April 2016

Endemic Environmental Services

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

RE: Community Run Nesting Bird Survey and Monitoring

Mr. Mejia,

I conducted the nest survey along the route of the community run at Fairview Park on Wednesday April 20, 2016. I located several nests of the following species: Orange-crowned warbler (*Vermivora celata*), California towhee (*Melozone crissalis*), and song sparrow (*Melospiza melodia*). These nests ranged approximately 100-150 feet from the trail in coastal sage scrub habitat. I monitored these nests for sensitivity to the ongoing foot traffic and my presence. The birds did not exhibit stress to foot traffic or my presence. The only stress these birds exhibited was when a common raven flew over the area. This bird species is a known nest raider and predator of these small passerines. Therefore, I determined that these birds treated the foot traffic and my presence as not a threat.

However, the community run was still a larger group of runners that could create a disturbance to these nests. Therefore, I recommended a biological monitor to be present onsite during the race as a mitigation measure to the potential disturbances. Dean Nerhus, the biological monitor, monitored the nests during the race on Saturday April 23, 2016 from 07:30-12:00. The birds did not show any stress from the race activities. There was no violation of the migratory bird treaty act (MBTA), which prohibits the take of any native avian nest.

If there are any further questions, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
Cell (714) 393-6249
bnerhus@endemicenvironmental.net

May 2016

Endemic Environmental Services

May 26, 2016

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey from along Placentia

Today, May 26, 2016, I surveyed all potential nesting bird habitats along the western side of Placentia between the Fairview Park signal and Adams Avenue from 09:00 to 12:00. The habitat consisted of coastal sage scrub, the walking bridge, and planted ornamental trees along the sidewalk. No nests were located nor was any nesting behavior detected along Placentia Avenue.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

June 2016
fish fry event

Endemic Environmental Services

June 01, 2016

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey for the Fish Fry Event.

Today June 01, 2016, I surveyed all potential nesting bird habitats within and around the footprint of the Fish Fry Event from 07:00 to 12:00. The habitat consisted of coastal sage scrub and open lawn and sycamores. No nests were located nor was any nesting behavior detected around the area for the Fish Fry Event.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

July 2016 Concerts

Endemic Environmental Services

July 05, 2016

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey for the Concert in the Park Event #1.

Today July 05, 2016, I surveyed all potential nesting bird habitats within and around the footprint of Concert Event from 07:00 to 11:00. The habitat consisted of coastal sage scrub and open lawn and sycamores. No nests were located nor was any nesting behavior detected around the area for this event. There are family groups of birds utilizing the lawn areas for foraging but appear not to be disturbed by human activity.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

March 2017 mowing

Endemic Environmental Services

March 26, 2017

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey

Today March 26, 2017, I surveyed all potential nesting bird habitats within and around the area desired to be mowed. The habitat consisted mostly of non-native annual forbs and grasses on the south side of the park. The habitat was searched for nests and also using behavioral observations of ground type nesting bird species such as the western meadowlark to determine nesting (i.e. fecal sac removal, nest material, food supply brought to a specific area). There was a red-winged blackbird colony located in a large mustard patch several hundred meters away, that is recommended to be managed by not disturbing the habitat and also delineating a buffer. No nests were found in the grassland area or within proximity. The nest survey is only valid for 3 days. It is also recommended to not mow additional areas during this time of year due to the high potential nesting habitat. Mowing in early autumn is a much better time period to avoid nests and mowing down native annuals.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

2017
nests found - rec'd
monitoring - spike in
activity

Endemic Environmental Services

April 21, 2017

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey for Community Run

I surveyed all potential nesting bird habitats within and around the community run path. The habitat consisted of non-native annual forbs, coastal sage scrub, and riparian woodland on the north side of the park. There were several nesting birds along the running path. These species included song sparrow, common yellowthroat, and house finch. These nests are located approximately 30 meters off the trail. Additionally, a male least Bell's vireo was advertising in a willow approximately 20 meters away from the running path. These paths are established running paths that all nesting birds have tolerated over numerous seasons. However, the race will be a spike in activity that could lead to disturbing natural avian behavior. As a conservation measure, I recommend that the least Bell's vireo is monitored, as well as the located nests.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

2 of 7 protected rare plant see photo/map

Endemic Environmental Services

May 10, 2017

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey to Mow Model Train Parking Lot

I surveyed all potential nesting bird habitats within and around the planned mowed area for parking. The habitat consisted of non-native annual forbs and native annual forbs on the east side of the park. There was no nesting activity observed in the vegetation. However, I located and mapped several large areas of small-flowered microseris, a protected rare plant with California Department of Fish and Wildlife (CDFW). Mowing the senesced (dead) plants that have already seeded is not a direct impact. However, parking vehicles on top of the area and compacting the soils is more of the issue. I recommend mowing and parking north of the exit sign.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

Attachment

Photo 1: Small-flowered Microseris with nodding head

Photo 2: Seeding head

Image 1. Map of Model Train Parking Lot

Photo 1.

