



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services

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In Reply Refer to:
FWS-SDG-08B0338-09F0902

SEP 01 2009

Mr. Victor Globa
U.S. Department of Transportation
Federal Aviation Administration
Western-Pacific Region
P.O. Box 92007
Los Angeles, California 90009

Subject: Biological Opinion for Redevelopment of the Gillespie Field 28.33-Hectare
(70-Acre) Parcel and Land Acquisition Project, San Diego County, California

Dear Mr. Globa:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion addressing effects to the federally endangered San Diego ambrosia (*Ambrosia pumila*; "ambrosia") from the Federal Aviation Administration's (FAA) proposed Gillespie Field Airport (Airport) 28.33-hectare (ha) [70-acre (ac)] Redevelopment Parcel and Land Acquisition Project (project), located at the border of the City of El Cajon and City of Santee, San Diego County (County), California. This biological opinion has been prepared in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

The following information was used to prepare this biological opinion: (1) the final Biological Assessment (BA) for the project, dated April 3, 2009; (2) Biological Resources Impact Analysis Technical Report (BTR), dated August 20, 2007; (3) discussions with the FAA, County Department of Public Works (DPW) staff and their consultants [Technology Associates (TAIC)] during site visits on April 23, 2008, and May 7, 2009; (4) a field review of San Diego ambrosia occurrences in the County; and (5) the final project description, including conservation measures developed in cooperation with FAA and DPW. The project file addressing this consultation is maintained at the Service's Carlsbad Fish and Wildlife Office.

CONSULTATION HISTORY

The FAA initiated formal consultation on the project's effects on ambrosia, in a letter dated January 29, 2008, and received by the Service on January 30, 2009. A draft BA, dated October 13, 2006, and the BTR were provided with the initiation request. In a letter, dated February 25, 2008, the Service acknowledged that we had sufficient information to initiate consultation; however, we requested additional information to complete our effects analysis. Conservation measures were determined during a pre-consultation meeting and a site visit to the



San Diego ambrosia enclosure at the project site with representatives of the Service, FAA, and DPW on April 23, 2008. On September 11, 2008, FAA provided the Service with a revised draft BA, dated August 18, 2008, for the project. The revised draft BA incorporated changes identified at the April 23 2008, meeting.

DPW met with the Service on November 5, 2008, to discuss the status of this and other projects. At this meeting, we provided preliminary support for the Gillespie Field ambrosia transplantation effort; recommended additional land be conserved at Mission Trails Regional Park (MTRP) to offset impacts to ambrosia; and recommended continued cooperation with the City of San Diego, land manager for MTRP.

On December 29, 2008, DPW contacted the Service to confirm whether any additional information was needed to complete the consultation. On December 31, 2008, the Service provided comments to FAA and DPW on the revised draft BA. On January 6, 2009, DPW confirmed that they were working on revisions to the BA and a draft translocation plan per the Service's request.

On February 18 and March 23, 2009, the Service requested a status update on the preparation of the ambrosia translocation plan and the revised BA. DPW confirmed that these documents were still being drafted. The Service received the revised BA and draft translocation plan on April 13, 2009. On April 27, the FAA extended the consultation period until June 27, 2009, in anticipation that the biological opinion would be completed concurrently with the finalization of the National Environmental Policy Act (NEPA) process for the project.

On May 7, 2009, the Service met with FAA and DPW to conduct site visits to the proposed impact and receptor site. The Service approved the suitability of the receptor site in an email to DPW and FAA on June 9, 2009. In that email, we asked for an extension to the consultation period, given that the NEPA public review had not yet been set. The FAA provided extended the consultation period to September 1, 2009.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Gillespie Field Airport (Airport) is located on County-owned land within the City of El Cajon and City of Santee, approximately 20.92 kilometers (km) [13 miles (mi)] northeast of downtown San Diego (Figure 1). The Airport is generally bordered by Kenney Street on the north, Magnolia Avenue on the east, Bradley Avenue on the south, and Cuyamaca Street on the west (Figure 2).

