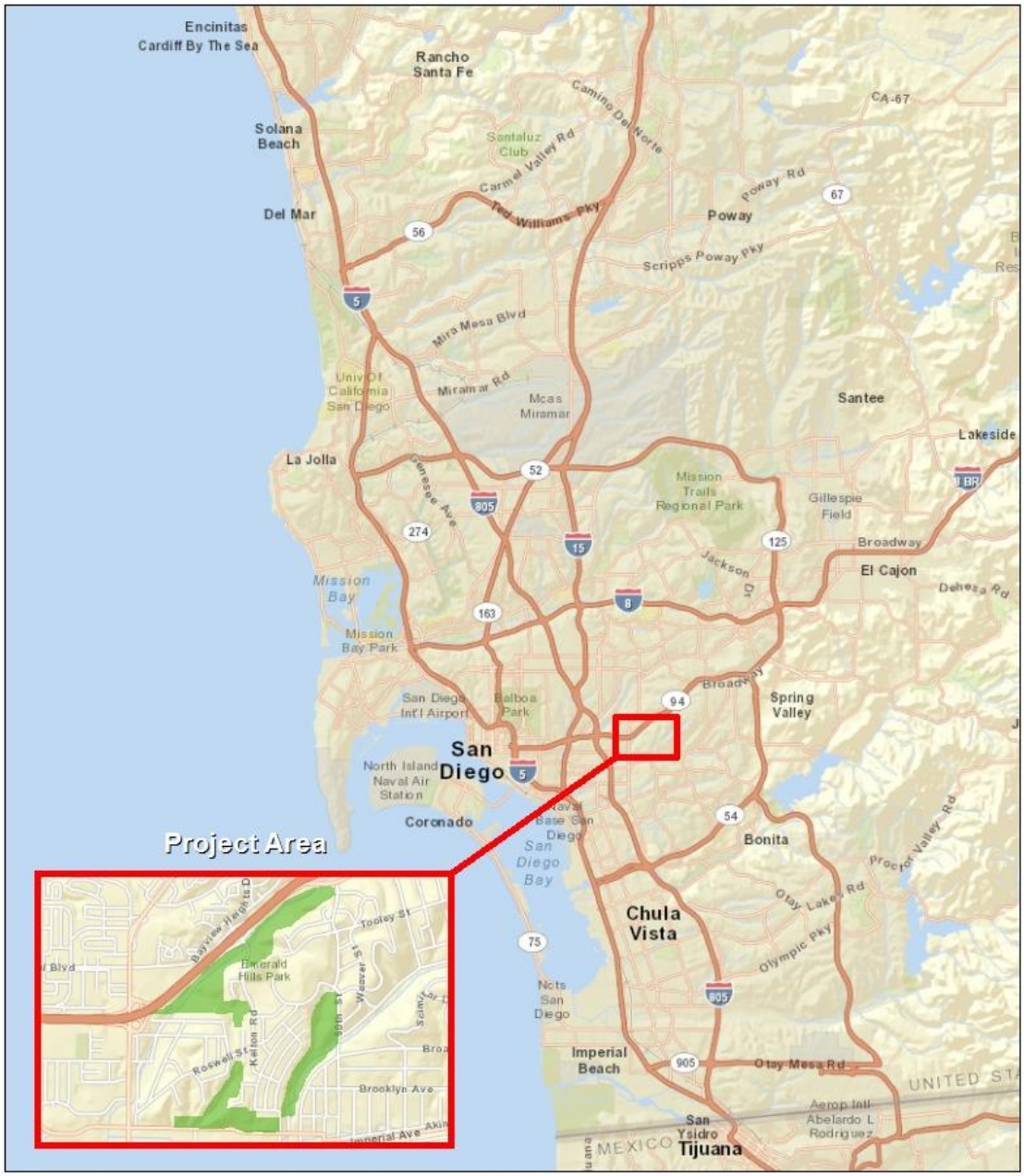
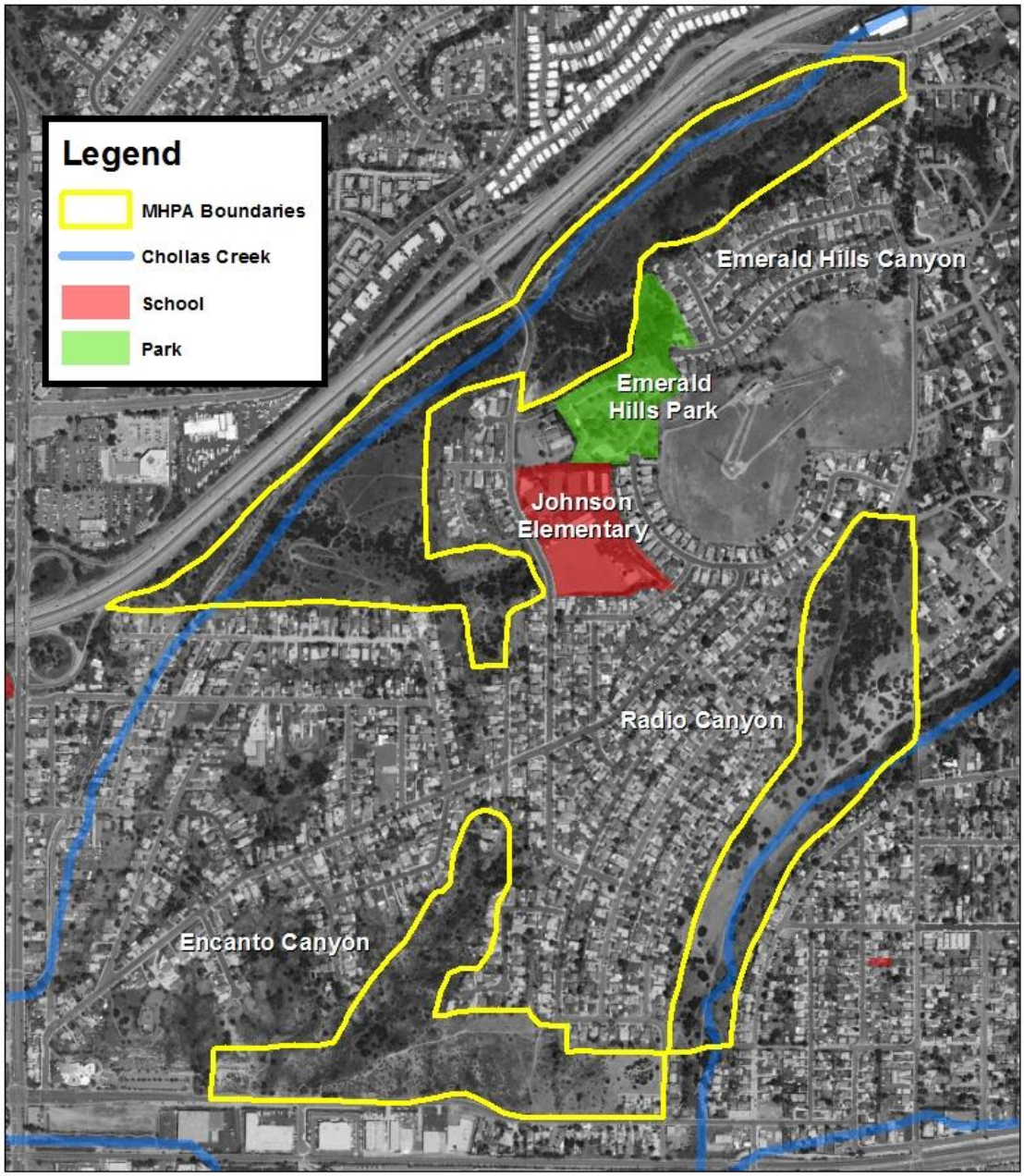


Figure 2. Project Location Map



opportunities to the public. The major objectives are to enhance and restore native habitats, manage exotic species, institute long-term wildlife and vegetation monitoring and adaptive management actions, as well as provide safe, low-impact recreational opportunities and public access.

Adaptive management is a key essential feature for the management and restoration of the Open Space Areas. Adaptive management acknowledges uncertainty about how ecological systems function and how they respond to management actions. Under this model, management activities are based upon monitoring outcomes, conducting targeted studies, and then applying management activities initially as experimental treatments then on a larger scale. The restoration work under this grant is a good example of this model which will allow for future restoration work to be done, while building upon scientific data collected. The results feed back into decision-making, reducing uncertainty and improving the effectiveness of the program through time. Adaptive management implies an ongoing scientific commitment to the plan in perpetuity. Under adaptive management, managers use the best available information to make informed decisions while seeking opportunities to learn how best to accomplish the goals of this RMP.

1.4 Biological Resources

1.4.1 Vegetation communities

In 2009 Groundwork San Diego and the San Diego Association of Governments (SANDAG), was awarded a grant through SANDAG under the Transnet Environmental Mitigation Program (EMP) to restore and enhance existing and potential coastal cactus wren (*Campylorhynchus brunneicapillus*) and California gnatcatcher (*Polioptila californica californica*) habitats in Encanto and Radio Canyons.

As part of this grant the pre-restoration condition of the vegetation communities was mapped in 2009. Since the effort was to primarily identify restoration opportunities, mapping concentrated primarily on documenting cactus and other perennial woody species, including nonnative vegetation. However, by generalizing the detailed information collected at the species level, overall vegetation communities was mapped in a broad sense. Figure 3 depicts the pre-restoration vegetation communities onsite, with species classified into habitat types. Areas in Figure 3 that are not shaded were dominated by nonnative species (primarily non-native grassland species) or disturbed land cover. A more detailed mapping effort of Radio and Encanto Canyon was conducted in September 2013 (Figure 4) by Groundwork's Interns Danny Ong and Seth Connolly, under the direction of Earthwork's manager Nicole Schott and biologist Julie Fontaine. This mapping effort focused primarily on invasive species locations, and has been used in the identification enhancement and restoration opportunities and priorities. No baseline work has occurred in Emerald Canyon.