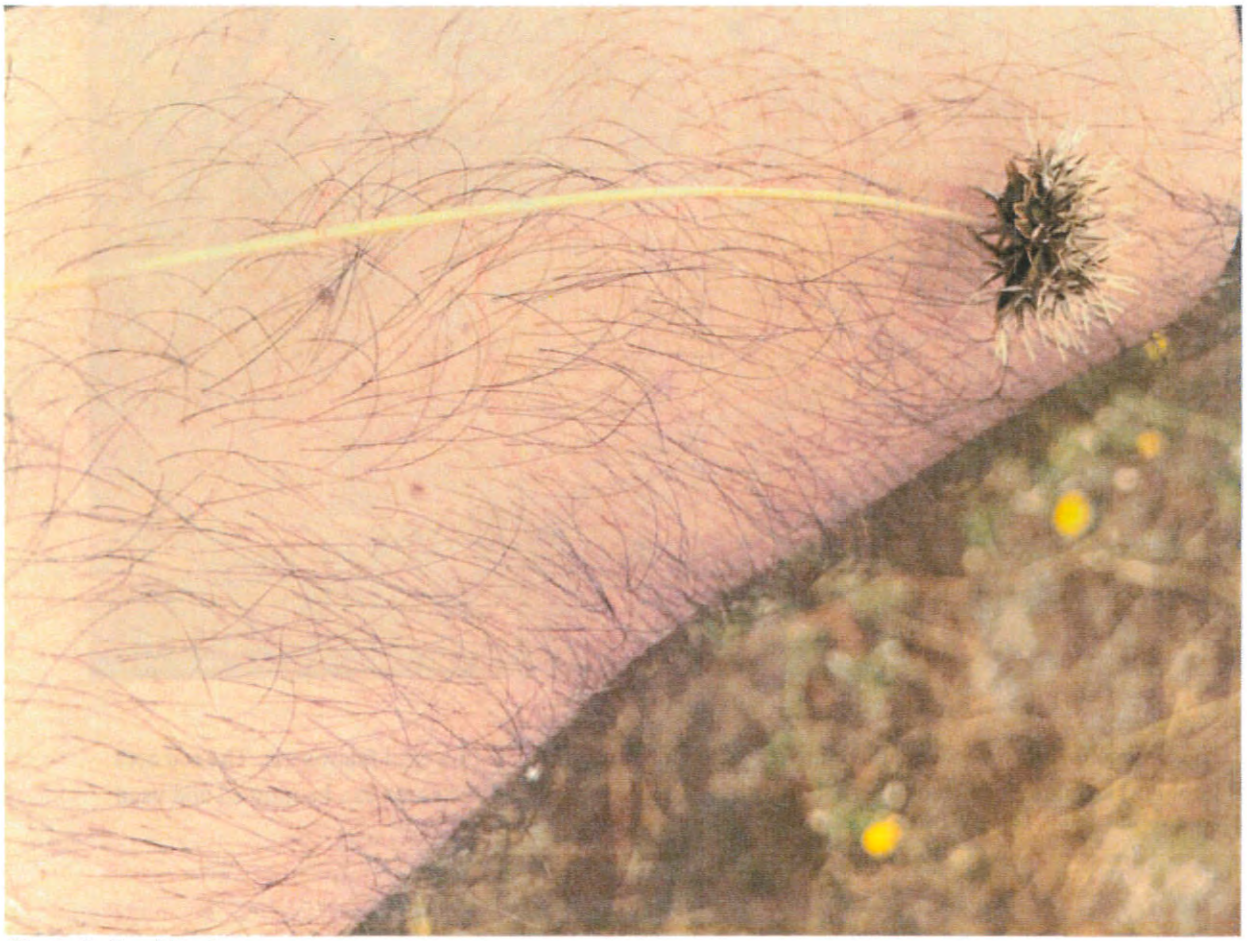

Photo 2. Seed head

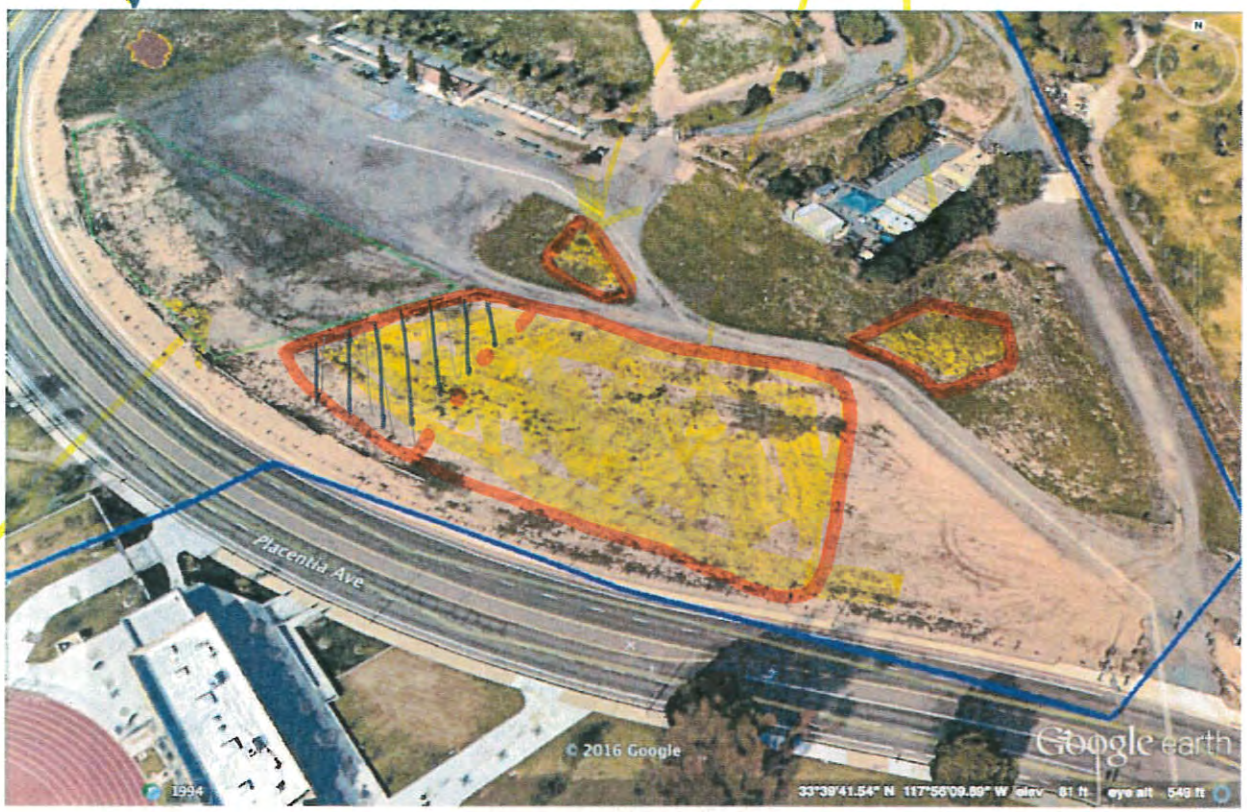

Image 1. The Orange is the areas where there are robust populations of small-flowered microseris. The red area is Vernal Pool A. The Blue line is the general border of Fairview Park. The Green area can be mowed and used as a parking lot.

May 2017

Endemic Environmental Services

June 08, 2017

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey for the Fish Fry Event.

On May 31, 2017, I surveyed all potential nesting bird habitats within and around the footprint of the Fish Fry Event. The habitat included the parking lot at the Model Train Engineers station on the East side of Placentia, the lawn and ornamental trees near the parking lot, and also the edge of the natural areas. An unoccupied crow's nest was observed in a sycamore. This nest was observed for two days without any activity. It appeared to be disarticulated from the wind. There is currently an active bluebird nest in a blue bird box near the Vandersloot Coastal Sage Scrub Site. I monitored the avian activity throughout the weekend to observe an abnormal behavior. Additionally, the event was compliant with the recommendation to keep night lighting pointed away from the nest and all natural areas to minimize night light disturbance. The adults continued to feed chicks throughout the weekend, as of June 5th, the nest is still active. There was no take of any nests regulated under the Migratory Bird Treaty Act.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

June 2017
delay until fall

Endemic Environmental Services

June 12, 2017

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey and Habitat Assessment for Mowing East Fairview Park

On June 16, 2017, I surveyed all potential nesting bird habitats within and around the footprint of the proposed area to be mowed, which included tall weedy grasslands east of Placentia Avenue between the walking bridge and the northern portion of the Park near Canary Drive. The habitat includes open weedy annual grassland and also several native purple needlegrass (*Stipa pulchra*) patches. The native purple needle grass is still flowering and should not be mowed until it sets seed. This will enable the native needle bunch grasses to expand their area. Additionally, there are many fledging birds that have left the nest but cannot fly well. This is a normal development of fledgling birds, however mowing could directly kill, harm, injure, and/or harass these