Figure 1. Regional Location Map

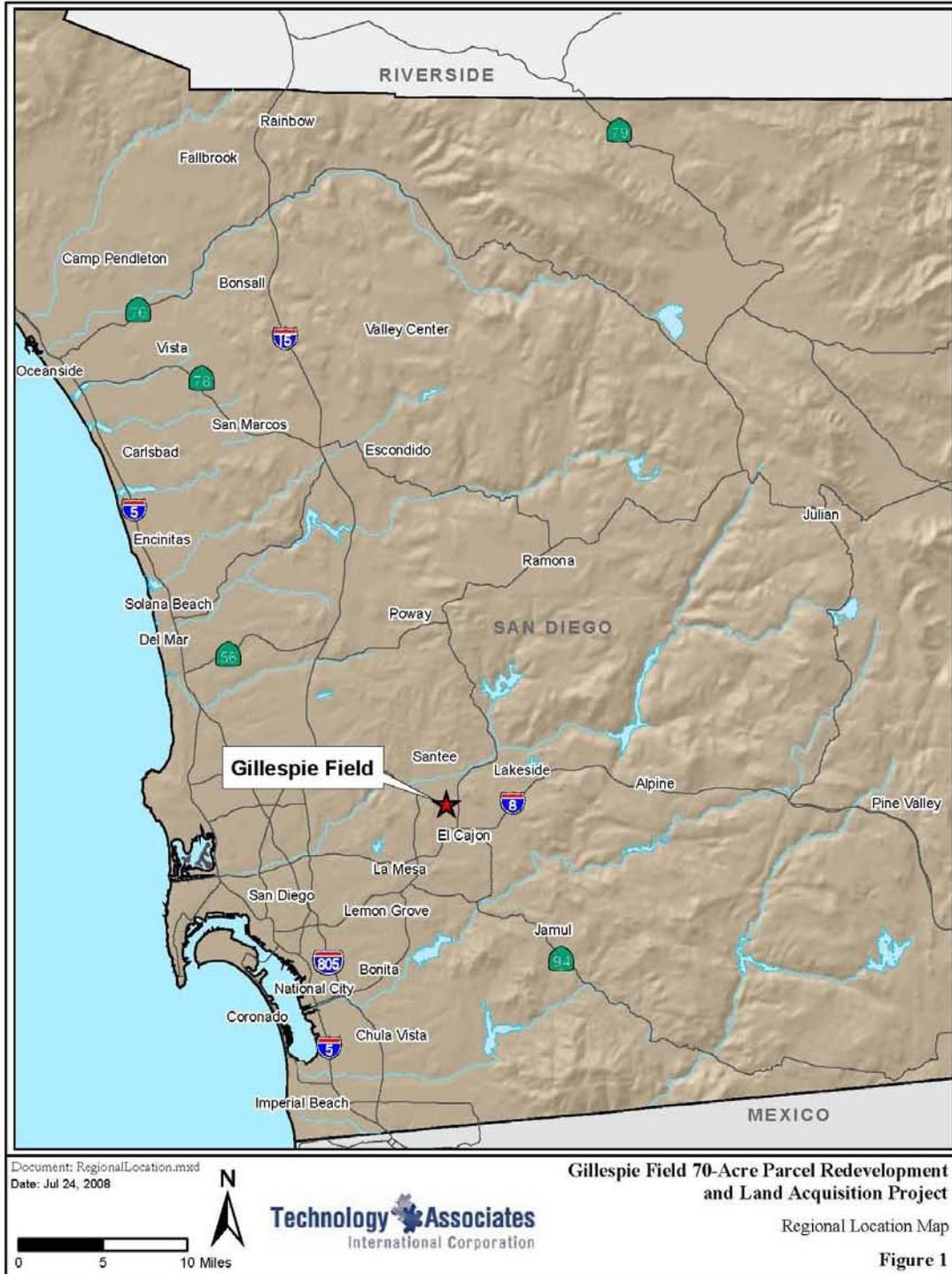
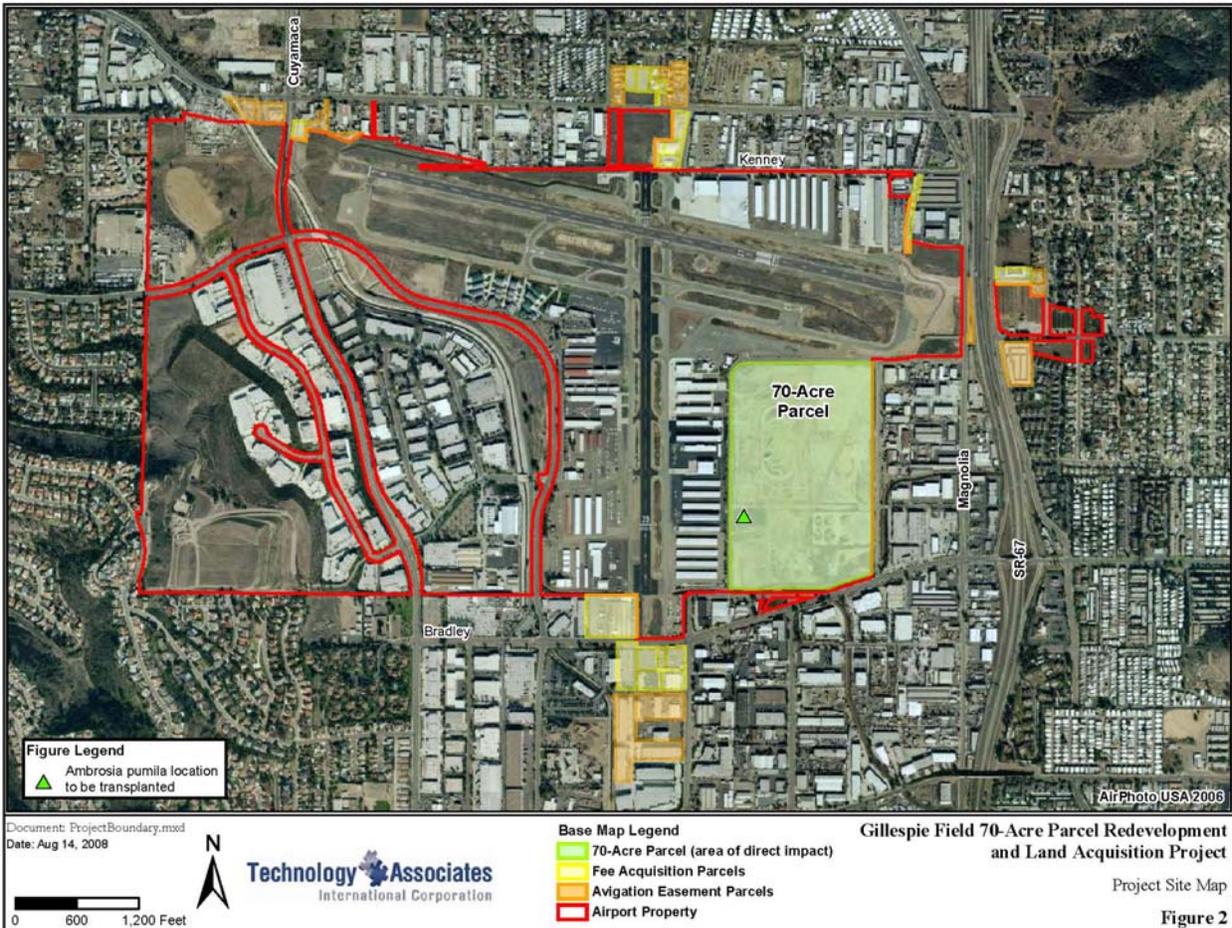