Figure 3. Vegetation Communities

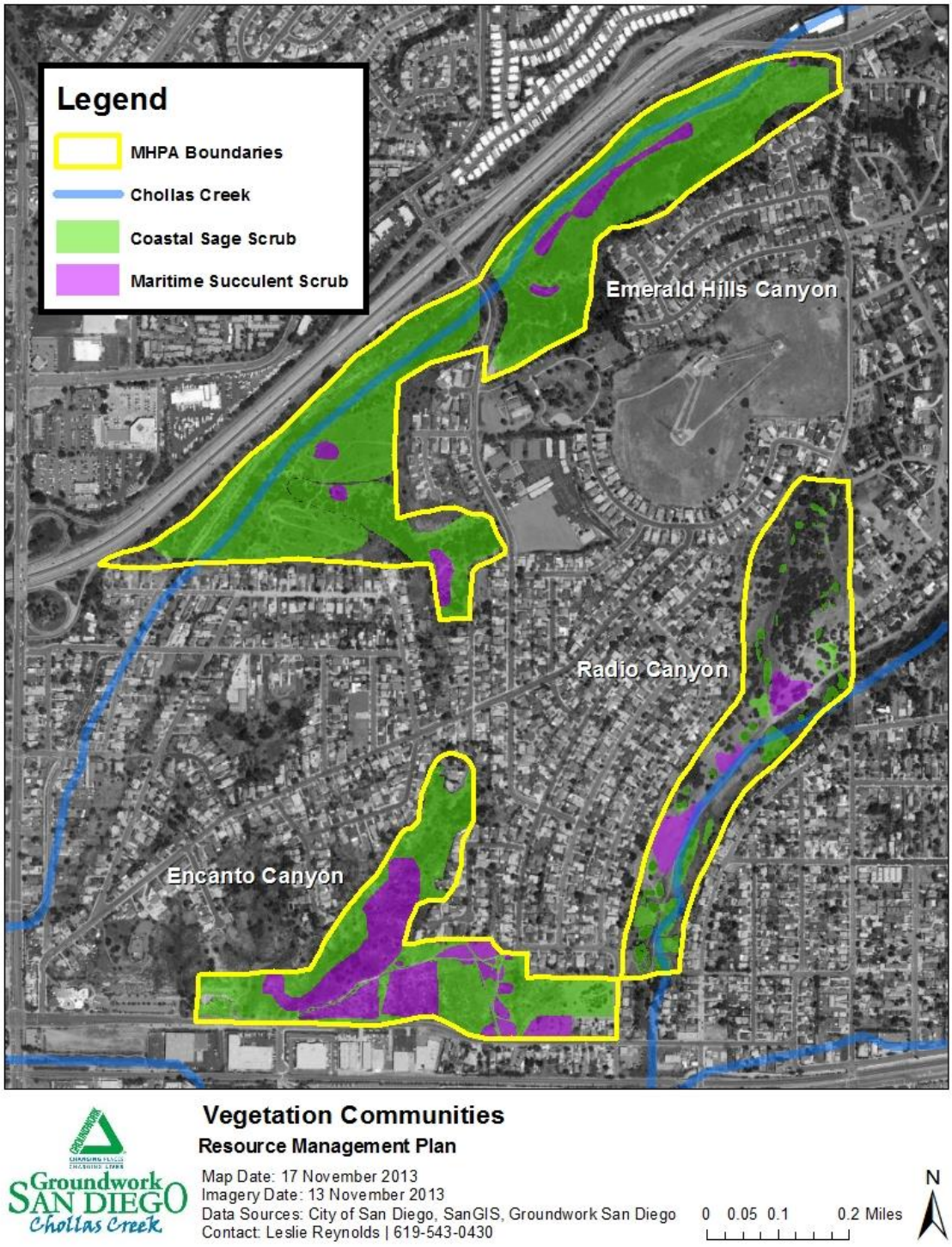
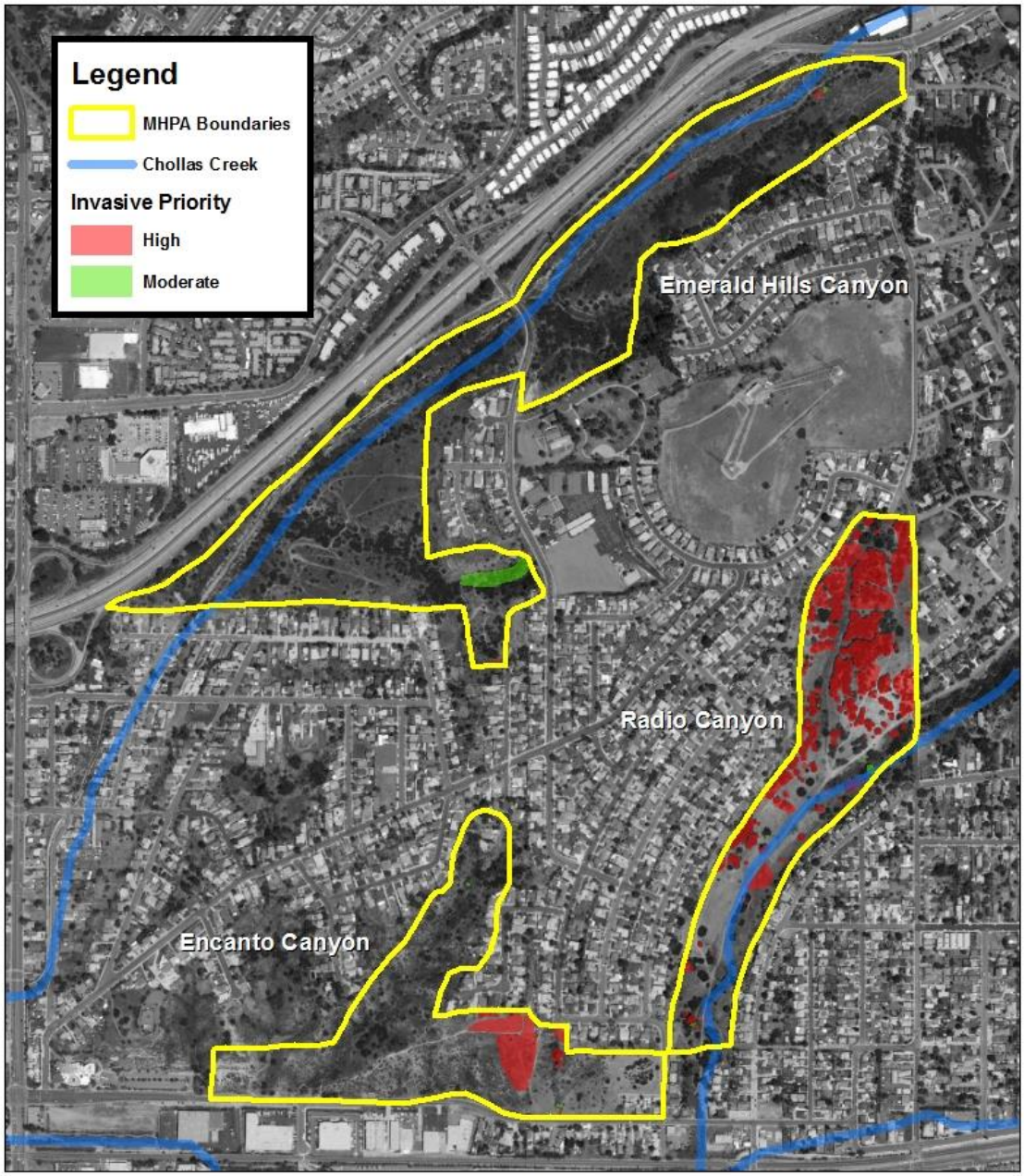


Figure 4. Exotic and Invasive Species Locations



Groundwork San Diego Chollas Creek

Exotic & Invasive Plant Species

Resource Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

N

Encanto Canyon

According to the AECOM, the biologists that conducted the mapping, habitat types within Encanto Canyon include coastal sage scrub, maritime succulent scrub and non-native grassland/vegetation. Common coastal sage scrub plant species found include are coastal sagebrush (*Artemesia californica*) and lemonadeberry (*Rhus integrifolia*). Common succulent plant species, located primarily on south-facing slopes are coast cholla (*Cylindropuntia prolifera*), coast barrel cactus (*Ferocactus viridescens* var. *viridescens*), fish-hook cactus (*Mammillaria dioica*), and dudleyas (*Dudleya* spp.). A population of spineshrub (*Adolphia californica*) and jojoba (*Simmondsia chinensis*) exist adjacent to Market Street on exposed southern slopes (AECOM 2011). Habitat within the northern arm of the canyon is considered good quality, as is much of the habitat in the west end of the project area along Market Street. Populations of cactus wren and California gnatcatcher observed are located in these areas. The remaining areas within the canyon, particularly the eastern-most portion, consisted of large populations of exotic grasses and forbs or disturbed habitat. These areas were targeted for habitat enhancement under the 2009 grant.

Radio Canyon

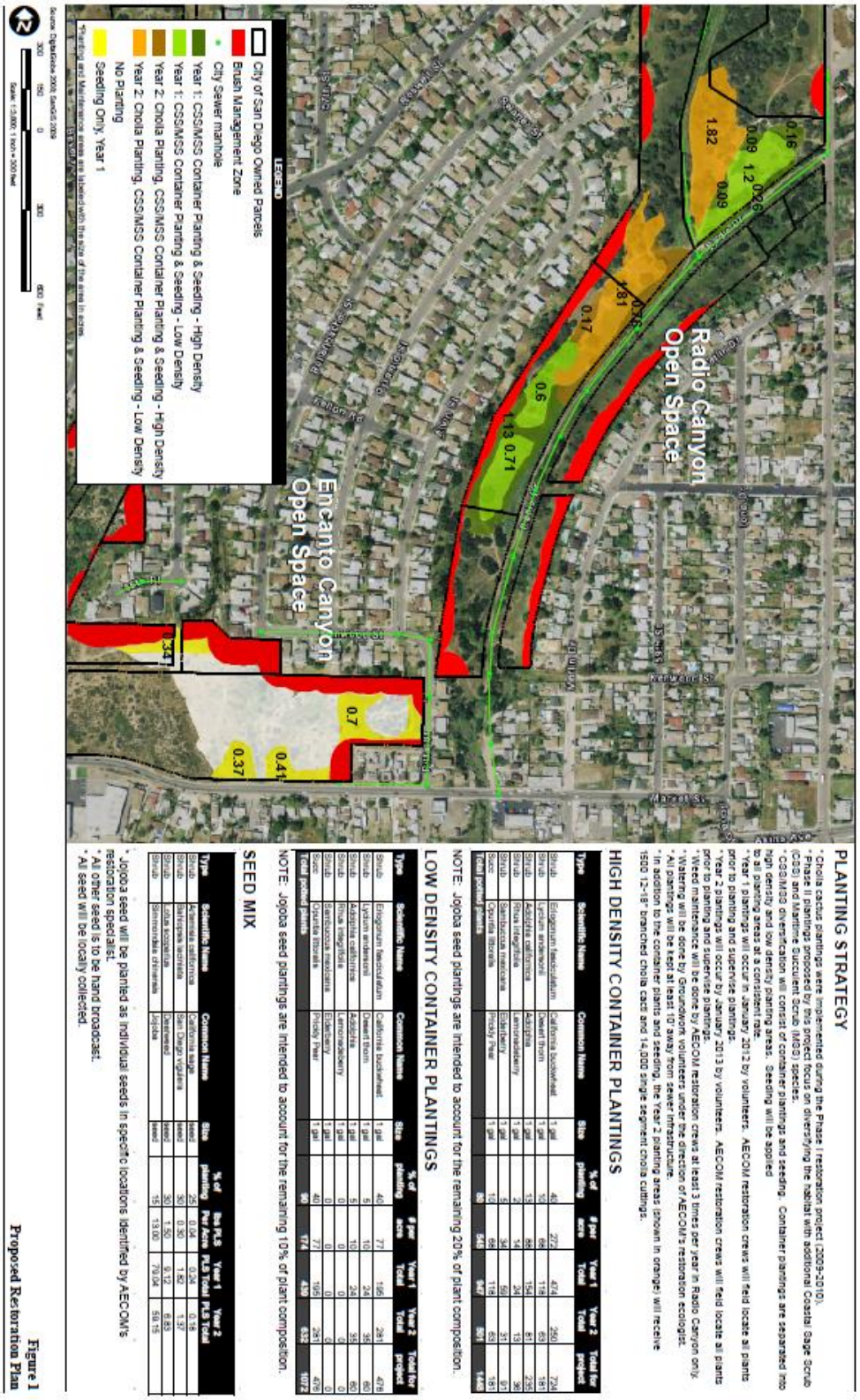
Habitat types within Radio Canyon as mapped in 2009 and 2013 were primarily non-native grassland and ornamental species. Common species identified include acacia (*Acacia* sp.), palm trees (*Washingtonia* sp., *Phoenix* sp.), and nonnative grasses and forbs such as bromes (*Bromus* sp.), wild oats (*Avena* sp.) and mustard (*Brassica* sp.). Small fragments of coastal sage scrub and maritime succulent scrub plant species are present, but degraded. The litter and large trash items were noted throughout the which further degrades the quality of the habitat. Riparian habitat known to be present in Radio Canyon has not been mapped. Individual plant and animal species observed during initial surveys can be referenced in Appendix 1 and Appendix 2 of the AECOM Final Report (2011). See Appendix A for the AECOM Final Report.

The EMP grant habitat enhancement and restoration project resulted in the planting of approximately 12 acres with cholla cactus (*Cylindropuntia prolifera*) and exotic removal on 4.69 acres, without active planting (Figure 5).

Emerald Canyon

No baseline biological work has been done in Emerald Canyon. Based on preliminary observations the Canyon is occupied by disturbed coastal sage scrub habitat. A drainage runs through Canyon and contains mature mesquite (*Prosopis* sp). trees. Mature toyon, lemonade berry, and other evergreens dominate the upper slope.

Figure 5. 2011 Habitat Restoration Areas



Source: Coastal Cactus Wren & California Gnatcatcher Habitat Restoration Project, AECOM and Groundwork San Diego, 2011.

1.4.2 General Wildlife

Open Space Areas surveys conducted in 2009 and 2011 (AECOM, 2011) under the EMP Grant documented the presence of native wildlife species: 4 species of insects and butterflies, 5 species of reptiles, 39 species of birds, and 3 species of mammals. Despite the fact that the Open Space Areas are almost surrounded by urbanization, it supports a diverse suite of wildlife species, including two threatened and endangered species: coastal California gnatcatcher and coastal cactus wren. Appendix 2 of the AECOM Final Report (2011) lists the wildlife species observed during the surveys.

Many of the wildlife species recorded are habitat generalists that use a range of habitats. The western fence lizard, coastal western whiptail, and southern alligator lizard are the most widespread reptiles. The most widespread mammal species are the California ground squirrel and coyote. Common avian species include the California quail (*Callipepla californica*), mourning dove (*Zenaida macroura)*, Anna's hummingbird (*Calypte anna)* and black phoebe (*Sayornis nigrans*). Note, no comprehensive wildlife surveys have been conducted in the Open Space Areas, thus species bats and other wildlife have not been documented.