young birds. I recommend avoiding the majority of the proposed grassland until late summer or early fall. Low biological activity was observed near the Canary Drive area. No purple needlegrass was observed in that area or fledgling activity. The area that I recommend to mow is the 150 feet buffer area near Canary Drive with a qualified biological monitor present to ensure no biological resources are impacted.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

July 2017

Endemic Environmental Services

July 22, 2017

Attn:
Bart Mejia
City Engineer
City of Costa Mesa

Subject: Results of Nesting Bird Survey for the Concert Series

On July 10, 17, and 22, 2017, I surveyed all potential nesting bird habitats within and around the footprint of Concert Event from 07:00 to 11:00. The habitat consisted of coastal sage scrub and open lawn and sycamores. No nests were located nor was any nesting behavior detected around the area for these events. There are family groups of birds utilizing the lawn areas for foraging but appear not to be disturbed by human activity.

If you have any questions, comments, or concerns, please feel free to contact me.

Sincerely,

Barry Nerhus
President/Ecologist
Endemic Environmental Services, Inc.
(714) 393-6249
bnerhus@endemicenvironmental.net

Fairview Park Riparian Mitigation Project

Phase II: Annual Report

2017

Prepared for the City of Costa Mesa
Prepared by Barry Nerhus
Restoration Ecologist
Endemic Environmental Services

Table of Contents

Executive Summary

The Fairview Park Phase II riparian mitigation is a 20.3 acre site in Costa Mesa, California including several channels, ponds, and riparian plant species. The goal of this project is to provide riparian habitat for the endangered Least Bell's Vireo (*Vireo belli pusillus*), coastal sage scrub for the California gnatcatcher, freshwater wetlands, and coastal grassland with southern tarplant, which supports other native flora and fauna. The purpose of this report is to provide information on the fourth and fifth-year success. Phase I of native species plantings have grown since planting was completed in 2009 and has been monitored for success. The current condition consists of over 95% survival of the planted container stock planted and less than 5% non-native plant coverage. Additionally, the species diversity, nutrient cycling, and reseeding are also important qualities that warrant discussion to meet the goal of a self-sustaining riparian ecosystem and are included in this report.