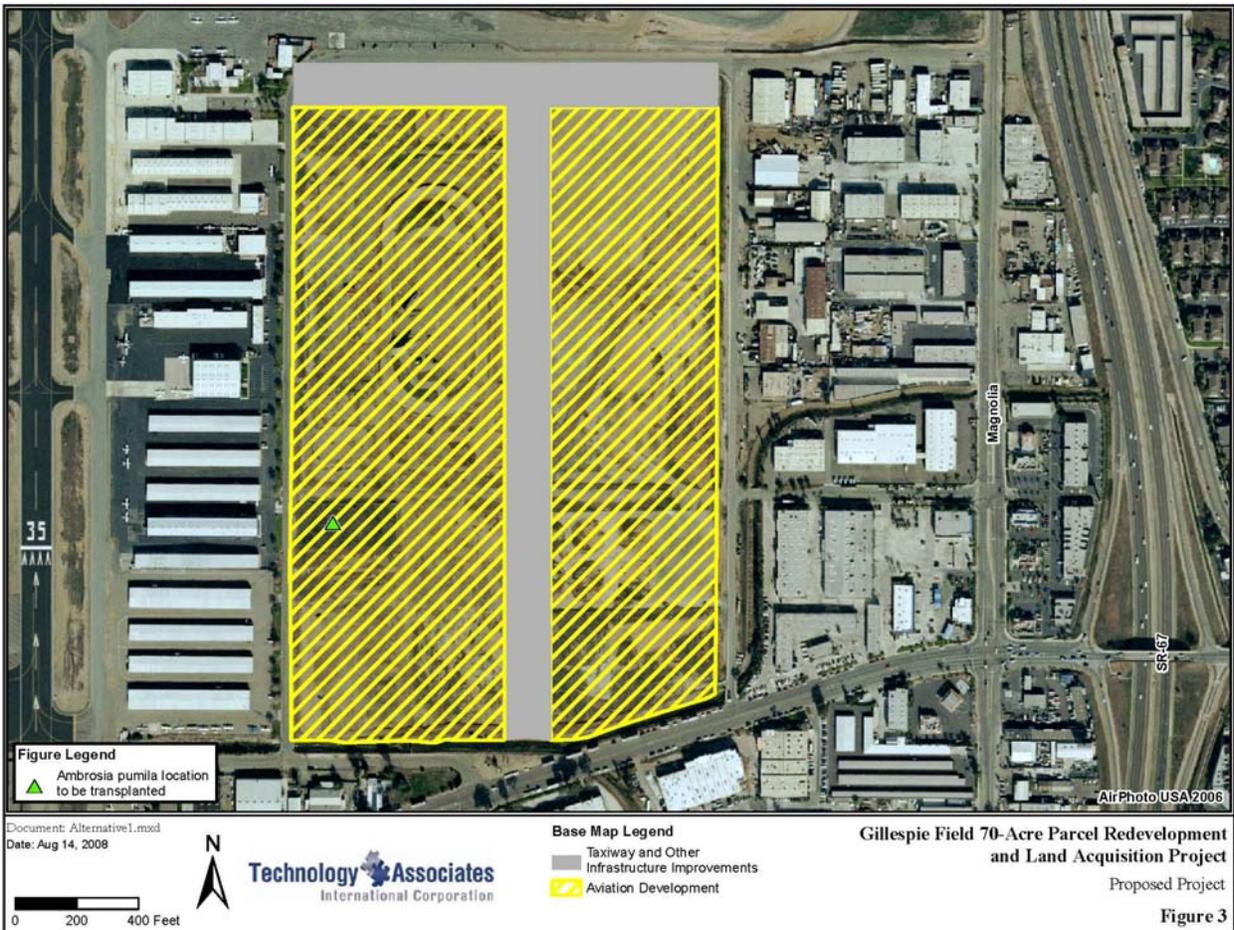
Figure 2. Project Site Map.

DPW, in cooperation with the FAA, proposes to allow for the redevelopment of a 28.33-ha (70-ac) parcel, located in the southeastern corner of the airfield, north and west of the intersection of Bradley Avenue and Wing Boulevard, in the City of El Cajon. Redevelopment will convert the existing vacant parcel from non-aviation use to aviation use (Figure 3). This change in land use will allow for future aviation development by private developers. Future improvements to be completed by private developers may include hangar space, aircraft tie-downs, an apron area, automobile parking, aircraft maintenance space, and aviation office and business space. DPW will install aviation infrastructure improvements, such as apron and taxiway areas. The entire 28.33-ha (70-ac) parcel is expected to be developed.

Most of the parcel consists of developed and disturbed land; however, the parcel also encompasses a 0.45-ha (1.1-ac) ambrosia conservation area, located approximately 152.4 meters (m) [500 feet (ft)] north of Floyd Smith Drive on Joe Crosson Drive. This 0.45-ha (1.1-ac) fenced conservation area supports a naturally occurring population of ambrosia that was

conserved to offset impacts to ambrosia from the *Gillespie Field Master Plan and Development Project*, prior to the species being listed as federally endangered (A.D. Hinshaw Associates, 1987). The project proposes to impact the entire ambrosia conservation area.

Figure 3. Proposed Project



Two smaller areas of ambrosia were found in 2009, outside and immediately south of the 1.1-ac (0.45-ac) ambrosia conservation area. The two additional areas were staked, fenced, and measure approximately 166.66 square meters (500 square feet). The total area of ambrosia on the 28.33-ha (70-ac) parcel covers 0.073 ha (0.18 ac). No other federally listed species occur on site or will be impacted by the project.

The project also involves the acquisition of adjacent properties and acquisition of aviation (airspace) easements to meet FAA safety requirements. Land acquisition and aviation easements will meet Federal safety standards for unobstructed approaches for runways 9L-27R

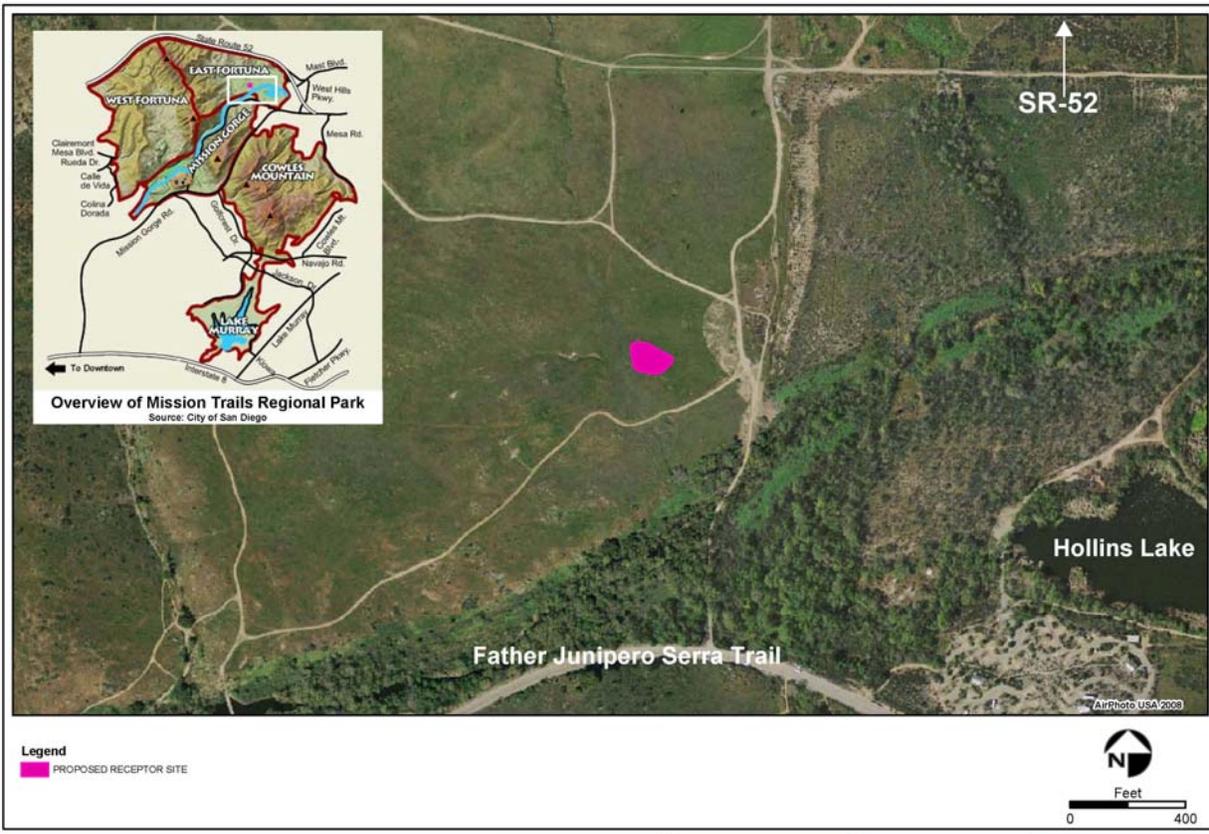
and 17-35. Where land acquisition is not necessary or infeasible, avigation easements will be acquired to prevent obstructions in the approach surface and to allow for over flight.