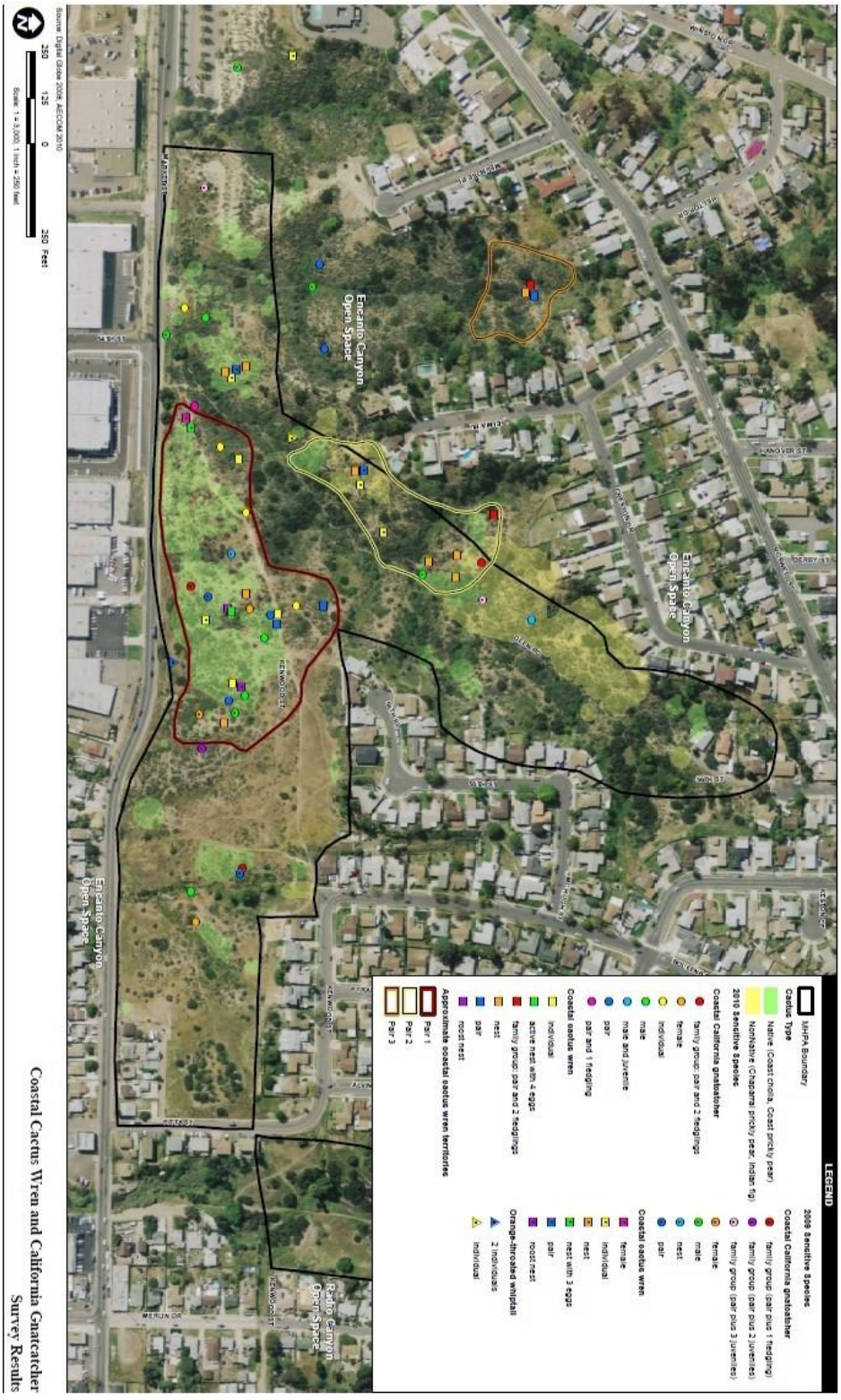
1.4.3 Sensitive Plant and Animal Species

The San Diego Barrel cactus is known to occur in Encanto Canyon. No known sensitive plant surveys have been conducted in either of Radio or Encanto Canyons. Surveys for the coastal cactus wren and the California gnatcatcher were conducted in 2009 and 2010 (AECOM, 2011). Three cactus wren pairs were observed within Encanto Canyon. California gnatcatchers were also observed in Encanto Canyon. Although not expressly counted, Encanto canyon may have 3 nesting pair (Figure 6). In addition the orange throated whiptail was also noted in Encanto Canyon. No sensitive species surveys have been conducted in Emerald Canyon.

1.4.4 Habitat Fragmentation and Wildlife Movement

The Open Space Areas are situated in a highly urbanized environment. The open space area are disconnected by Pitta Road as well as residential development. North of Encanto Canyon, the habitat has been fragmented by the Emerald Hills residential community which separate it from the open space area to the north that parallels Highway 94. Wildlife movement is restricted between the canyons as a result of these urban encroachments.

Figure 6. Sensitive Species Locations



Source: Coastal Cactus Wren & California Gnatcatcher Habitat Restoration Project, AECOM and Groundwork San Diego, 2011.

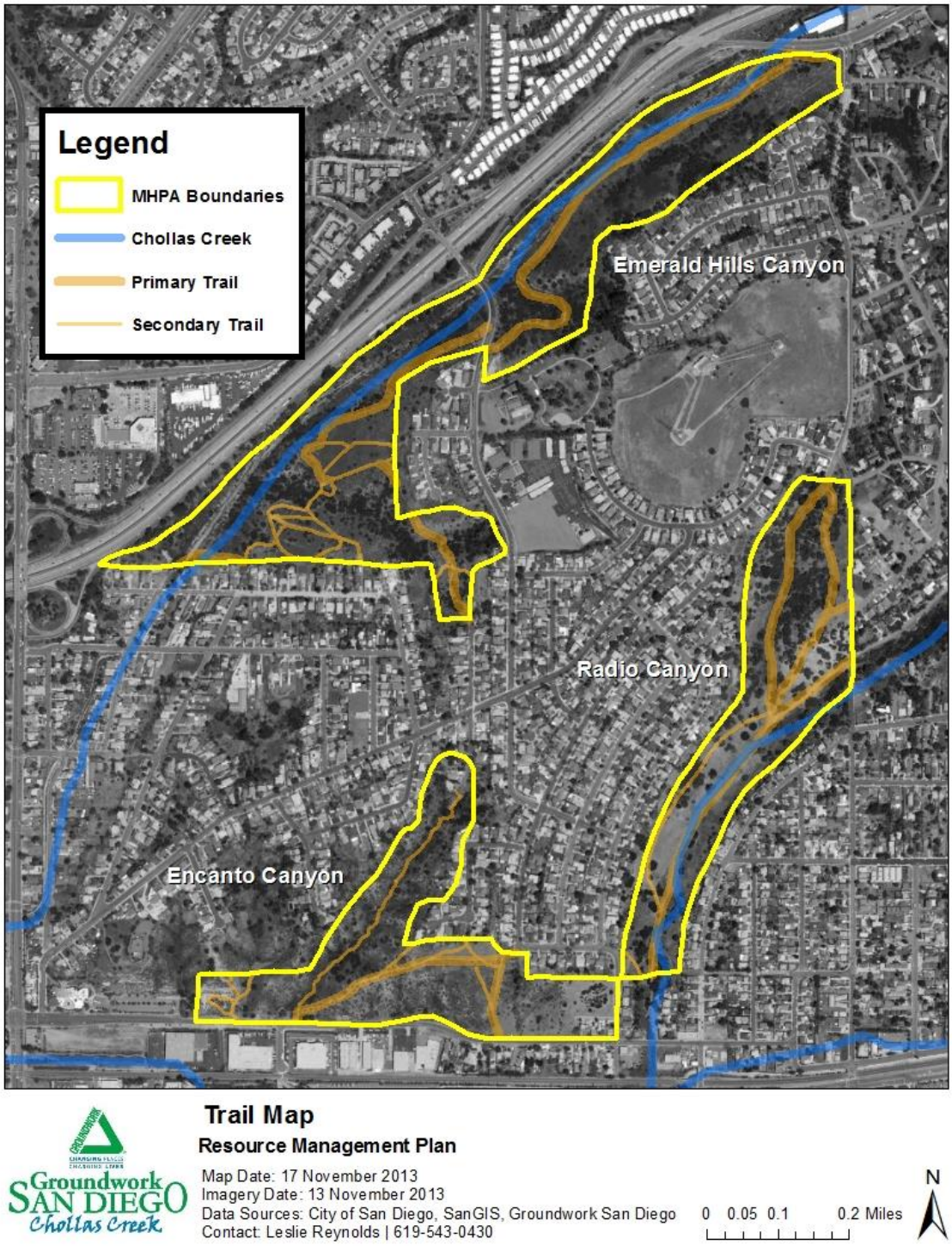
1.5 Recreational Resources

The Open Space Areas have ad-hoc trails used by the public. Three known trails within Encanto Canyon originate off of Pitta Street that traverse across and down the slopes. One non-official trail is situated near the canyon bottom in Radio Canyon (See Figure 7). Emerald Canyon trails have not been mapped. No trails are currently being maintained or managed.

1.6 Educational Programs

The restoration project offered a unique opportunity for students and residents within the surrounding canyon communities to play an important role in project planning and implementing of the restoration project in the Open Space Areas. Plants for the project were propagated at the Earthlab nursery and over the two year project habitat-based activities were developed to align with the school's model Conservation Science course enrolling 70 students per year. Students worked in cactus propagation, soil and water quality monitoring, wren monitoring, habitat restoration including cacti installation, and community education and outreach. This RMP will provide further opportunities for students and researchers to get involved in active restoration and enhancement projects within the canyons.

Figure 7. Existing Trails Map



2.0 MANAGEMENT GOALS and OBJECTIVES

Groundwork San Diego desires to maintain and enhance the biodiversity of the Open Space Areas ensuring that the land continues to be a viable habitat refugia. This section's goals and objectives relate to resource management and public use. These goals and objectives are intended to implement the Mission of the RMP as time and resources such as funding and available personnel permit. Management of the Open Space Areas will accommodate public use as a secondary objective to maintain and restore the natural resources.

2.1 Threats and Potential Impacts

The Open Space Area's key management challenges stem from its proximity to residential development, while certain issues, such as invasive plant infestations, stem from historical land uses and are intensified by current adjacent land uses. Table 1 identifies the most significant threats to the native habitat and sensitive species and lists the potential impacts that are likely to result from these threats. Habitat fragmentation, invasive plant species, the urban edge effect, public use, and erosion constitute these main threats. The RMP is designed to address these threats and minimize the impacts. Management guidelines that address these issues are provided in Section 3.0.

Table 1. Analysis of Main Threats and Potential Impacts for the Open Space Areas

Threats	Potential impacts
Habitat Fragmentation	
Wildlife corridors become increasingly important for plants and wildlife as human development encroaches upon natural areas or isolates them from other protected areas. No safe wildlife linkages allow for movement between the Open Space areas or surrounding open space areas.	• Movement of wildlife and genetic material is hindered, resulting in the extirpation or isolation of species • Habitat fragmentation contributes to the “urban edge effect”
Invasive Plant Species	
Invasive plant species are outcompeting native species in significant areas of the Open Space Areas.	• Invasive plant species degrade existing native habitat and reduce the biodiversity • Invasive plant species compete with native plants for resources and habitat and prevent seedling establishment • Invasive plant species may displace native wildlife
Urban Edge Effect	
The Open Space Areas are surrounded by urban lands along most of its boundaries, and the fuel modification required along these areas further increases the effects of the urban edge.	• Exotic plant and animal species are introduced and degrade the natural environment by outcompeting or preying on native species • Prevents native wildlife from using habitat along the periphery of the Open Space Areas or puts them at risk for predation by feral or domesticated animals • Contributes to an increase in frequency and severity of wildfires • Fragmentation caused by unauthorized trails • Ambient lighting and noise can disturb wildlife and ecosystem functioning • Artificial water sources and public feeding of wildlife disrupts the natural cycle of nature • Unauthorized collecting and harassing of wildlife • Unsecured backyards can act as artificial food sources for wildlife
Public Use	

The existing ad-hoc trail networks evolved from short cuts to other locations, which were not created with consideration of the sensitivity of the surrounding habitat. Off-trail use has facilitated the development of unauthorized trails and shortcuts degrading habitat and causing erosion problems.	• Inappropriate uses of trails [both authorized and unauthorized] contribute to erosion, alteration of natural drainage patterns, introduction of exotic vegetation, degradation of native vegetation, and increased human-wildlife interactions • Degraded trails create difficult or unsafe trail conditions for visitors • Expanding and eroding trails may contribute to habitat fragmentation
Erosion	
Unrestricted and improper land use practices have resulted in erosion threats in parts of the Open Space Areas. Lack of designed and implemented trails, and areas without vegetation on steep slopes are the most susceptible to erosion.	• Increases sedimentation in streams and watercourses • Degrades water quality • Reduces habitat value in riparian and ephemeral ecosystems as a result of siltation • May create hazardous trail conditions from erosion for users, which may then result in the creation of alternate unauthorized trails • Reduces soil productivity and water-holding capacity • Alters natural drainage patterns • Increases velocity and amount of storm water runoff • Scarred/barren areas reduce aesthetic values • Results in habitat loss

2.1.1 Invasive Plant and Animal Species

Invasive plants are a threat to open space because they colonize disturbed areas and degrade existing native habitat. The invasive plants “alter ecosystem functions such as nutrient cycles, hydrology, and wildfire frequency, outcompete and exclude native plants and animals, harbor dangerous animal invaders, and hybridize with native species” (Bossard et al. 2000). Significant disturbance in the past has permitted nonnative invasive plants to out compete natives, changing the plant community functioning. The non-natives have caused significant degradation of the habitat and have resulted in the loss of viable wildlife foraging and nesting areas. The management of the invasive plants will be an important component of the continued health and viability of the habitat.