Introduction

Planting in Phase II was completed November 2012. Phase II vegetation success monitoring began in December of 2012. Fairview Park Phase II has been hydroseeded and planted with container plants. Hydroseeded plants include: Coastal Goldfields (*Lasthenia californica*), Western Ragweed (*Ambrosia psilostachya*), Mulefat (*Baccharis salicifolia*), California mugwort (*Artemesia douglasiana*), Coast Goldenbush *(Isocoma menziesii*), Evening Primrose (*Oenethera elata* ssp. *Hookeri*), Hoary nettle *(Urtica dioca* ssp. *holosericea*), California Sagebrush (*Artemisia californica*), California Poppy (*Eschscholzia californica*) and many others. Container plants included: Arroyo Willow (*Salix lasiolepis*). Goodding's Black Willow (*Salix gooddingii*), Coast Live Oak (*Quercus agrifolia*), Toyon (*Heteromeles arbutifolia*), Coastal Prickly Pear (*Opuntia littoralis*), and others.

The native plant material implemented included hydroseed from S&S Seed, container stock from Moosa Creek and Tree of Life Nurseries, and cuttings from local and adjacent areas. In addition to implemented native plant material, the project site also received native plant recruitment from existing native vegetation outside the project boundaries. The mitigation site has been monitored quarterly by ecologists provided by Endemic Environmental Services. Restoration ecologists documented the progress of the site. The qualitative and quantitative information recorded included non-native plant coverage, and container stock survival as the main criteria to gauge the success of the establishment of the riparian vegetation. Irrigation scheduling and function, trash presence, erosion, and vandalism were all additional elements that were monitored to ensure good health of the native vegetation. Non-native vegetation was removed by hand-weeding and mechanical removal (i.e. brush cutting) when deemed not detrimental to the native vegetation by the restoration ecologist. Monitoring maintenance reports have been provided by Endemic Environmental Services and sent to the City of Costa Mesa. Irrigation has been off this year for most areas, with the exception of the oak woodland and grassland areas.