Conservation Measures

The following conservations measures will be implemented to offset impacts to San Diego ambrosia:

1. The FAA and DPW will offset direct impacts to 0.073 ha (0.18 ac) of ambrosia through transplantation of all ambrosia within the proposed impact area to a 1.17-ha (2.9-ac) native grassland area north of the San Diego River, within Mission Trails Regional Park¹ [MTRP; (Figure 4)].

Figure 4. San Diego Ambrosia proposed receptor site within Mission Trails Regional Park.



Gilspie Field 70-Acre Parcel Redevelopment and Land Acquisition Project
San Diego Ambrosia Proposed Receptor Site within Mission Trails Regional Park

Figure 4

1 MTRP is protected by open space easements and is managed by the City of San Diego Department of Parks and Recreation.

A survey will be conducted before project impacts occur to ensure that all ambrosia have been located and mapped within the project footprint. The outer perimeter of each ambrosia patch will be delineated on the ground with spray paint. If any ambrosia stems are discovered outside of this pre-transplantation mapped area of San Diego ambrosia, FAA will reinitiate consultation with the Service.

2. A San Diego ambrosia transplantation plan will be approved by the Service before any impacts to ambrosia occur. The plan will be implemented by a biologist or botanist with experience transplanting sensitive plant species (i.e., transplantation biologist). The transplantation plan will serve to guide the transplantation effort and the initial five year monitoring program.
3. The ambrosia transplantation plan will include the following:
 - a. Individual clusters of ambrosia will be salvaged as blocks and transplanted to the transplantation site at MTRP using similar spacing and distribution as at the impact site.
 - b. Ten percent of ambrosia within the clusters will be removed from the project impact site, following the Service-approved transplantation plan, and will be grown in large flats at a nursery/greenhouse and used for later out-planting at the MTRP transplantation site.
 - c. The exact location at the transplantation site where the cut-blocks containing San Diego ambrosia propagules will be transplanted will be determined in the field by the transplantation biologist, in coordination with the Service, prior to transplantation.
 - d. The methods of transplantation, monitoring, and maintenance will be developed in coordination with the Service. The agreed-upon methods will be described in the transplantation plan and will include specifics such as timing of transplantation, preparation of the donor and receptor sites prior to transplantation, placement of San Diego ambrosia, predator control and protective fencing, weeding, irrigation, length and type of monitoring, maintenance, and success criteria.
 - e. The 1.17-ha (2.9-ac) ambrosia transplantation site will be restored with native grasses.
4. Long-term management of the transplantation site will be funded by the County DPW through a non-wasting endowment held by the City of San Diego Department of Parks and Recreation. The amount of the endowment will be based on the analysis conducted in the document entitled "Final San Diego Ambrosia Transplantation Business Plan for the Redevelopment of the Gillespie Field Airport 28.33-ha (70-ac) Parcel and Land Acquisition/Avigation Easements Project" prepared for this project by EDAW/AECOM. This plan will be submitted to the Service for review and approval within 1 year from the date of this biological opinion.

5. To minimize the potential effects of herbivory, the receptor site will be fenced off to delineate areas containing the transplanted San Diego ambrosia.
6. The City of San Diego Department of Parks and Recreation will be responsible for long-term management of the transplantation site at MTRP, using the endowment funds provided by the County DPW.
7. The transplanted ambrosia population will be monitored for a minimum of 5 years, in accordance with the requirements of the Service-approved translocation plan, to document success of the transplantation efforts. Success will be achieved when 80 percent of the transplanted ambrosia plugs are established and expand from the transplanted plugs as clones and/or newly established individuals.
8. All ambrosia propagules taken from the impact site for nursery/greenhouse growing will be out-planted at the restoration site to increase the probability of transplantation success. Out-planting of the nursery/greenhouse grown San Diego ambrosia plants will occur during the 5-year monitoring period as determined by the transplantation biologist in coordination with the Service. In the event of transplantation failure, the transplantation plan will include a contingency plan to offset impacts to ambrosia.
9. In addition to the Service-approved transplantation plan, a long-term management strategy will be approved by the Service before any impacts to ambrosia occur. City staff will be responsible for ensuring that the transplanted San Diego ambrosia population is managed consistent with this long-term management strategy. Disturbance will be part of the long-term management strategy for the transplantation site at MTRP. Management activities will be developed that maintain an open canopy, allowing for ambrosia to survive and expand into habitat adjacent to the transplantation receptor site. Management activities may include: mowing, thatch removal, and shrub management along the outer perimeter of the restored native grassland.
10. To offset impacts to the existing ambrosia conservation area (conserved to offset impacts from the Gillespie Field Master Plan and Development Project), DPW and FAA will conserve one or more known ambrosia populations totaling 0.45-ha (1.1 ac) through one or more of the following actions:
 - a. Acquiring land or securing a conservation easement over land with an existing San Diego ambrosia population that is currently not conserved.
 - b. Management and monitoring of an existing ambrosia population in perpetuity.
 - c. Financial contribution towards permanent management of one or more populations that are currently protected, but not actively managed.

The final determination of which of these actions will be implemented will be approved by the Service before impacts to the San Diego ambrosia population in the project area occur.