Domestic/feral pets, particularly cats, enter the Open Space Areas to roam and forage for food. These animals prey on the native animals themselves and may compete with native animals for food.

2.1.3 Urban Edge Effect & Fuel Management Zones

Urban areas in proximity to the Open Space Areas cause negative effects of the functioning of the habitats. Some of these effects of urbanization include light and noise pollution, exotic pests, feral animals, exotic plants, diseases, fire, and trash and other pollution. These effects can deter animals from using the habitat along the edge of the Open Space Areas, which in turn reduces the overall usable acreage for wildlife. Interactions may occur along the urban edge from native wildlife venturing into the urban areas to roam and forage, including coyote, raccoon and other adaptable wildlife.

The Open Space Areas have urban development along most of its boundaries. One of the obvious effects of the urban edge is the fuel modification required along these areas. Fuel modification impacts the native habitat and reduces the overall acreage of the Open Space Areas (Figure 8). The ornamental plants in the urban areas may encroach and outcompete native habitat. Urban edge effects can be minimized through outreach to people who live along the edge of the Open Space Areas informing them of the importance of the habitat and ways they can reduce impacts to it. Dumping is also a problem within the Open Space Areas. Figure 8 provides a map of the areas where dumping is common.

2.1.4 Public Use

Human use has the potential to cause degradation of the natural resource values of open space areas. Overuse and inappropriate uses of the ad-hoc trail network can have negative environmental effects through alteration of natural drainage patterns, erosion and deposition of soil, introduction of exotic vegetation and increasing human-wildlife interactions. Degraded trails also diminish the quality of the visitor experience by creating difficult or unsafe trail conditions, promoting trail use conflicts, and impacting the scenic quality of the landscape.

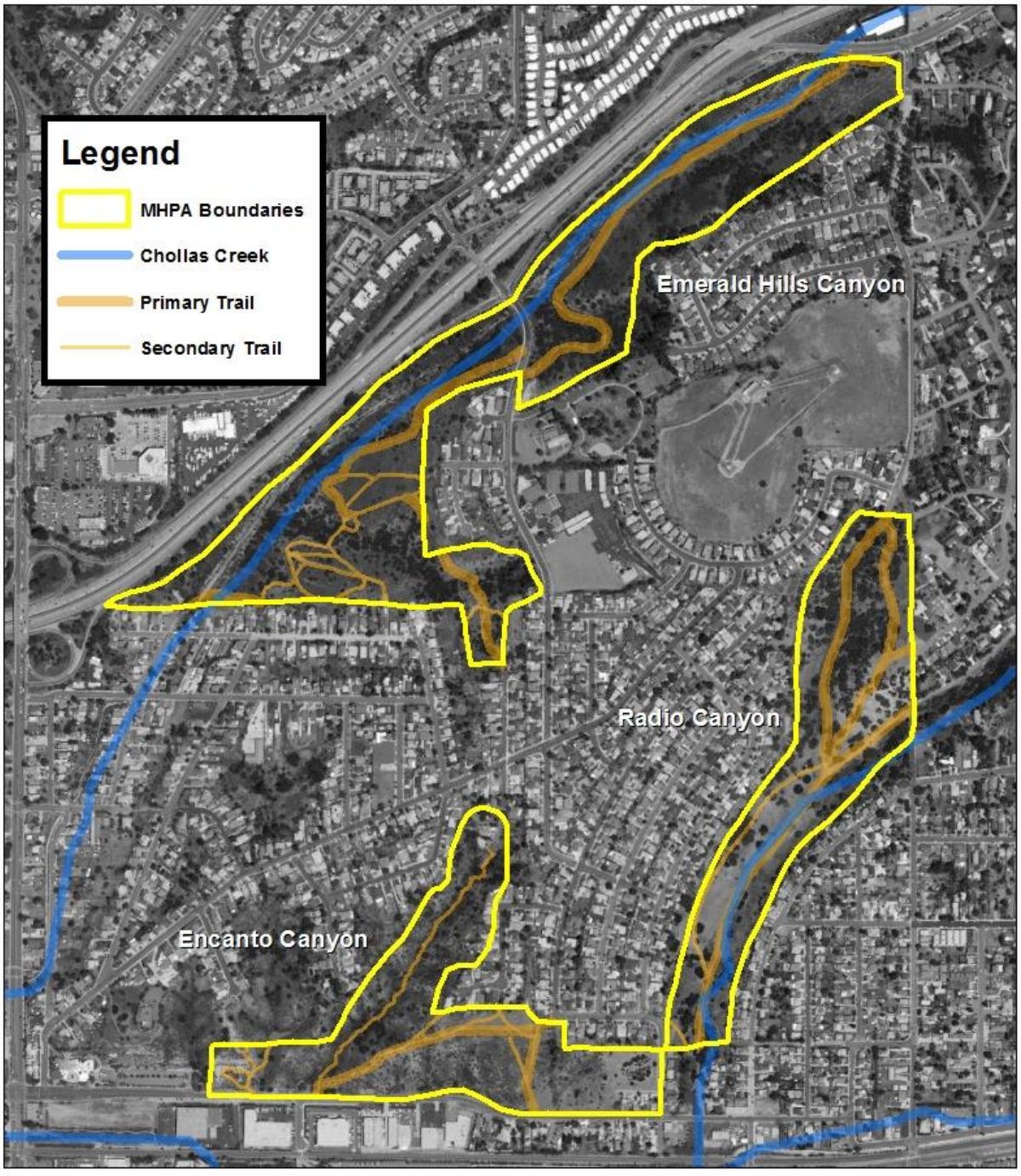
The existing trail network has evolved from short cuts and other ad-hoc use that were not constructed or maintained with sensitivity to the environment. Steep trails within Encanto Canyon without adequate ground cover are eroded, with compaction along their edges. The Radio Canyon trail sometimes concentrates flow and carries water during storm events. In addition, off-trail use by people and pets tramples native vegetation, degrades habitat, disturbs wildlife, and promotes invasive exotic species growth. Figure 7 provides a map of the existing ad-hoc trails within the Radio and Encanto Canyons.

2.1.5 Erosion

Human land use practices such as removal of vegetation or heavy repeated trampling can cause accelerated natural erosion beyond natural levels, causing degradation of the habitat. Erosion reduces soil quality and water-holding capacity by removing the nutrient-rich upper layers of the soil. Erosion can result in increased sedimentation in watercourses, degradation of water quality and reduction of water storage capacity. The extent of erosion depends on a combination of factors, including the amount and intensity of rainfall, soil type, slope length and steepness, and ground cover (vegetation, litter/mulch, rocks). Soil erodibility is a function of texture, organic matter content, structure, and permeability. In general, areas with erosive soils on long steep slopes with little or no cover will be most susceptible to erosion.

The lack of adequate trail design and implementation has resulting in ad-hoc trails that area not well positioned. The creation of unauthorized trails, particularly downhill trails in steep hillside areas, has also exacerbated conditions that are conducive to erosion through similar mechanisms. Figure 8 provides a map of erosional problem areas within the Open Space Areas.

Figure 8. Fuel Modification, Dumping & Erosion Map



Groundwork SAN DIEGO Chollas Creek

Trail Map

Resource Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

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2.2 Management Goals and Objectives

The following goals and objectives outline a management framework designed to protect and restore the natural resources of the Open Space Areas. Goals and objectives are necessary to perpetuate the important natural, scenic, and recreation values and to respond to threats to those values.

The goals and objectives are divided into Biological Resource Management, Public Use and Maintenance, and form the basis for the management and monitoring actions. A biological goal is a statement of intended outcome of management based on the feasibility of enhancing, maintaining, or restoring species populations and habitat. A public use goal is the statement of the type and level of public use compatible with biological goals. Objectives state the intended results for management actions that promote the resource, interpretation, and maintenance goals for the Open Space Areas. The management actions that follow are intended to implement these objectives. While the achievement of goals and objectives will be based on the availability of resources such as personnel and funding, priority spending of available resources will be in alignment with the Mission of Groundwork San Diego.

2.2.1 Biological Resource Element

The management guidelines for the biological resources are based on analysis of existing site-specific survey data including vegetation and wildlife surveys, to assist in the discussion of invasive plant species, sensitive species, and habitat management. The major intent of the goals and objectives is to provide a strategy by which the natural resources can be restored, managed, conserved, and enhanced, while at the same time providing educational and recreational opportunities to the public.

Section 1.0 of this document contains a summary of site assessment, survey work and habitat restoration related to the onsite natural resources. Three major vegetation types: non-native vegetation, coastal sage scrub, Maritime Succulent Scrub, in addition to disturbed/developed lands have been mapped identified within the Open Space Areas. In addition a small component of riparian habitat/ephemeral drainage is known within Radio and Emerald Canyons that has not been mapped. Of these, the non-native vegetation habitat covers the largest area, and it is dominated by nonnative annual grasses and forbs as well as invasive trees and shrubs. Control efforts will be focused toward particularly highly invasive plant species, including acacia, Brazilian peppertree, tree of heaven, giant reed and other identified "high priority" areas, which are present to varying degrees and pervasive throughout. Invasive plant species, habitat fragmentation, and the urban edge effect have threatened the viability of native habitat and wildlife and sensitive species. Section 3.2.4 provides a list and ranking of priority invasive species to be removed. As discussed in Section 1 above, at least 3 sensitive species are known to occur within the Open Space Areas. By restoring and preserving habitat and educating visitors and neighbors, viable populations can be maintained for the perpetuity of the species.

The following management goals and objectives are recommended and are intended to identify gaps in knowledge and suggest ways to eliminate them, establish sound data management and monitoring techniques, and provide the framework that will assist in making informed management decisions.

Goal: BIO-1: Identify and maintain all populations of native plants and wildlife with special emphasis on management of locally uncommon, sensitive, federally-threatened or endangered species and other sensitive resources.

Objectives

BIO-1.1 Maintain and update the plant communities map, and affected fuel management zones.

BIO-1.2 Protect and maintain all native vegetation communities, with special attention to sensitive vegetation types such as maritime succulent scrub, coastal sage scrub, and riparian communities.

BIO-1.3 Identify, protect and maintain populations of sensitive, threatened, or endangered plant species.

BIO-1.4 Identify and protect breeding populations of sensitive animal species and their habitat including coastal Cactus wren, the coastal California gnatcatcher and the orange throated whiptail.

Goal: BIO-2: Enhance and restore degraded habitats.

Objectives

BIO-2.1: Develop and prioritize habitat restoration areas within the Open Space Areas, outside of Fuel Management Zones. Determine restoration priorities based on weed and soil associations, percent slope, size of weed infestation, proximity to roads and trails, proximity to existing restoration, wildlife connectivity, etc.

BIO-2.2 Remove all unauthorized trails within the Open Space Areas to improve the quality of habitat for wildlife.

BIO-2.3 Identify and map areas needed for selective fuel reduction to increase native vegetation, maintain a diverse age structure, and restore biotic and abiotic processes to the vegetation community.

BIO-2.4 Map and monitor the spread of invasion of exotic species and develop appropriate management responses in association with restoration priorities.

BIO-2.5 Develop a invasive exotic plant removal action plan and set removal activities on a year by year basis, as funds and resources are available.

BIO-2.6 Identify offsite sources of invasive species and the landowners. Prioritize coordination for removal of those species.

Bio-2.7 Update planting plans in support of annuallyrenewed ROE application from landowner City of San Diego Parks and Recreation Open Space Division).

Goal: BIO-3: Implement monitoring programs designed to identify canyon threats and guide adaptive management by tracking the health, function, and integrity of habitats and ecological processes.

Objectives

BIO-3.1 Monitor all native and non-native habitat types to assess their condition and to document any changes that are a result of specific management recommendations.

BIO-3.2 Monitor key ecological processes to interpret biological changes and responses to management measures.

BIO-3.3 Document the status of locally uncommon, sensitive, threatened or endangered species and other sensitive or special status resources in order to prioritize management actions and to assess the effectiveness of management actions.

BIO- 3.4 Monitor the effects of urban runoff and soil deposition from surrounding areas.

BIO-3.5 Continue to implement measures to restore habitat and improve habitat quality designed to reduce nutrient loading and sedimentation potentially impacting beneficial uses in the watershed.

Goal: BIO-4: Encourage community-based, as well as university-level research, to address unanswered biological questions.

Objectives

BIO-4.1 Facilitate focused research projects.

Goal: BIO-5: Develop an in-house data storage and analysis system.

Objectives

BIO-5.1 Develop a centralized data management system that interfaces with regional and statewide biological database systems (e.g. SANDAG, BIOS).