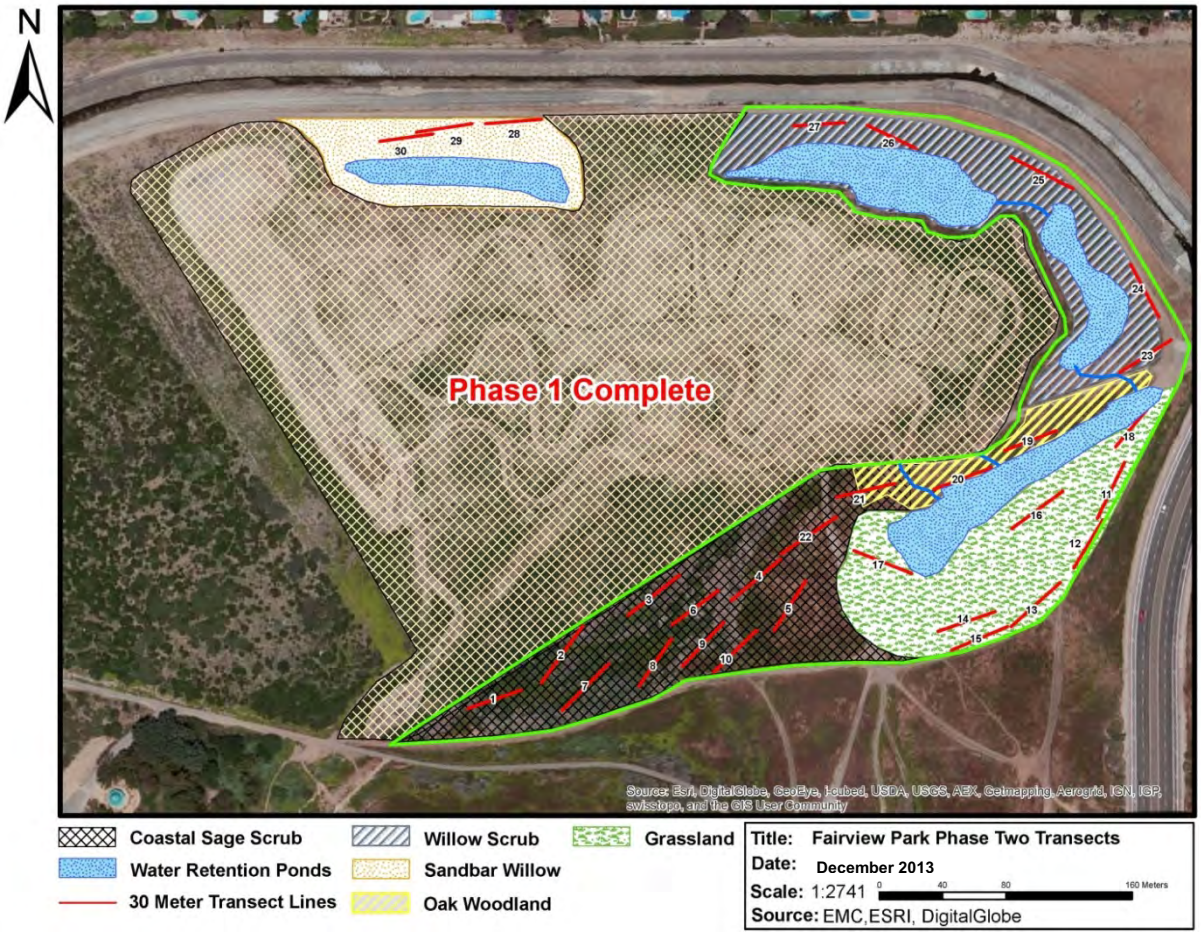

Figure 1. Map of point-intercept transect locations at Phase II of Fairview Park

Methodology

During a five-day period in December of 2017, two biologists conducted vegetation surveys at Fairview Park to obtain information on species diversity and composition and cover of native and exotic species within Phase II of the mitigation site. Two methodologies were implemented consisting of point line-intersect transects and regularly-spaced 1 m^2 quadrats. All plant species were identified to the lowest possible taxonomic level. Percent cover of each plant species within quadrats was included not exceeding 100%. These methodologies provide a consistent means of collecting and comparing data at different locations and times and allow for long-term studies of changes in communities and diversities.

In previous years, we used 30-point line-intercept transects, each thirty meters in length. However, due to the highly dense areas of the coastal sage scrub areas, we assumed over 95% native cover in those specific areas. Our focus was on the grasslands and habitat surrounding the ponds. Transect measurements were conducted throughout the site with the selection of starting

points intended to ensure a balanced sample of plant diversity and establishment patterns on site.. All of these transects were oriented in an approximately east-west direction and sampling was conducted from east to west. For each point line-intercept transect, a thirty meter measuring tape was run out to its full length, assuring that the tape lay low to the ground and was pulled taut. Every two feet along the transect, for a total of 50 point measurements, plants and substrate were documented by positioning an ½-inch wooden dowel vertically on the near side of the tape and recording every live plant or portion of a plant touching the dowel (or the vertical line created by the dowel from the sky to the ground). Dead organic matter and bare ground were also recorded if present. The point line-intercepts measuring vegetation frequency in place of plant cover or abundance. All plants touching the dowel were identified to species or genus in cases of more complex specimens, and only plants too immature or damaged to identify in the field were recorded as unknown. If a species contacted the dowel in multiple places (even if there were separate plants), only one hit was recorded per species and up to four species were recorded per hit.

In conjunction with each point line intercept transect, 1 m^2 quadrats were placed at 0, 7.5, 12, and 22.5 meters, alternating to the left and to the right of the transect (starting on the right). A visual estimate of coverage was made for each species independent of canopy position. Percent cover was recorded for each species present in the quadrat, as well as the cover of dead organic matter and bare grounds, with cover estimates not exceeding 100% for all species.

Results

Native cover is 68%, non-native cover is 9%, bare-ground cover is 23%, and organic matter cover is 5% across Phase II of Fairview Park. Non-native cover is highest in the grassland and oak woodland habitat followed by the riparian areas. The lowest cover of non-natives is in the coastal sage scrub area. See the table below for the list of native and non-native species.

Table 1. Native species found in Phase II

Scientific Name	Common Name	Status
Ambrosia psilostachya	Western Ragweed	Native
Artemisia californica	California sagebrush	Native
Artemisia douglasiana	Mugwort	Native
Artemisia dracunculus	Tarragon	Native
Baccharis pilularis	Coyote Bush	Native
Baccharis salicifolia	Mulefat	Native
Centromadia parryi ssp. australis	Southern Tarplant	Native/Rare CNPS 1B.1*
Conyza canadensis	Horseweed	Native
Croton californicus	Croton	Native
Crassula connata	Pygmy weed	Native

Encelia californica	California Encelia	Native
Eschscholzia californica	California poppy	Native
Gnaphalium luteo-album	Bicolored cudweed	Native
Gnaphalium bicolor	Bicolored cudweed	Native
Heliotropum curassavicum	Chinese purslane	Native
Heteromeles arbutifolia	Toyon	Native
Heterotheca grandiflora	Telegraph Weed	Native
Isomeris arborea	Bladderpod	Native
Isocoma menziesii	Golden Bush	Native
Juncus mexicanus	Mexican Rush	Native
Oenothera elata	Evening Primrose	Native
Opuntia littoralis	Coastal prickly pear	Native
Opuntia prolifera	Coastal Cholla	Native
Platanus racemosa	California Sycamore	Native
Pluchea odorata	Marsh Fleabane	Native
Rosa californica	Wild Rose	Native
Salix exigua	Coyote/Sandbar Willow	Native
Salix gooddingii	Goodding's black willow	Native
Salix laevigata	Red Willow	Native
Salix lasiopelis	Arroyo Willow	Native
Salvia mellifera	Black sage	Native
Sambucus mexicanus	Mexican Elderberry	Native
Solanum douglasii	Deadly Nightshade	Native
Schoenoplectus californica	California Bulrush	Native
Typha latifolia	Flat-leaved Cattail	Native
Urtica dioica	Stinging Nettle	Native
Verbena lasiostachys	Western Verbena	Native

Table 2. Non-native plant species

Scientific Name	**Common Name**	**Status**
Anaglis arvensis	Scarlet pimpernel	Non-native
Apium graveolens	Celery	Non-native
Atriplex suberecta	Peregrine saltbush	Non-native
Avena barbata	Slender oat	Non-native
Brassica nigra	Black mustard	Non-native (Invasive)
Bromus catharticus	Rescue grass	Non-native
Bromus madritensis	Spanish brome	Non-native
Centaurea melitensis	Maltese star thistle	Non-native