According to 50 CFR § 402.02 pursuant to section 7 of the Act, the “action area” includes all areas to be affected directly or indirectly by the Federal action. Areas directly impacted include all areas within the project footprint, including construction vehicle access routes, staging areas, and grading areas. No sensitive habitat is located immediately adjacent to the project footprint; therefore, no indirect impacts are expected to occur as a result of the project. In addition, the action area will include the transplantation site at MTRP [1.17-ha (2.9-ac)], as well as any access to the site from parking areas given that the transplantation biologist and assistants will need to traverse part of MTRP to access the transplantation site, totaling approximately 4.04 ha (10 ac), as suggested in the BA. Thus, we have defined the action area for the proposed project to be approximately 32.39 ha (80 ac), encompassing the 28.33-ha (70 ac) redevelopment parcel, the ambrosia conservation area to be impacted, and 4.04 ha (10 ac) at MTRP, estimated as the needed transplantation area for successful transplantation and buffering, including the 1.17-ha (2.9-ac) receptor site. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area.

STATUS OF THE SPECIES

San Diego ambrosia (*Ambrosia pumila*)

Listing Status

San Diego ambrosia was federally listed as endangered on July 2, 2002. A detailed account of the status, distribution, taxonomy, ecology, and reproductive characteristics of San Diego ambrosia is presented in the final listing rule (Service 2002), which is hereby incorporated by reference. On August 27, 2009, the Service proposed critical habitat for this species (74 FR 44238). The project site is not within proposed critical habitat. The receptor site is partially located within proposed critical habitat (Unit 6); however, it is being considered for exclusion pursuant to section 4(b)(2) of the Act given that it is located within the City of San Diego’s Multiple Species Conservation Plan Preserve and not under threat of development. A recovery plan has not been developed for this species.

Species Description

San Diego ambrosia is an herbaceous perennial plant species that spreads vegetatively by means of slender, branched, rhizome-like roots from which the aerial (above-ground) stems arise each year (67 FR 44372). Plants that spread in this way are referred to as clonal species. This clonal growth pattern results in groupings of aerial stems interconnected by their herbaceous underground rhizome-like roots that represent genetically identical individuals. When these underground interconnections disintegrate, aerial stems that are genetically identical become physically separate from one another.

The plant produces shoots and runners, and aerial stems are 5 to 30 centimeters (cm) [2 to 12 inches (in)] tall, but may grow to 50 cm (20 in), and are densely covered with short hairs. The leaves are three to four times pinnately divided into many small segments and are covered with short, soft, gray-white, appressed (lying flat on surface) hairs. This wind-pollinated species flowers from May through October with separate male and female flower clusters (heads) on the same plant. The male flowers are yellow to translucent and are borne in clusters on terminal racemes (flower stalks). The female flowers have no petals and are yellowish-white. Female flowers are in clusters in the axils of the leaves below the male flower clusters (Service 2002). The fruiting heads are enclosed in involucre that form cup-like structures lacking spines, often a feature of other *ambrosia* species, although some reports note a few vestigial spines. Few preserved museum specimens have fertile fruits, and field collections have not provided evidence of production of significant numbers of viable seeds (67 FR 44372-44382).

Distribution

San Diego ambrosia is endemic (occurs only within a very small geographic area) to southern California and northern Baja California, Mexico. This species is distributed from western Riverside County and western San Diego County, California, south in widely scattered populations along the west coast of Baja California, Mexico (Munz 1974, Reiser 1994). Additional populations occur in the central highlands of Baja California in the vicinity of Laguna Chapala near Catavina (Burrascano 1997). The complex of populations near Laguna Chapala reportedly contains the largest number of individuals. The status of populations between Cabo Colonet and the United States border are less certain and are rapidly disappearing due to recreational uses, development, and agricultural conversion.

Ambrosia is known to occur at four locations in Riverside County: near Alberhill Mountain, along Nichols Road (City of Lake Elsinore); near the Skunk Hollow vernal pool; and along the San Diego aquaduct south of Skunk Hollow. The Alberhill Mountain population is threatened by impacts from unauthorized grading and disking and a permitted road re-alignment project. Several patches of the plant occur within the watershed of a large vernal (ephemeral) pool in the Skunk Hollow Wetland Mitigation Bank in Riverside County (Dudek 2003, CNDDDB 2008). One small population is known to occur along the San Diego aquaduct.