BIO-5.2 Manage and update an in-house GIS system with maps and locations of natural resources, planned invasive removal and restoration areas, and proposed trails.

2.2.2 Public Use Element

The Open Space Areas are open to the public and permit pedestrian and bicycle access on most trails. An evaluation of the trail locations and connectors, and opportunities to implement management actions to minimize impacts on soils, water quality, native habitat, and wildlife is needed. The will focus will be on analyzing the existing trail system and evaluate limited new trail routes.

Goal: USE-1: Provide a trail system that protects natural resources of the Open Space Areas, while allowing low-impact recreational use.

Objectives

USE-1.1 Abandon roads and trails if impacts on native habitat or other resources are discovered.

USE-1.2 Locate new trails away from sensitive habitat areas.

USE-1.3 Minimize riparian crossings to decrease disturbance of sensitive natural areas.

USE-1.4 Make decisions to reconstruct or reroute existing trails and emphasize minimizing ground disturbance.

USE-1.5 Provide diverse and interesting trail experiences to minimize unauthorized trails.

USE-1.6 Use best management practices in the design, construction, and maintenance of trails, including temporarily closing trails when needed.

USE-1.7 Implement trails in partnership with public agencies, non-governmental organizations and private landowners, when feasible.

USE-1.8 Implement a trail system that is considerate of adjacent landowner interests to the extent possible, and consistent with protecting natural and visual resources.

USE-1.9 Seek methods to establish partnerships among trail interest groups to improve cooperation on trail use, volunteer maintenance opportunities, and preservation of habitat consistent.

USE-1.10 Create and maintain trails in an environmentally sustainable manner by:

- Using natural materials
- Restoring damaged areas
- Reducing the use of chemicals
- Minimizing disturbance of habitat
- Limiting runoff and grading

Goal: USE-2: Enforce protection of the varied resources and promote an enjoyable and safe environment for visitors.

Objectives

USE-2.1 Encourage uses that acknowledge the natural and scenic beauty of the Open Space Areas and facilitate enjoyment of the outdoor experience, as well as those that promote the safety of visitors. Establish rules outlining appropriate uses and restrictions on the use.

Goal: USE-3: Create and/or improve a trail system that provides a broad public benefit by accommodating diverse uses and user abilities.

Objectives

USE-3.1 Allow trail use within the Open Space Areas.

USE-3.2 Discourage the use of trails that are not part of the system of maintained trails.

USE-3.3 Prohibit the use of motorized vehicles, with authorized exceptions.

USE-3.4 Where reasonably feasible, provide access for people with disabilities within the context of the agency's purpose, policies, and legal requirements.

USE-3.5 Connect Open Space Areas trails to regional trails, where appropriate.

Goal: USE-4: Identify and accommodate parking, access points, and trail amenities that maintain the natural character of the land, enhance resource protection and contribute to the enjoyment of open space.

Objectives

USE-4.1 Rely primarily on public rights of way to provide parking capacity to serve trail users arriving by car.

USE-4.2 Seek to provide reasonable access points to eliminate excessive parking and avoid or minimize traffic to the surrounding community.

USE-4.3 Allow trail amenities such as, but not limited to:

- Informational displays and signs
- Portable restrooms in areas with group use
- Trash and recycling receptacles
- Facilities to encourage the pickup and disposal of pet waste
- Water fountains.

2.2.3. Interpretation and Education

The a long-term goal will be to create interpretive programs that educate both individuals and communities on the importance of preserving, understanding, and coexisting with the natural resources. This can be accomplished through the creation and installation of a variety of interpretive tools such as signs, kiosks, printed material, and public programs.

Goal: INTERP-1: Enhance public stewardship appreciation of the value of the Open Space Areas, conservation issues in general, and the significance within the Chollas Creek Watershed.

Objectives

INTERP-1.1 Provide high-quality educational and outdoor-learning opportunities.

INTERP-1.2 Provide opportunities for community involvement and education.

INTERP-1.3 Develop a public outreach and education program.

INTERP-1.4 Continue partnerships with other environmental and educational organizations for public outreach and education.

Goal: INTERP-2: Provide a trail system that promotes and enhances public enjoyment and appreciation of the natural, cultural and scenic resources.

Objectives

INTERP-2.1 Use signs, education and barriers to keep users on the trails.

INTERP-2.2 When feasible, produce an accurate and informative trail map for the public, with trail safety guidelines, that is accessible from the Groundwork San Diego or other website.

INTERP-2.3 Provide trail users with accurate information on trail locations.

INTERP-2.4 Provide information to trail users that facilitates orientation, natural and cultural resource interpretation, code compliance, and appropriate trail etiquette.

INTERP-2.5 Educate trail users on the potential impacts that trail uses have on wildlife, cultural resources, and the environment.

INTERP-2.6 Promote volunteer participation in trail stewardship.

3.0 BIOLOGICAL MANAGEMENT AND MONITORING IMPLEMENTATION

Recommended management and monitoring actions necessary to achieve the goals and objectives in Section 2.0 are summarized below. These management and monitoring actions should be implemented as sufficient resources become available.

3.1 Proposed Management Activities

The implementation of this RMP will move forward a range of projects and management activities relating to biological resources management, public use and interpretation, and ongoing maintenance and monitoring. The ongoing management activities will be enhanced and supplemented by these proposed management activities.

Resource Management

- Prioritize studies that provide general biological information that are not currently available, such as rare plant surveys and sensitive wildlife locations.
- Design and implement targeted studies and monitoring protocols to assist management decision-making and guide future management and monitoring activities
- Maintain a database of natural resources identified within the Open Space Areas
- Implement a habitat enhancement and restoration plan to identify areas of high, medium and low exotic removal and restoration priorities
- Manage and minimize exotic invasive plant species threatening the integrity of native habitats
- Develop planting plans for all restoration needs based on reference sites
- Develop a seed collection and plant procurement program for sensitive plant species or plant communities located within the Open Space Areas, to maintain and enhance biological diversity and for use in future restoration projects

Public Use and Interpretation

- Develop and implement the a Trail Plan, and provide kiosks, signs, or map pamphlets that clearly demarcate permitted use trails, authorized users for each trail, and summarize the rules and regulations
- Establish proposed trails and remove inappropriate trails as part of the implementation of the proposed Trail Plan to provide loop opportunities for users
- Construct proposed trailheads per the Trail Plan
- Develop a comprehensive interpretive plan and deliver interpretation and education using a wide range of methods including, but not limited to, brochures, signs and kiosks, special events and programs, and web-based strategies

- Work with local recreation groups, neighboring jurisdictions, and the public to establish programs and events that promote stewardship and increase awareness of the natural resources

Open Space Areas Maintenance

- Select and install erosion and sediment control practices where practicable and within an allocated budget such as culverts, drains, mulch, contour wattles, sediment traps, etc., as warranted
- Close and restore to natural condition any existing trails that are no longer necessary to retain and are not included in a proposed Trail Plan, as budget and resources allow
- Install fencing where appropriate to protect resources, post signs, establish permanent markers, and/or enforce boundaries and permitted access
- Maintain facilities and structures (e.g., trails and kiosks) and remove litter, trash, and debris that may attract nonnative wildlife and reduce the aesthetic values
- Provide boundary encroachment enforcement and landowner education

3.2 Biological Resource Management

The primary objective of this RMP is to identify the best way to manage, protect, and enhance the biological resource values of the Open Space Areas. The resource management guidelines proposed by the RMP include biological investigation and monitoring within an adaptive management framework, data keeping and database management, habitat enhancement and restoration, exotic plant control, seed collection and plant procurement, exotic animal control, and wildlife corridor optimization. Table 2 provides a list of monitoring and maintenance actions and recommended intervals based upon information described below.

Table 2. Summary of Long-term Monitoring and Management Tasks

Task	Purpose	Frequency
General Qualitative Site Monitoring		
Photo Monitoring	Assess overall condition of Open Space Areas to detect changes in plant communities and other physical conditions.	Annually
General biological survey and site assessment	Assess overall condition of Open Space Areas (e.g., fencing, trash, habitat degradation, etc.) and map incidental observations of sensitive native or invasive species. Note wildlife observed.	Annually in spring
Habitat Monitoring		
Vegetation mapping	Map vegetation communities to track changes in boundaries and composition over time.	Every 5 years
Invasive species mapping	Update map of infestations of invasive species, and estimate percent cover of non-native species	Annually

Task	Purpose	Frequency
Quantitative habitat monitoring	Quantitatively monitor habitat over time to assess changes in species richness, abundance, distribution, and percent cover.	Every 3-5 years in spring
Species Monitoring		
Rare plants	Survey habitats for rare plants	Every 3-5 years during spring
Rare plants	If detected, annually in spring. Count individuals and map population locations.	Annually
Cactus Wren	Assess the status and general trend of utilization of the habitat.	Every 3-5 years during spring
California gnatcatcher	Assess the status and general trend of utilization of the habitat.	Every 3-5 years during spring
Wildlife Movement	Understand wildlife utilization	Every 1-2 years
Exotic Removal and Restoration		
Set Priorities for Exotic Removal	Identify exotic removal locations and activities for the year and set dates for removal	Annually
Set Priorities for Habitat Restoration	Identify habitat restoration locations and activities for the year and set dates for removal	Annually
Seed Collection	Collect seed for restoration project that will take place in 1-2 years	Seasonally timed
Plant procurement	Grow plants for planned restoration project 3-6 months in advance of planting date	Seasonally timed
Open Space Areas Maintenance & Management		
Invasive plant control	Perform invasive species removal in specified areas as budget allows	Annually or as possible
Habitat Restoration	Restore habitat in specified areas as budget allows	Annually or as possible
Brush management	Reduce fire risk in brush management zones	As needed (City to perform), in coordination with the fire authority
Trash removal	Remove all trash and materials that have been illegally dumped	As needed
Erosion evaluation	Inspect areas for erosion problems and identify solutions. Coordinate with the City for implementation.	As needed, within one month of observation
Feral animal control	Remove feral and exotic animals that prey on native wildlife	As needed, in coordination with County Animal Control
Boundary Encroachment Enforcement	Survey and identify boundary encroachment issues and notify City.	Inspect annually
Reporting		
Reports	Prepare report summarizing all management and monitoring activities, continued threats, and other pertinent information	As needed.
Update GIS	Update GIS layers resulting from management and monitoring actions	Annually

Task	Purpose	Frequency
Update RMP	Update Resource Management Plan	Update every 5-10 years

3.2.1 Biological Monitoring

Monitoring and targeted studies should be designed to assist management decision-making. Under this approach, management moves forward in a scientifically-based way that involves monitoring, conducting targeted studies, and applying management activities as experimental treatments. The results would feed back into decision-making, thus reducing uncertainty and improving the effectiveness of the program through time.

The best available information will be used to make management decisions and also look for opportunities to learn how to better accomplish the Goals and Objectives of the RMP. Steps that may be involved in a long-term adaptive implementation program include opportunistic learning, management, monitoring, and directing the results of analysis and assessment back into the program through decision-makers. The existing biological inventory, direct observation, and empirical information are expected to inform the strategy for implementing the this plan.

A problem-focused approach that links the management objectives to causes of change and management activities are necessary for effective management and monitoring. Monitoring allows the measurement of resource condition and responses of the resource to human-induced and natural disturbances. Monitoring should identify problems early so that corrective management action can be taken as soon as it is needed. In contrast, targeted studies (at small spatial scales or in pilot studies) can be used to resolve critical questions regarding ecosystem functioning or management applications. Some management activities will have little uncertainty regarding application or outcomes such trash removal or sign posting, however other management activities will have greater uncertainty, including habitat restoration. These activities should be designed as experiments to increase our understanding of the system and the effectiveness of management, including determining the most effective way to control exotic species.

The results from monitoring and targeted studies should be evaluated and used to refine goals, improve the management program and improve monitoring methods.

Phase 1: Inventory Resources And Identifying Relationships

The main goal of Phase 1 is to determine the baseline condition of the system as a prelude to long-term monitoring program design. This involves an inventory of what species, habitats, and other resources are present, their locations, and general conditions. Much of this work has been done. However, data gaps warrant additional studies including baseline work in Emerald Canyon.

Management can and has been applied during this phase. In general, management should be limited to actions of known impact, such as weed eradication or trash removal until such management can be appropriately evaluated. This phase can also be used to develop or test relationships between species, habitats, processes, and other causes of variation such as trails or invasive species. Management questions should be developed with the goal of transforming management questions into long-term monitoring protocols.

Phase 2: Pilot Testing of Long-term Monitoring and Resolving Critical Management Uncertainties

Phase 2 is characterized by pilot testing of long-term monitoring protocols and sampling designs to select cost-effective designs with the ability to detect biologically relevant and management-relevant changes. This process of designing pilot monitoring protocols may be as simple as determining locations for photographic point monitoring or may require the development of a scientific sampling design with adequate statistical power to detect change. In addition, the pilot phase is an opportunity to conduct targeted studies to resolve critical management uncertainties.