Chamomilla suaveolens	Pineapple weed	Non-native
Chenopodium album	Lamb's quarters	Non-native
Cnicus benedictus	Blessed thistle	Non-native
Conium maculatum	Poison hemlock	Non-native
Cortadera selloana	Pampas grass	Non-native (Invasive)
Crassula connata	Pygmy weed	Non-native
Emex spinosa	Devil-s thorn	Non-native (Invasive)
Erodium cicutarium	Common stork's bill	Non-native
Hordeum murinum	Mouse barley	Non-native
Malva parviflora	Cheeseweed	Non native
Marrubium vulgare	Horehound	Non-native
Medicago polymorpha	Bur-clover	Non-native
Melilotus indicus	Annual yellow sweetclover	Non-native
Mesembryanthemum crystallinum	Crystalline iceplant	Non-native (Invasive)
Mesembryanthemum nodiflorum	Small-flowered iceplant	Non-native (Invasive)
Nicotiana glauca	Tree Tobacco	Non native (Invasive)
Raphanus sativus	Wild radish	Non-native
Salsola tragus	Russian thistle	Non-native (Invasive)
Secale cereale	Cereal rye	Non-native
Setaria viridis	Green bristlegrass	Non-native
Silybum marianum	Milk thistle	Non-native
Sisymbrium orientale	Oriental sisymbrium	Non-native
Sonchus asper	Spiny sowthistle	Non-native
Sonchus oleraceus	Common sow-thistle	Non-native
Taraxacum officinale	Dandelion	Non-native
Tamarix ramosissima	Salt cedar	Non-native (Invasive)
Trifolium repens	White clover	Non-native

Evidence of Regeneration

The level of natural regeneration is very high. The regeneration in the past years is also creating offspring, which is a strong indicator of sustainable native plant species success.This regeneration and eventual breakdown of organic material such as dead vegetation and animal matter will play an important role to the health of the ecosystem and covering the existing bare-ground.

Coast Live Oak Success

Quercus agrifolia trees (Coast live oak) were planted in Phase II of Fairview Park in the Oak Woodland and Grassland areas. Two trees near the east entrance of the park had relatively moist soil and healthy leaves. The remaining oaks were not surviving well. Christian Redman, an Eagle

Scout helped direct volunteers to plant more oaks in autumn 2015. All the oaks appear to be surviving well and are continued to be watered and maintained..

Wildlife Usage

Many species and trophic levels were found in Fairview Park that had not previously been observed. Bird species include Mourning doves, Lesser gold-finches, Kestrels, Rock wrens, Blue-grey gnatcatchers, Green Herons, Red-tailed hawks, Red-shouldered hawks, Northern Harriers, Cooper's Hawks, Turkey Vultures, Red-winged blackbirds, White-crowned sparrows, Lincoln sparrows, Common yellow throats, American coots, Mallards, Widgeons, Snowy egrets, a Green heron, White-faced ibises, Grebes, Northern rough-winged swallows, Yellow-rumped warblers, House finches, Anna's hummingbirds, and Black-chinned hummingbirds. In addition, several juvenile western toads were found on Phase II. Sawfly galls were found deposited on arroyo willow as well. Coyotes have been observed utilizing Phase II to forage. Wildlife at every trophic level is thriving at Fairview Park, which is an indicator of ecosystem health as a whole. It appears that there are now some non-native wildlife species utilizing the park. They include: crayfish, bullfrog, red-eared slider, nutmeg manikin, orange bishop, small-mouth bass, mosquito fish, and brown-headed cowbird.

Sensitive Species

There are several sensitive species utilizing the restoration area. These species range from summer residents such as the least Bell's vireo, yellow-breasted chat, California least tern, yellow warbler to winter/year round residents such as the California gnatcatcher, northern harrier, and Cooper's hawk. One rare plant, southern tarplant (*Centromadia parryi australis*) has spread throughout the grassland area.

Table 3. The table lists the observed rare species within the restoration area in 2017.

Species	Latin Name	Status	Behavior
California Gnatcatcher	*Polioptila californica*	State: SSC Federal: Threatened	Year round resident/Wintering/foraging
Least Bell's Vireo	*Vireo bellii pusillus*	State: Endangered Federal: Endangered	Nesting in Phase I /Foraging Phase II
Yellow-brested Chat	*Icteria virens*	State: SSC Federal: None	Summer resident/Nesting
California Least Tern	*Sterna antillarum browni*	State: Endangered Federal: Endangered	Summer resident/ Foraging in ponds
Yellow Warbler	*Setophaga petechia*	State: SSC Federal: None	Summer resident/ Nesting
Cooper's Hawk	*Accipiter cooperii*	State: Watchlist Federal: None	Year round/Foraging
Northern Harrier	*Circus cyaneus*	State: SSC Federal: None	Year round resident/foraging
White-tailed Kite	*Elanus leucurus*	State: Watchlist Federal: None	Wintering/Possible nesting

Merlin	*Falco columbarius*	State: Watchlist Federal: None	Wintering
Southern Tarplant	*Centromadia parry spp. australis*	CNPS* Rank 1B.1 (endangered)	Growing in the 100s to 1000s throughout the grassland areas
Chaparral Sand Verbena	*Abronia villosa* var. *aurita*	CNPS Rank 1B.1 (endangered)	Only one individual growing in the northwest corner
Lewis' evening primrose	*Camisoniopsis lewisii*	CNPS Rank 3 (Review List)	Growing near Pond E and also along the west trail
South Coast Branching Phacelia	*Phacelia ramosissima* var. *austrolitoralis*	CNPS Rank 3.2 (Review List)	Growing as a dense undergrowth around Pond E.