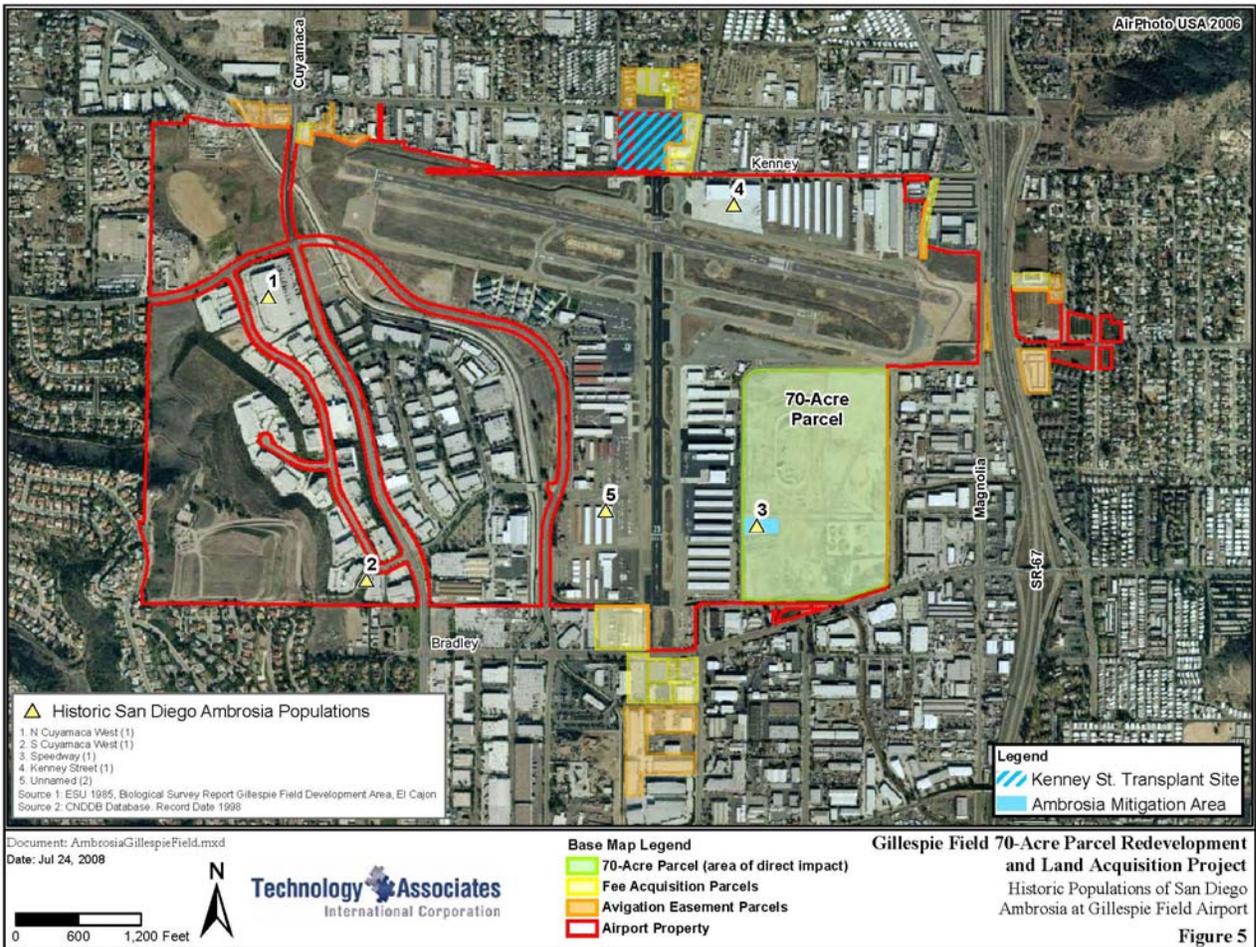
In San Diego County, ambrosia is known to occur at 16 locations. Ambrosia is known to occur along the San Luis Rey River at two locations. Two additional populations were translocated along the river. There is a single extant occurrence within the Los Penasquitos Canyon Creek watershed consisting of five of six transplanted groups. The Sweetwater River corridor supports five natural occurrences. In 1996, ambrosia was transplanted from the Sweetwater River corridor to a restoration site along a tributary to the Otay River. A population located north of Lake Hodges, once thought to be extirpated, has recently been rediscovered.

The San Diego River corridor supported four occurrence complexes historically; two in MTRP, one at Gillespie Field, and one immediately south of Mission Gorge Road. The occurrences in MTRP include the largest occurrence throughout its range with numerous large groups

distributed over 13.77 ha (34 ac). In addition, MTRP includes two occurrences transplanted from the impacted areas from the construction of SR 52 and Kumeyaay Campgrounds.

Four populations of San Diego ambrosia were observed during a 1985 field survey within the boundaries of Gillespie Field Airport (ESU 1985) (Figure 5). These were referred to as element occurrences (EO) (1) North Cuyamaca West, (2) South Cuyamaca West, (3) Speedway, and (4) Kenney Street populations. A fifth population record from 1998 is known from Gillespie Field in the CNDDDB database. There is no additional information about this data point; however, the population likely has been extirpated because the area has been developed. At the time of the 1985 field surveys, San Diego ambrosia was not federally-listed as endangered.

Figure 5. Historic populations of San Diego Ambrosia at Gillespie Field Airport



The Environmental Impact Report for Gillespie Field Master Plan determined that the proposed development would eliminate three of the four populations of San Diego ambrosia on the airport. The largest population [the Speedway population in the 28.33 ha (70-ac) parcel enclosure] would

be preserved and protected (A.D. Hinshaw Associates 1987). As part of the Gillespie Field Master Plan, EO 1, 2, and 5 were transplanted adjacent to the Kenney Street population.

Habitat Affinities

San Diego ambrosia occurs in open habitats in coarse substrates near drainages, and in upland areas on clay slopes or occasionally on the dry margins of vernal pools. These habitats are usually associated with sandy alluvium or riverwash type soils. Ambrosia also occurs in a variety of associations dominated by sparse grasslands or marginal wetlands, such as river terraces, pools, and alkali playas (Munz 1974, Reiser 1994). Reiser (1994) noted that San Diego ambrosia may also occur in creek beds and willow woodlands lacking tree canopies. In 2000, Dudek and Associates (Dudek 2000) found San Diego ambrosia at MTRP in rocky fine sandy loam, Fallbrook rocky sandy loam, Diablo clay, and Ramona sandy loam and that San Diego ambrosia occurs mostly in sandy loam textured soils that were moderately acidic (pH ranging from 4.48 to 5.77) and low in salinity.

Elevations for this species include less than 487.68 m (1,600 ft) in Riverside County and less than 182.88 m (600 ft) in San Diego County. At MTRP in San Diego, patches of San Diego ambrosia occur upon slope angles ranging from 0 to 18 percent with the vast majority of plants occurring at slope angles of less than 5 percent (Dudek 1997). San Diego ambrosia can be found in association with a number of plant species including saltgrass (*Distichlis spicata*), California buckwheat (*Eriogonum fasciculatum*), dove weed (*Eremocarpus setigerus*), non-native grasses (*Poaceae* spp.), yellow star-thistle (*Centaurea melitensis*), western ragweed (*Ambrosia psilostachya*), fascicled tarweed (*Hemizonia fasciculata*), and graceful tarplant (*Holocarpha virgata*).

Life History

Ambrosia pumila is a clonal, herbaceous perennial plant species in the family *Asteraceae* (Munz 1974). Other than its clonal growth, the life history strategies of this species are largely unknown. San Diego ambrosia is sensitive to seasonal conditions and variations causing the amount of above ground mass to fluctuate from year to year. Flowers are generally present from May through October (Munz 1974).

Because the male flowers are downward facing and positioned above the female flowers, some suggest that San Diego ambrosia is self-compatible. However, wind pollinated species typically have the male flowers above the female flowers, and no self-compatibility studies have been conducted to clearly demonstrate that the species can self-pollinate. In addition, because most *Ambrosia* species are wind pollinated, San Diego ambrosia is thought to be wind pollinated (Payne 1996).

Recent genetic research confirms the presence of multiple stems of multiple genotypes at nine plots across three populations in San Diego and western Riverside Counties (McGlughlin and Friar 2004). Researchers found 31 distinct genotypes across the three populations sampled.

Their findings suggest that sexual reproduction has occurred at sometime in the past and that closely associated stems within an occurrence are not always clones of a single genotype but can consist of distinct genotypes. Based on the genetics study and seed viability studies by Dudek (2000) and Corona-Bennett et al. (2003), sexual reproduction likely occurs infrequently, with the timing and extent of this sexual reproduction unknown.