- **Inventory sensitive species on a regular basis to keep track of the current status of the species.** Known populations of sensitive plant species are typically inventoried every year in the spring to identify status, health, threats, problems, and the trend of the populations, as possible. Suitable habitat in other areas of the Open Space Areas should be surveyed during the spring for the presence of sensitive plant species at 3-5 year intervals. The coastal California gnatcatcher and coastal cactus wren populations should be surveyed by a qualified biologist periodically (recommended every 3-5 years) to track the population and distribution of the species in the Open Space Areas, and to determine whether this threatened species is utilizing restored habitats. Survey frequency should be determined by management need. Table 2 provides potential survey frequency information for species of interest located within the Open Space Areas.

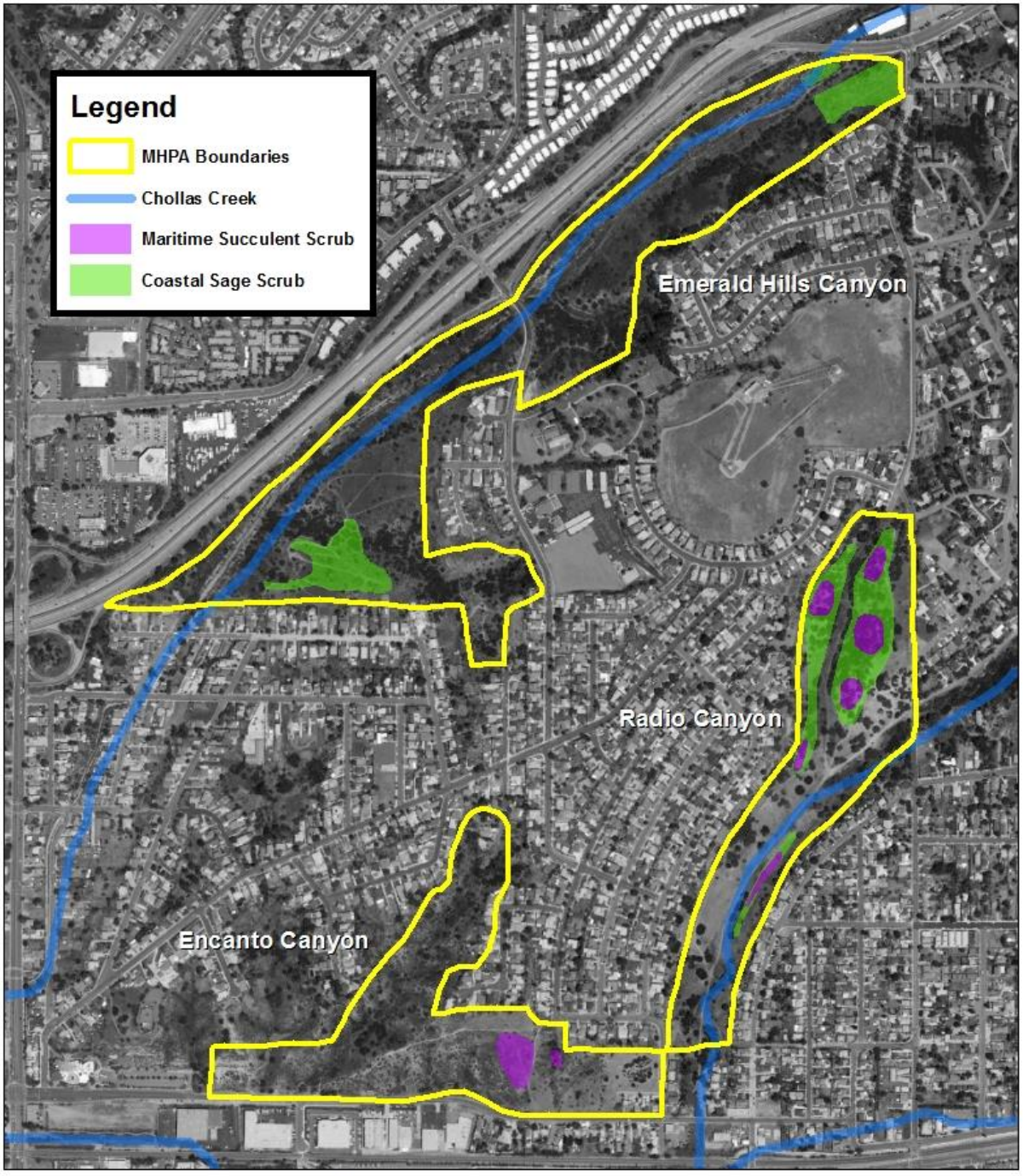
- **Update vegetation maps every five years.** This update would include habitat restoration projects and changes in invasive species locations. It is important to have updated maps for Open Space Areas management and planning. During the vegetation mapping effort, the invasive plant species discussed previously should be mapped to determine whether control of these populations should be considered a priority within certain areas of the Open Space Areas.

- **Design and implement a study to track the trends and changes in the habitat types and quality.** This study will monitor the status of the Open Space Areas and shift priorities and management methods to achieve the Open Space Areas goals. The study should be conducted at the same time each year in order to make consistent comparisons over time. Spring would allow for easier identification of the habitats and species. This will consist of setting up photo stations in various vegetation communities and tracking from year to year.

- **Perform restoration experiments utilizing different techniques to determine the most cost-effective methods for the habitats of the Open Space Areas.** Detailed methods for

restoration are should build upon the AECOM restoration work. In 2012 an updated restoration map was developed and is included as Figure 9 in this report. A longer-term restoration map that includes priorities for exotic removal and subsequent restoration has been developed as part of this effort and is included as Figure 10. developed in a Habitat Restoration Plan. Site-specific restoration plans will be developed on an as-needed basis.

Figure 9. Updated Restoration Plan Map



Proposed Restoration Areas

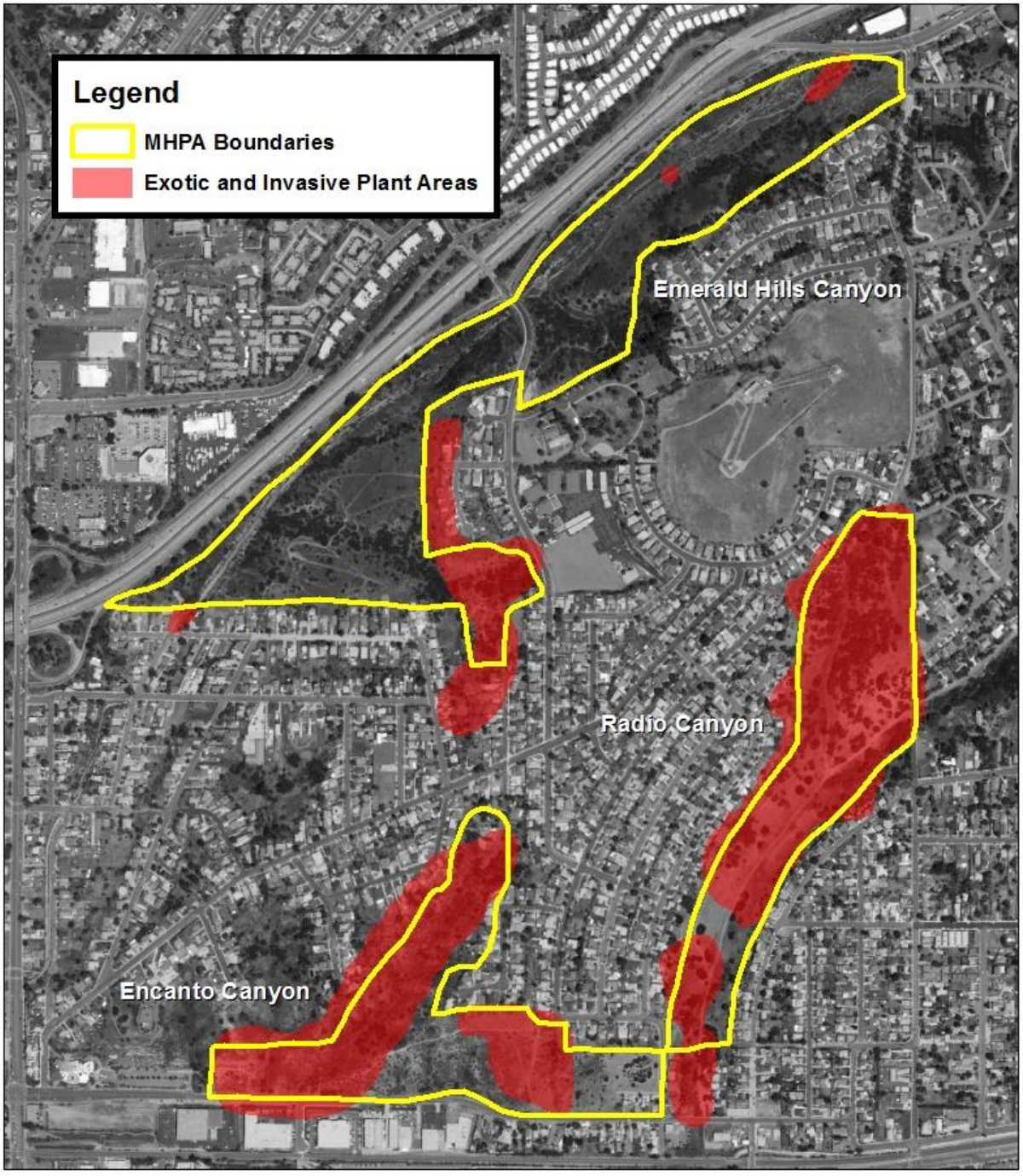
Resource Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

N

Figure 10. Long-term Exotic Removal Priorities



Groundwork San Diego Chollas Creek

Long-term Exotic Removal Priorities

Resouce Management Plan

Map Date: 17 November 2013
Imagery Date: 13 November 2013
Data Sources: City of San Diego, SanGIS, Groundwork San Diego
Contact: Leslie Reynolds | 619-543-0430

0 0.05 0.1 0.2 Miles

N

- **Conduct periodic wildlife monitoring to determine the health, quality, and functionality of different portions of the Open Space Areas.** As resources allow, general wildlife surveys should be conducted every year in the spring when seasonal migrants are present. Numbers and locations of sensitive wildlife can be identified and mapped concurrently. To understand and confirm the movement of animals across or through the Open Space Areas wildlife movement studies should be conducted every year or every other year. Wildlife cameras should be set up in key locations and photos collected for 5 days, or as budget allows. Close monitoring of the results of these investigations will allow Open Space Areas managers to redirect or focus additional studies or actions to address specific conservation or restoration needs as they are identified. Flexibility and responsiveness to changing situations will be critical to the success of this effort. Proactive monitoring and management programs conducted within the Open Space Areas will play a vital role in the conservation of natural resources within the region

- **Periodically reassess the presence of nonnative and other pest animal species to determine their effect on the Open Space Areas.** During the wildlife surveys and wildlife movement studies (camera traps), the biologist should document and track the occurrences of feral cats, European starlings, brown-headed cowbirds, and Argentine ant. As new invasive animal species are observed or reported, the number along with impacts to the Open Space Areas, should be assessed.

- **Provide opportunities for local and university-level research, particularly where research and studies would help to answer management questions or contribute to the understanding of species of interest and habitats**. Work with local schools and universities to develop projects that would provide useful information to regarding resources in the Open Space Areas. Research proposals should be submitted and evaluated on a case-by-case basis in consideration of potential impacts associated with the research.

Phase 3: Implementation of Long-Term Monitoring and Adaptive Management

Activities include implementation of long-term monitoring protocols and periodic evaluation and refinement of the monitoring program. The program continues to address uncertainties, principally by evaluating responses to management and extreme events. Emerging uncertainties are also addressed and prioritized, such as a new invasive species, pollution sources or global warming.

3.2.2 Biological Resource Data Keeping

A database and maps of plant and animal species observed in the Open Space Areas should be maintained. The geographical information system (GIS) database developed as part of this grant will provide the means to accomplish this intent. The Groundwork San Diego should share spatial and/or resource data as appropriate with statewide data warehouses such as SANDAG and BIOS.

- Regularly update the GIS database by expanding the layers associated with special status plants and animals and invasive exotic plant infestations. Incorporate new observations from

Open Space Areas personnel and from such sources as the CNDDB, the USFWS, Audubon Society bird counts, etc. Standard protocols would help to facilitate ongoing observations and monitoring using global positioning system (GPS). The use of a data dictionary to store images and other data should be incorporated into the GIS database.