CNPS is the California Native Plant Society that has a rare plant ranking system that is reviewed under the California Equality Quality Act (CEQA).

Conclusions/Discussion

The Fairview Park riparian mitigation site is establishing quickly and strongly, despite the exceptional drought. The main limiting factor for the success of this site establishing at this point are perennial non-native species and a few non-native annuals. Since phase II has been relatively recently planted and seeded, more weeding, and planting, will be required. The most abundant non-natives species that will require removal are common horehound (*Marrabium vulgare*), black mustard (*Brassica nigra*), tree tobacco (*Nicotiana glauca*), common stork's bill (*Erodium cicutarium*), pampas grass (*Cortadera selloana*), Russian thistle (*Salsola tragus*), crystalline iceplant (*Mesembryanthemum cystallinum*) and scarlet pimpernel (*Anagalis arvensis*). Several individuals of salt cedar (*Tamarix chinensis*) have also been found in Phase II and should be prioritized in removal as they are among the among the most common invasive plant in the world and most impactful invasive species in Fairview Park system. Russian thistle experienced a boon year with heavy infestation. It is recommended to remove as many plants as possible. As the native plant community establishes, annual non-plant plant species will be less of an issue. Endemic Environmental Services, Inc. and the City of Costa Mesa are updateing a wetland vegetation management program as a mitigation measure for mosquito habitat. I recommend continuing with weeding the grassland areas with dense weed areas, pampas grass, salt cedar, and other highly invasive species. There is also a growing concern for Polyphagus Shot Hole Borer infesting willows. These trees are being monitored by the UC COOP who is currently conducting a county-wide investigation.

Attn:
City of Costa Mesa **(714) 754-5303**
Robert Staples **rstaples@ci.costa-mesa.ca.us**
Contract Administrator

Provided by:
Endemic Environmental Services, Inc.,
Restoration Ecologist **(714) 393-6249**
Barry Nerhus, Jr. **bnerhus@endemicenvironmental.net**

Date of inspection: 22 September 2017

Inspection for September

General Overview

Phase II of the 20.3 acre Fairview Park riparian mitigation continued its maintenance period on September 22, 2017. The monthly maintenance monitoring of these native plant materials, non-natives, vandalism, pond quality, bike and pedestrian path maintenance, etc. is currently in its fifth year and an annual monitoring will be performed in December. The annual report will be submitted following the annual quantitative monitoring in December. Endemic Environmental Services, Inc. is responsible for the maintenance of the mitigation site to reach the success criteria.

Container Stock

Container plants included: Arroyo Willow (*Salix lasiolepis*). Goodding's Black Willow (*Salix gooddingii*), Coast Live Oak (*Quercus agrifolia*), Toyon (*Heteromeles arbutifolia*), Coastal Prickly Pear (*Opuntia littoralis*), and others. The container plants are growing well, especially the mulefat, arroyo willow, and hooker's evening primrose. Similar to previous months, approximately 90% of the oaks are healthy, and others are improving in condition. All of the oaks are alive. With continued weeding and consistent watering to individual oaks and sycamores, the container plants will continue to grow healthier.

Hydroseed

Hydroseeded plants include: Coastal Goldfields (*Lasthenia californica*), Western Ragweed (*Ambrosia psilostachya*), Mulefat (*Baccharis salicifolia*), California mugwort (*Artemesia douglasiana*), Coast Goldenbush *(Isocoma menziesii*), Evening Primrose (*Oenethera elata* ssp. *Hookeri*), Hoary nettle *(Urtica dioca* ssp. *holosericea*), California Sagebrush (*Artemisia californica*), California Poppy (*Eschscholzia californica*) and many others. Those hydroseeded plants were found growing abundantly across the site and will aid in competition with exotic weed species. The site has not received irrigated water for two years. The annual species

appeared to be mostly dead at this point. September is a hot dry month. However, this past winter rains allowed for high species germination rates, which could still be observed during this visit.

Native Recruitment

Native recruitment is exceptionally high. A great majority of the coastal sage scrub areas are so dense with several different age classes of shrubs that it is difficult to determine the container stock, original hydroseed mix and natural recruitment from the introduction of native plants. Additionally, a family of federally-threatened California gnatcatchers were observed in the coastal sage scrub areas.