Propagation in clonal perennials is thought to be primarily through extensions of rhizome-like root structures. The species propensity to spread asexually suggests that local population expansion may be by rhizome-like structures while speculation is that longer distance dispersal may have been by flood disturbance (Dudek 2000). Because of the clonal nature of *Ambrosia pumila*'s growth, it is not possible to directly determine the number of genetically distinct plants present in an area simply by counting stems (McGlaughlin and Friar 2007). McGlaughlin and Friar's (2007) analysis of clonality in *A. pumila* determined that the aerial stem-to-genet ratio is roughly 10-to-1 on average [about 1 genet for every 10 aerial stems counted in a patch (cluster of stems)]. A patch constitutes a spatially distinct cluster of stems within an occurrence, whereas an occurrence constitutes a group of individuals separated from the next nearest group of individuals by a distance greater than or equal to 0.40 km (0.25 mi).

Population Trends

Sensitive species database searches indicate that this species has been documented historically from approximately 40 verifiable locations throughout western San Diego County and Riverside County (Figure 7). A total of 17 occurrences are considered extant or possibly extant in San Diego County (Figure 6; Appendix 1). Most of the extirpated occurrences have disappeared since the 1930s, nearly all by urban development and highway construction. Eight of the 17 occurrences are transplanted populations. CNDDDB 4, 23 and 47 are transplanted populations near the action area. CNDDDB 4 was located at the intersection of Mission Gorge Road and Fanita Drive, but this occurrence was transplanted to a City-owned open space parcel along Forrester Creek in July 2009. CNDDDB 23 is the population at Mission Trails and CNDDDB 47 is the Kenney Street population within the 28.33-ha (70-ac) proposed project footprint. The population at CNDDDB 40 contains only about 10 plants, and may become extirpated in the near future if not properly managed. Several of the populations that are labeled as extirpated are now thought to have been misidentified originally, because only weak-leaved burweed (*Ambrosia confertiflora*) was found at the site during recent surveys, and this species has been known to be confused with San Diego ambrosia (CNDDDB 2009).

The transplanted San Diego ambrosia plants have met with variable success. Some of the receptor sites continue to support healthy groups of San Diego ambrosia and are expanding into adjacent habitat (e.g., Kenney Street population and SR 52 Stage IV transplants). Some of the plants at receptor sites appear to be just hanging on or are expanding from the few propagules that survived the transplantation process (e.g., Pilgrim Creek and Penasquitos Canyon). A few locations appear to have no San Diego ambrosia at this time.