- Facilitate long-term habitat restoration and management efforts in the Open Space Areas, particularly with regard to special status and invasive exotic species by maintaining current data in the GIS system for each layer. Include the following key attributes in the GIS database for each community:

Vegetation Attributes	Wildlife Attributes
Dominant overstory plant species	Common animal species
Dominant understory plant species	Observed special status animal species
Dominant ground cover	Observed exotic species
Common plant species	Introduced animal species
Observed special status plant species	Observed roosting, nesting, and burrowing sites
Potential special status plant species	Other notable species
Invasive exotic plant species	Special habitat features
Typical overstory density	
Typical understory density	
Typical ground cover density	

3.2.3 Habitat Enhancement and Restoration

The purpose of a Habitat Restoration Plan is to provide guidance on restoring degraded and disturbed habitats throughout the Open Space Areas. Large areas of degraded habitat have been infiltrated by invasive weeds. Restoration of important and sensitive habitat resources, including wetlands, riparian areas, and wildlife corridors, is essential.

While the Habitat Restoration Plan would provide a great deal of technical information on existing conditions within the Open Space Areas and on restoration methods, it also would accomplish the following:

- Identifies the range of conditions that exist in the potential restoration areas, specifically soil characteristics and weed composition;

- Provides restoration criteria and a priority evaluation on restoring the degraded and disturbed habitats;

- Provides information on the most effective restoration methods currently known and their associated costs;

- Provides basic data and recommended prescription for restoration methods for each type of potential restoration area;

- Provides guidelines for preparing more detailed, site-specific plans that will maximize the success and minimize the cost of individual restoration efforts; and

The Habitat Restoration Plan should be organized by the analyses of existing conditions (e.g., soil, slope, and exotic species), restoration criteria and priority, restoration application, restoration techniques, planting and seeding lists, and performance standards and monitoring. The Habitat Restoration Plan may be modified based on monitoring results.

- Develop specific plans for individual restoration sites, using the information and guidelines provided in the Habitat Restoration Plan as well as new information developed through adaptive management. It will be important to consult with an experienced restoration ecologist when preparing the individual specific restoration plans.

- Assess, control, manage, and eradicate invasive exotic species as appropriate and needed to protect Open Space Areas resources.

While a comprehensive restoration plan has not been prepared, as described above some preliminary work has been accomplished. A short term restoration map was developed by AECOM in 2012 that builds upon the coastal cactus wren restoration work that was completed in 2011. It sets forth a plan for the subsequent 2 years (Figure 9). The exotic removal mapping work that was accomplished under this grant also sets a foundation for setting long-term restoration priorities. Further details are in the next section.

3.2.4 Exotic Plant Control

Exotic and invasive plant species are of primary concern for the Open Space Areas. General locations were mapped by AECOM the 2009 (Figure 3). Subsequently focused exotic species mapping was accomplished in 2013 for Radio and Encanto Canyons, and exotic species were prioritized by High, Medium and Low priorities. The results of this effort is found in Figure 10. The primary objective in exotic plant control in the Open Space Areas is to reduce the abundance of invasive species, particularly around populations of sensitive plants and in riparian areas. Control can be a combination of using mechanical and chemical methods. Continued monitoring of exotic species populations, abundance, and locations will assist in determining the most appropriate management options. Site-specific measures for physical, biological, and chemical control should be developed; such measures are described further in Invasive Plants of California's Wildlands (Bossard et al. 2000). Exotic species mapping sets forth the priorities thus for exotic removal in subsequent years. Table 3 below provides the list of invasive species found and their priority status.

On an annual basis, new stands of exotic species should be mapped and prioritize for treatment. Utilize the list below and Cal-IPC list as exotic pest plants of greatest ecological concern in California as priorities for removal.

Priority Plant List for Invasive Species in Encanto and Radio Canyons

More details and plant photos can be found here: http://www.cal-ipc.org/paf/ and http://www.invasiveplantatlas.org/

Each plant on the list received an overall rating of High, Moderate or Low based on evaluation using the criteria system developed by Cal IPC.org as well as site-specific priorities.

- High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- Low – These species are invasive but their ecological impacts. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Table 3. Invasive Species and Management Priorities

Species	Common Name	General Habitat	Invasive Rating| Management Priority
Acacia melanoxylon; A. redolens◊	Black acacia; Desert Carpet	Landscaped	High
Agave americana; A. attenuata	Agave	Landscaped	Low
Ailanthus altissima¤	Tree of Heaven	Disturbed |Upland	High
Aptenia cordifolia◊	Iceplant; baby sun rose	Landscaped	High
Arundo donax◊	Giant reed grass	Riparian |Waterway	High
Atriplex semibaccata	Australian saltbush, berry saltbush	Landscaped	Moderate
Avena barbata	Wild oat	Grassland|Disturbed	Low
Brassica nigra	Black mustard	Grassland|Disturbed	Moderate
Brassica tournefortii◊	Sahara mustard	Grassland|Disturbed	High
Bromus diandrus; Bromus sp.	Rip gut brome	Grassland|Disturbed	Moderate
Carpobrotus edulis◊	Hottentog-fig	Landscaped	High
Centaurea melitensis	Tocalote	Grassland|Disturbed	Moderate

Centaurea solstitialis◊	Yellow star thistle	Grassland|Disturbed	High
Chrysanthemum coronarium◊ *Glebionis coronaria*	Crown-daisy	Grassland|Disturbed	High
Cotoneaster franchetii; C. lacteus; C. pannosus	Cotoneaster	Landscaped	Moderate
Crassula argentea	Jade	Landscaped	Low
Cynara cardunculus	Artichoke thistle	Grassland|Disturbed	Moderate
Cyperus involucratus◊	African umbrella plant	Riparian |Waterway	High
Erodium cicutarium	Red-stemmed filaree	Grassland|Disturbed	Low
Fraxinus uhdei	Ash	Riparian |Waterway	High
Foeniculum vulgare	Fennel	Grassland|Disturbed	High
Magnolia grandiflora	Southern magnolia	Landscaped	Low
Malephora crocea var. *crocea*◊	Crocea iceplant	Landscaped	High
Marrubium vulgare	Horehound	Grassland|Disturbed	Low
Meloleuca sp.	Myrtle	Landscaped	Low
Nicotiana glauca	Tree tobacco	Riparian |Waterway	Moderate
Opuntia ficus-indica	Mission prickly pear	Landscaped	Low
Pennisetum setaceum	African fountain grass	Grassland|Disturbed	Moderate
Piptatherum miliaceum *Stipa miliacea var. miliacea*	Smilo grass	Riparian |Waterway	Moderate
Phoenix canariensis¤	Canary island date palm	Riparian |Waterway	Moderate
Plumbago auricultata	Cape leadwort	Landscaped	Low
Raphanus sativus	Wild Radish	Grassland|Disturbed	Low
Ricinus communis	Castor bean	Grassland|Disturbed	Low
Rumex crispus	Curly dock	Riparian |Waterway	Low
Salsola tragus	Tumbleweed	Grassland|Disturbed	Low
Schinus molle¤	Peruvian Pepper tree	Grassland|Disturbed	Low
Schinus terebinthifolius¤	Brazilian Pepper tree	Grassland|Disturbed	High
Urtica urens	Dwarf nettle	Riparian |Waterway	Low
Washingtonia robusta¤	Mexican date palm	Riparian |Waterway	Moderate

¤*Warrants mapping of individual(s)*

◊*Warrants specific mapping of entire area per specie or plant form such as "iceplant"*

3.2.5 Seed Collection and Plant Procurement

Develop a seed collection program for some of the sensitive species and communities located within the Open Space Areas to ensure that the genetic diversity of the on-site populations is

not lost, and for restoration projects. Collect seed in conjunction with other management measures to maintain or improve habitat quality and in a manner that does not impact existing populations. Seed should be collected from a percentage of all populations on the property in order to Open Space Areas the full genetic spectrum. A take authorization will be necessary for the collection of seed from listed species if such species are found within the Open Space Areas in the future. A Seed Collection and Propagation Manual was prepared by Sharon Muczynski, a SDSU Graduate Student specific to the Open Space Areas in 2012 (see Appendix B). This manual should be used as a guide for seed and plant procurement.

• Collect seed from within the Open Space Areas for restoration efforts, wherever feasible. All shrub species and herbaceous species used in the restoration efforts will offset impacts from the exotic species present within the Open Space Areas. With proper planning efforts, seed collection should be initiated 1–2 years in advance of the restoration to allow for the collection of seed from species that flower at different times throughout the year.

• Grow collected seed in a local procurement facility for restoration purposes. Seed should be available for restoration, enhancement, or reintroduction efforts, as determined necessary. Seed should be used for restoration within three years of collection.

3.2.6 Exotic Animal Control

The presence of exotic species is inconsistent with the goals of maintaining native species and natural systems. Dogs and cats and other domesticated and feral animals that live near the Open Space Areas are potential predators to native species.

- Educate homeowners and Open Space Areas visitors about keeping pets indoors at night and keeping pet food indoors or in a secure location that does not attract wildlife from the Open Space Areas.

- Establish and enforce existing Open Space Areas rules and regulations regarding dogs. When hiking with dogs at the Open Space Areas, owners should be required to keep dogs on leash, stay on trails, and pick up waste.

- Identify and control, to the extent possible, feral cats.

4.0 PUBLIC USE

Public access is secondary to the primary goal to protect and enhance the natural resources of the Open Space Areas. A Trail Plan should be designed and implemented to:

- Improve the proposed network of authorized trails and ensure that there are minimal impacts to natural resources;

- Close and restore unauthorized and other existing trails to native habitat;

- Evaluate the potential for new trail routes that provide loop opportunities and connections between other trails to prevent additional unauthorized trails from forming; and

- Initiate management actions to minimize trail impacts to the natural and cultural resources of the Open Space Areas.

A comprehensive interpretative program should be developed to convey information about the Open Space Areas. Trail use can be enhanced by educating trail users about the local environment and history. An Interpretive Plan should be developed that integrates interpretive trails, interpretive displays and public programs into the already existing activities that the Open Space Areas allows.

4.1 Access and Trails

A trail network created by historical uses has provided an ad-hoc trail system to accommodate public use. However, it has also left the Open Space Areas with a legacy trails that were not constructed or maintained with sensitivity to the environment. The creation and ongoing use of these trails destroys and fragments habitat and causes erosion. In particular, trails on steep hillsides exacerbate conditions that lead to erosion because they compact soils, remove ground cover, and concentrate runoff flows.

The challenge for the Open Space Areas is to ensure that public access and recreational use are consistent with habitat protection. As such, as funding becomes available a Trail Plan will be developed that focuses on the following.

- Prioritizing resource protection

- Relocating or decommissioning trails if impacts on native habitat or other resources are discovered

- Locating new trails away from sensitive habitat areas

- Eliminating duplication of trails

- Reconstructing existing trails rather than rerouting the trail is positioned ecologically

- Providing diverse and interesting trail experiences to minimize unauthorized trail use

- Using best management practices in the design, construction, and maintenance of trails

- Formulating seasonal trail guidelines including possible rotation of access points to protect sensitive species from significant adverse user impacts during nesting season or other sensitive periods

There has been no Trail Plan developed to date, thus ad-hoc trails contribute to erosion, habitat fragmentation, alteration of natural drainage patterns, introduction of exotic vegetation,

degradation of native vegetation, and increased human-wildlife conflicts. To be consistent with the mission and intent of the Open Space Areas, public access must be restricted in areas that are unsafe or inappropriate for users. Such areas include sites where conflicts with wildlife may occur, where conditions are degraded, and where it is necessary to minimize impacts to sensitive habitat for conservation or restoration. In addition, temporary closure of trails or other facilities may be necessary to effect a beneficial change in a significant habitat.

Authorizing official trails and closing or abandoning selected trails within the Open Space Areas and subsequently restoring these areas will improve the quality of habitat for wildlife and be consistent with the primary goal of resource protection. Trail decommissioning and restoration priority should be given to trails in the more biodiverse areas of the Open Space Areas. Before restoration activities take place, closing may be accomplished by covering the trails with leaf litter and blocking them with physical barriers, or by posting signage and delivering citations as necessary to discontinue any additional human disturbance. Each trailhead in the Open Space Areas should have an informational kiosk or sign that contains a map with the authorized trails; permitted user groups; a summary of the trail safety guidelines, rules and regulations; and a description of the benefits of using the designated system of roads and trails and the detriments of non-system trail use and construction.

4.2 Interpretive Themes

Interpretation provides the means to deepen an appreciation of the landholdings and to provide lasting benefits to individuals and the local communities. Interpretive services can introduce visitors to the intrinsic values of the property and educate about the appropriate management of natural and cultural resources.

The Open Space Areas contains intact native habitat and remnants of Southern California's historic landscape. Interpretation will include the significance of the historical use of the land, the local wildlife and their habitat still present, and the need for preservation of the land to instill in visitors the sense of place and stewardship.

- Follow interpretive themes that establish the overall interpretive direction and tone, as outlined below. A unifying theme must relate to the resources, the goals of the Open Space Areas, and the interests of visitors. Primary and supporting interpretive themes elaborate and further describe the unifying theme.

Suggested Unifying Theme: Natural forces, plants, animals, and people continually change the fragile habitat. Through conservation and sustainable practices, the Groundwork San Diego and their partners endeavors to provide permanent protection for the Open Space Areas resources.