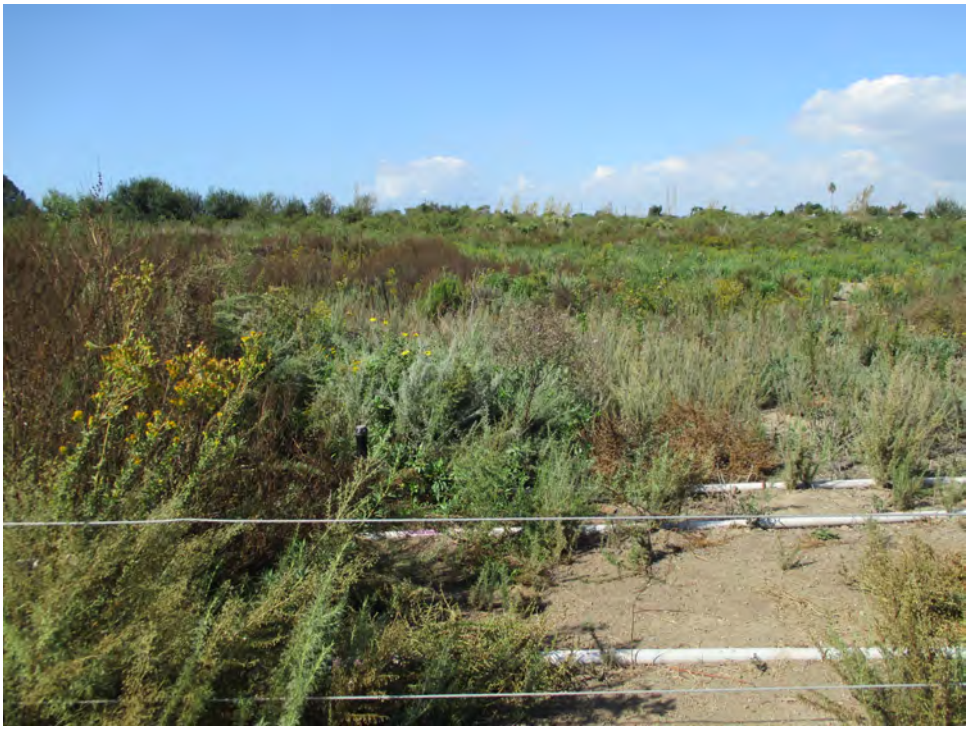

Figure 1. High concentration of native plant species in the Coastal Sage Scrub habitat

Figure 2. High cover of native plant species grassland habitat

Figure 3. High cover of native plant species in riparian habitat.

Regeneration

There is regeneration occurring from the hydroseed, and container plants throughout the site. The cattails (*Typha latifolia*) have grown and seeded in Pond E. Additionally, existing native species like evening primrose and goldfields are regenerating and adding to the plant diversity, native coverage, and aid in exotic plant species competition. This regeneration and eventual breakdown of organic material such as dead vegetation and animal matter will play an important role to the health of the ecosystem.

Figure 4. Invasive pampas grass was removed and in its place native deergrass was planted.

Exotic Species

Although exotic species cover has drastically decreased because of removal events, some exotics have returned. Invasive black mustard (*Brassica nigra*) was almost completely removed however is reoccurring on the west side of the park. Current non-native/invasive species include castor bean (*Ricinus communis*), pampas grass (*Cortaderia jubata*), Russian thistle (*Salsola tragus*), and tree tobacco (*Nicotiana glauca*) have developed on path edges and throughout the riparian habitat although have been drastically reduced. Non-native plant growth is approximately 0-5% in coastal sage scrub habitat. Non-native plant cover is less than 10% in the riparian habitat and is approximately 0-5% in the grassland habitat.

Figure 6. Approximately 500 lbs. of Salt Cedar was removed from the site.

Erosion

Fairview Park was monitored for erosion in Phase II. Some erosion remains in the grassland area near the area where the Fairview Park Opening ceremony took place. The irrigation was turned

off to prevent further erosion and plants have begun to regenerate. The north trail has experienced heavy erosion from heavy winter rains. We filled the trail with decomposed granite with a small bobcat loader.

Figure 7. Trail repair caused by erosion.

Fences

The cables making up fences around each zone in Phase II were monitored and were in good condition. One fence post had fallen. The City was notified and the post is repaired.

Figure 8. Damaged fence post.

Irrigation

All main irrigation is off. The oaks are still being watered via a temporary irrigation system on an as-needed basis.

Ponds A, B, C, D, and E All ponds appear healthy, as they have recruited native western toad larvae, are eutrophic, and provide habitat for insects. There are cattails spreading and filamentous algae that will be continuous issues for mosquito breeding, if not managed. Endemic has been managing the waterflow, algae build up and cattail growth in areas that it is possible. Thus far, Orange County Vector Control has not determined the wetlands to be a gross producer of mosquitos.

Figure 9. Pond B after flow management and algae clearing.

Figure 12. Pond A has accumulated low algae growth and has improved greatly.

Figure 10. Algae was removed to the maximum extent practicable in all areas.

Figure 11. Homeless activity.

Recommendations

Although algae have begun to be removed, there should be further removal throughout the Fall or until regrowth of algae discontinues. The eventual lack of oxygen may create harsh living conditions for any organisms in the ponds including western toad larvae and mosquito fish. Furthermore, the removal of phosphates in the water source may help prevent the buildup of algae. Additional recommendations include increased filtration to the system and potentially using aquatic weed control. Invasive pampas grass has developed and can be removed from the riparian habitat along walkways. Continued weeding is recommended because of the recent growth of Russian thistle, tree tobacco, castor bean, and others. The non-natives should continue to be removed from all Phase II locations as they reoccur.

Wildlife Usage

Many species and trophic levels were found in Fairview Park during the maintenance. Bird species include the American coot, black phoebe, snowy egret, mallard, lesser goldfinch, orange-crowned warbler, house finch, Anna's hummingbird, mourning dove, and song sparrow among others. Also noted were exotic orange bishops in addition to, dragonflies, ground squirrels, and juvenile western toads/larvae found on site. Red-tailed hawks, Northern harriers, and turkey vultures were observed foraging and coyote scat was also found on the site. Wildlife at every trophic level is thriving at Fairview Park, which is an indicator of high and stable ecosystem health.