- **Primary Theme:** The Open Space Areas contains a richly diverse collection of plant and animal species, all dependent on the native habitat.

- **Secondary Theme:** The biological diversity of the lands it is crucial that there be a biological corridor present to support exchange of genetic materials by the wildlife to other existing natural areas.

- **Secondary Theme:** Because of the urban edge effects to wildlife and the native habitat, it is important and beneficial to humans to learn coexistence techniques.

- **Secondary Theme:** Because of the diverse ecosystem present within the Open Space Areas, recreational use must be balanced to provide long-term preservation.

Primary Theme: The Open Space Areas contains landscape that is rich in both history and culture.

- **Secondary Theme:** Early indigenous peoples' traditional use of the natural resources and cultural harmony with the land give the people of today an insightful look into how to coexist with and care for the natural resources around them.

- **Secondary Theme:** Early explorers and settlers helped to shape the communities that are present today.

4.3 Interpretive Goals and Implementation Actions

Interpretive goals and guidelines provide the basis to prepare interpretive plans that expand upon the interpretive themes, and detail methods, media, and programs. Specific project interpretive plans and exhibit plans that focus on more detailed interpretation may then follow in future documents. Three main goals are identified for the interpretive programs:

1. Visitors will understand and appreciate the importance of Southern California's native habitats

2. Visitors will learn about and understand how humans both past and present have affected Southern California's native habitats

3. Visitors will understand the need for ongoing protection and enhancement of the natural, cultural, and recreation resources for present and future generations

To realize these goals, the following actions should be implemented, when feasible:

- Develop a Comprehensive Interpretive Plan that reflects the unifying theme and primary themes outlined above. The Plan should articulate strategies to implement the goals and objectives for interpretation, including interpretive trails, interpretive displays, and interactive programming. The Plan should also enhance interpretive techniques for public programs, self-guided tours, brochures, maps, and school programs.

- Align interpretive and educational programs for K-12 age groups with the California Department of Education's frameworks and content standards.

- Focus interpretation and educational efforts on developing stewardship practices among visitors, neighbors, and neighboring jurisdictions. These elements could include urban edge effects, urban wildlife coexistence, wildfire risk and prevention, and trail safety.

- Deliver interpretation and education using a wide range of methods including, but not limited to, brochures, signs, special events, and web-based strategies.

- When feasible, use Habitat Authority staff and the expertise of other agencies and organizations and volunteers in developing and implementing Open Space Areas interpretive and education programs.

- Support youth and adult educational, research, and interpretive opportunities. Foster and support ongoing relationships with local school districts, colleges, and universities.

- Implement the following interpretive programs:

    - Interpretive hikes based on existing themes for adults, families, or organized groups

    - Interpretive and educational lectures and events for the public and local communities o Interpretive and educational programs for K–12 students

        - Volunteer and Docent training programs

        - Community and wildlife coexistence programs

- Continue the partnership with other agencies for funding, research and support

- Provide interpretive kiosks at key points within the Open Space Areas.

4.4 Public Information

Groundwork San Diego maintains a strong community relations. With that relationship it should foster a positive visitor experience with minimal adverse impacts on neighbors to the Open Space Areas. A number of both formal and informal partnerships already exist and provide for the continued exchange of information. Partnerships provide Open Space Areas management and local community leaders the opportunity to meet the environmental and recreational needs of the public. Opportunities exist to form new partnerships and to address specific issues such as trail design or to solidify new traditions such as restoration planting volunteer days.

- Maintain ongoing liason and communications between Groundwork and the City, County, as well as State, federal agencies, other community organizations, and elected officials to maximize the potential benefits and opportunities.

- Surveying visitors periodically will identify trends in activities, use, or attitudes. If feasible, adjust services, educational outreach, and/or operations to accommodate trends. Work

with neighboring jurisdictions to provide a unified delivery of services in response to public safety emergencies and utilize the training and expertise of all personnel.

- Work with local recreation groups, neighboring jurisdictions, and the public to establish programs and events that promote Open Space Areas stewardship and increase awareness of the natural resources.

- Provide relevant information for local residents about living near the Open Space Areas through vehicles such as the Groundwork website, press releases or other local coverage.

5.0 OPEN SPACE AREAS MAINTENANCE

Ongoing maintenance promotes the successful implementation of resource management activities. Routine operations and maintenance efforts in the Open Space Areas would also keep the Open Space Areas safe, functional, and attractive for residents and visitors.

5.1 Erosion Control

Erosion control is critical for maintaining natural drainage patterns, water and soil quality, healthy aquatic ecosystems, and safe trail conditions. Recommended erosion control guidelines are listed below.

- Evaluate the site. On-site areas that are subject to severe erosion should be evaluated. Trees and vegetation to be preserved should be located and flagged, with access areas identified. Figure 8 depicts known locations of erosion problems within the Open Space Areas that need to be addressed.

- Select and install erosion/sediment control practices. A qualified professional should determine the specific practices needed and direct installation as appropriate. All BMPs should be chosen carefully, located and installed correctly, and maintained well to be effective in controlling erosion and sediment. Ensure that sediment-trapping devices and erosion control measures are accessible for maintenance and removal. The following BMPs should be considered in design and implementation on a site-specific basis:

    - Properly designed culverts and drains that avoid concentration of runoff

    - Vegetation

    - Mulch (wood chips, erosion control blankets, all native material based)

    - Wattles to reduce slope and trail runoff

- Develop a practice maintenance program. Maintenance of BMPS is essential for proper functioning. As possible, they should be inspected regularly, particularly after major rainfall events

- Control surface runoff. Divert and disperse surface water runoff originating upslope of exposed areas to reduce erosion and sediment loss.

5.2 Trail Maintenance

The following general guidelines will focus on trail maintenance, once a trail plan is developed and implemented. Figure 7 depicts the exiting trail network in Radio and Encanto Canyons.

Environmental Considerations

- In special status species habitat areas, trail use levels should be limited, as appropriate to ensure the protection of resources. Techniques for limited use may include physical access control, seasonal or intermittent closures, and/or the exclusion of domestic pets.

- Biological resource assessments should be conducted before specific trail routes are planned and implemented. Assessments should be conducted by a qualified biologist and include focus surveys for sensitive wildlife and habitat. These assessments should include recommendations to align existing trails where impacts to sensitive species and habitat may occur

- Removal of native vegetation should be avoided, to the extent possible. The appropriate resource agencies should be contacted regarding any trail alignments that may impact sensitive habitat or species.

Trail Amenities

- Standard signs should designed and implemented to be consistent throughout.

- Each trailhead should have an informational kiosk. Information kiosks should include a copy of the most recent trail map. The kiosks should provide a summary of the rules and regulations regarding the use of trails and describe the benefits of using the designated trail system and detriments of off-trail use.

- When developing trailhead facilities, design the trail head access points to meet both user and manager needs.

- Interpretive and protective signs should be located, where applicable. Interpretive and protective signs should indicate natural resource points of interest or sensitive areas. Signs should be designed to identify habitat types or particular plant species.

Trail Closure

Decommissioning. The goal of decommissioning is to restore natural topography and native habitat as much as possible so that maintenance work is no longer needed and to prevent future environmental impacts. Shortcuts and unauthorized trails should be eliminated. If left uncorrected, these unauthorized trails will encourage additional use and lead to damaged vegetation, soil erosion, and drainage problems. A key component of any trail closure plan is to create a practical and sustainable alternative.

- In areas where the old trail is being relocated or abandoned, effort should be made to erase the old trail and restore it to as natural a condition as possible. This will avoid confusion as to which trail to use, eliminate sources of erosion, restore it to a more natural appearance, and help eliminate shortcutting. Depending on the terrain, the use signs, rock, brush, fallen timber, and transplanted vegetation is appropriate. The construction of temporary fencing to prevent use may be needed.

- Compacted soil in the old trail tread should be broken up or scarified to allow the seeds and roots of new plants to penetrate.

- Surface drainage on abandoned routes needs to be addressed so that it is self-maintaining, adequately serves the area it drains, and prevents sediment loss. Abandoned trails should be stabilized to prevent further erosion and natural revegetation promoted. Trails break natural drainage patterns and collect and concentrate surface water flows. Restoring the natural contour of the slope reestablishes the local drainage patterns and reduces the likelihood of erosion. Recontouring usually eliminates any temptation to use the old trail and facilitates revegetation efforts.

- Starting plants on the old trail is the best way to restore the landscape. Disturbed soil often provides an opportunity for invasive plant species to take hold. Only native species should be planted in these areas.

- The most effective manner to reduce or eliminate closed trail use is to erase its footprints. The goal is to eliminate the visual corridor, including the airspace above the old trail. Depending on the terrain, logs and branches may be dragged across the abandoned trail to block the corridor at eye level. Leaves and other organic matter should be raked over the tread as the final step to complete the disguise and aid new plants. A sign posting "trail closure for restoration purposes" may also discourage users.

Trail Maintenance

- **Prepare a Trail Maintenance Plan.** Priorities for trail maintenance tasks are to:

    - Address trail conditions

    - Repair trail and other environmental damage

- Restore the trail to desired conditions

- Trail work should be planned and implemented with the objective of providing for resource protection and public access. Operating within budget and staffing constraints, the trail maintenance program should include:

    - Periodic trail monitoring

    - Trail work aimed towards preventing erosion or other serious damage

    - emergency repair work and signage to eliminate or identify possible safety hazards.

- Practice environmentally sound maintenance and use techniques appropriate for the type of trail.

- Guidelines for trail maintenance include:

    - Clear windfalls and dangerous trees from the trail bed for safety and to prevent detouring

    - Remove loose rocks and debris from the trail surface.

    - Repair erosion damaged trails and information kiosks promptly to prevent further damage. Check for erosional effects after spring runoff. Check and repair BMPs. Construct additional drainage structures if needed. Corrective work for drainage or erosion problems should be performed within a reasonable period of time. Where necessary, barriers to prevent further erosion should be erected until problems are corrected.

    - Remove new plant growth on the trail annually. Clear in the outside the nesting bird season and outside of areas where known sensitive wildlife occur. Vegetation on the sides of the trail should be pruned to allow passage, but should be preserved, as much as possible, to protect the aesthetic quality of the trail. Typically, vegetation is cleared to a height of 7 ft to accommodate hikers. Good pruning practices must be followed, including cutting branches almost flush with the limb and cutting stumps at ground level or below. Large limbs should be pruned almost flush with the trunk. Dead and dying limbs and snag that may fall on the trail should be removed. Groundcover plants and low shrubs should not be removed except on the actual trail tread.

    - Level the trail tread as necessary and restore the tread grade to the original slopes. Use local material to fill ruts, holes, low spots, or muddy areas.

    - Check, repair, or replace signs and trail markers.

    - Maintain trailhead facilities such as waste containers.

Trail Monitoring

- An inventory of all trail maintenance, including drainage, vegetation clearing, signage, surfacing, need for graffiti removal and repair of structures, gates, fences, and barriers may be pursued if there are adequate resources. Based on maintenance reports, trails should be subject to seasonal closures or repair as warranted.

5.3. Boundary and Encroachment Control

Numerous entry points from adjacent neighborhoods allow for entry into the Open Space Areas. Boundaries should be periodically surveyed in order to protect the natural resources and public safety. Backyard encroachment into the Open Space Areas destroy natural vegetation and should not be permitted. Enforcement of boundaries by maintaining property fencing and access points and by posting signs signifying the property boundary should be instituted. Illegal encroachment should be addressed.

Enforce boundaries by maintaining site fencing and access points.

- Identify portions of the boundaries where fencing may be needed. Fencing should be installed or reinforced in areas adjacent to residential lots, roads, and other level areas. Fencing should be maintained as needed and monitored annually.
- Establish property signs along the boundary and at each access points, identifying the area as a boundary and providing directions for access and contact information.
- Maintain all existing fencing and locked gates and establish a list of persons with keys to the site.
- Establish permanent marker of the boundary, where appropriate.

6.0 REPORTING

An report summarizing the status of the Open Space Areas, results of the surveys, and all major actions taken since the last assessment should be prepared appropriately. This report should include a discussion of the following:

1. Summary of management and monitoring tasks and issues addressed during the previous time period;
2. Overall health of the Open Space Areas, including any changes to the health or distribution of sensitive species, hydrological changes, damage resulting from natural or anthropogenic causes, problems with invasive species, trespass, dumping, etc.
3. Results of qualitative and quantitative biological monitoring, including photographs taken from fixed photo points;
4. Funds generated, expenses incurred in performing management tasks, and years-end balance; and
5. Problems encountered, and recommendations for management and monitoring identified for the upcoming year.

7.0 REFERENCES

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This plan is adapted from LSA Puente Hills Habitat Authority Final Resource Management Plan, 2007.

APPENDIX A: TRANSNET FINAL REPORT FOR ENCANTO & RADIO CANYON RESTORATION. 2011

APPENDIX B: SEED COLLECTION & PROPAGATION MANUAL. 2012