Figure 6. Current status of ambrosia populations in San Diego County

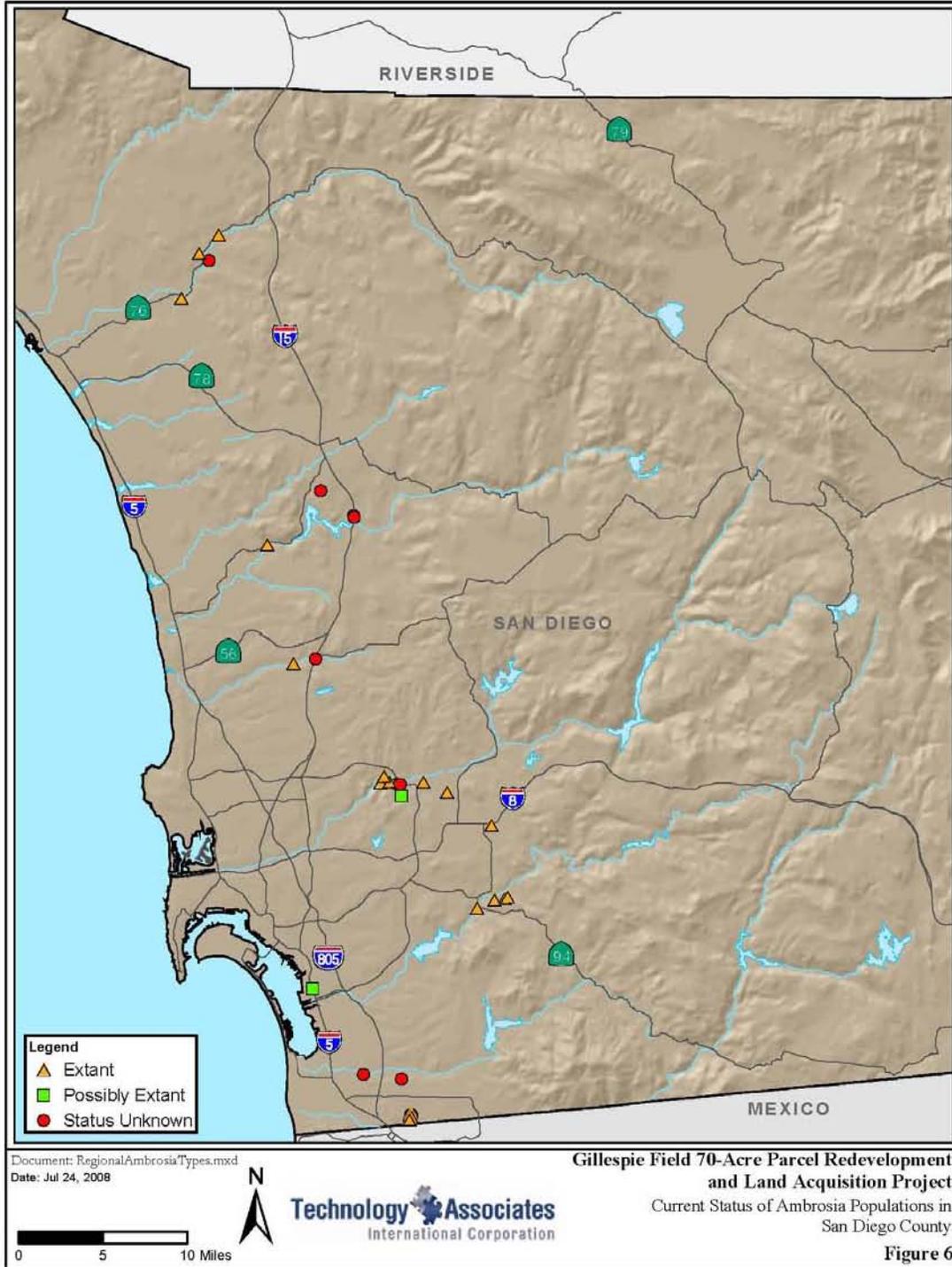
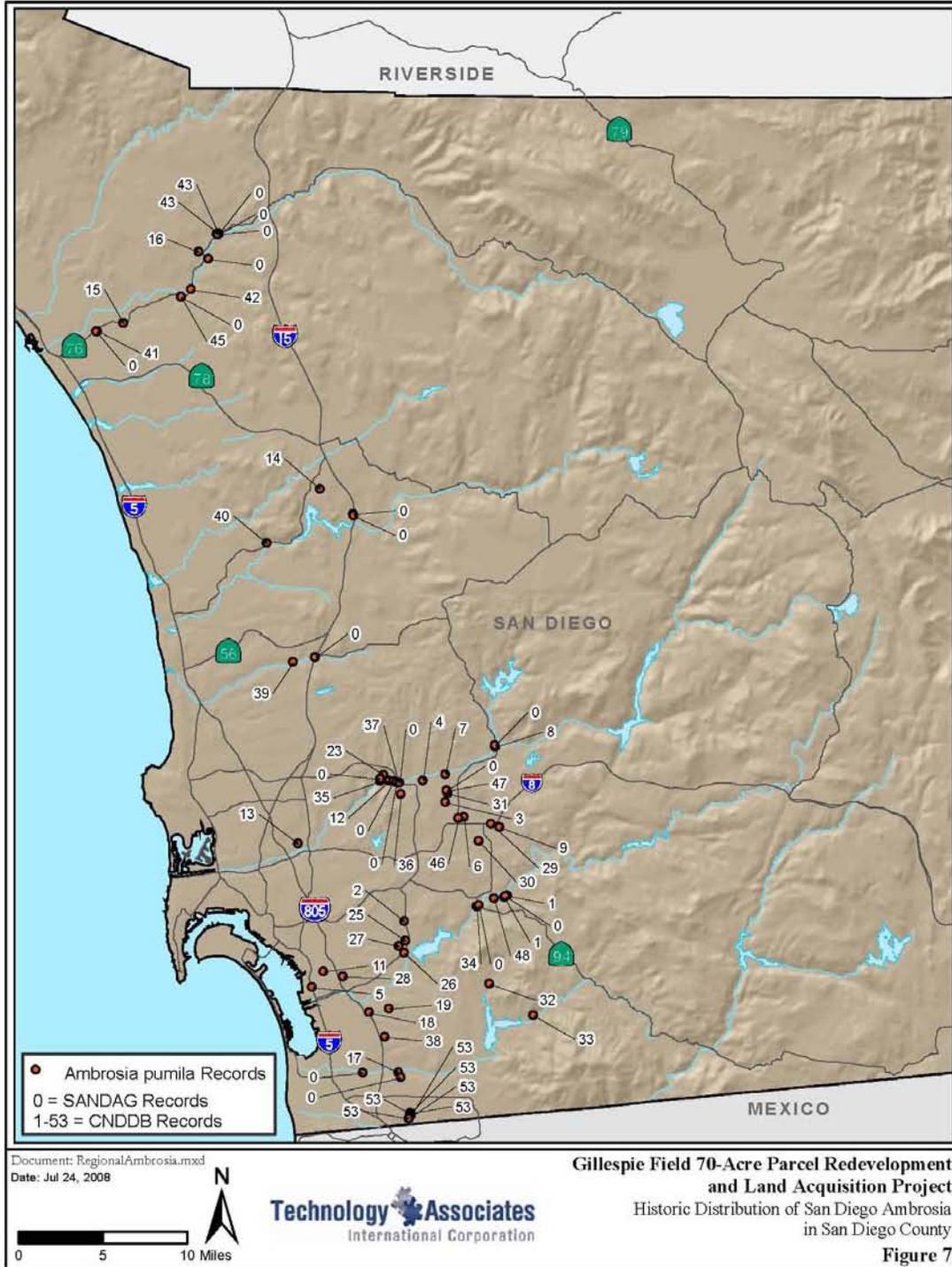


Figure 7. Historic distribution of ambrosia populations in San Diego County



In Riverside County, the Nichols Road and San Diego aquaduct populations are highly disturbed due to human activities. Both the Alberhill and Skunk Hollow Mitigation Bank populations are conserved; however, neither population is being actively managed to control non-native species invasion (Folarin, pers. comm., August 2009).

Threats

A detailed discussion of threats to ambrosia and its habitat can be found in the final listing rule (Service 2002). The primary threats to San Diego ambrosia are habitat loss due to urbanization and fragmentation; soil compaction; habitat alteration by invasive species invasions; and alteration of hydrology (Service 2002, 2009). Nearly all U.S. populations occur in sites that are disturbed and frequently affected by secondary impacts (e.g., trampling, competition from non-native plants) due to proximity of development and infrastructure (e.g., roads and pipelines). The potential threat from lack of natural hydrological regime is unknown.

Alteration of habitat through invasion of non-native species is one of the most serious threats to remaining ambrosia populations (Service 2009). Non-native annuals, particularly grasses, can germinate and establish quickly following the first fall or spring rainfall. Subsequent rain allows these non-native germinants to grow vigorously. Over the years, non-native grasses can build up a thatch that can suppress native forbs, such as ambrosia. The thatch can also prevent the few viable seeds from reaching the soil and suppress germinants from establishing. Since viable seed is rarely produced (Dudek 2000), having seeds lost to suppression by non-native species could lead to a loss of genetic diversity over the long-term.

A problem noted at some of the sites where salvaged San Diego ambrosia plants were transplanted is herbivory by pocket gophers (*Thomomys bottae*). At two of the sites where San Diego ambrosia was transplanted at Los Penasquitos Canyon Preserve, pocket gophers ate most of the transplants (Bainbridge et al. 2003). San Diego ambrosia is more vulnerable to all of the above threats because of its low genetic diversity. The roots spread underground and produce above-ground stems which are genetically identical to one another. When the roots between shoots disintegrate, the above-ground stems become separate, but genetically identical individuals. Self-pollination and self-fertility contribute to strong inbreeding in this species, which results in a much greater vulnerability to local extirpation (Service 2009).

Regional Conservation Needs

As illustrated in Chapter 3 of the Final Biological Assessment, approximately one third of the historical populations of San Diego ambrosia remain, and the remaining populations are mostly unprotected. Due to the rapid decline of the species, the California Department of Fish and Game is currently evaluating ambrosia's listing under the California Endangered Species Act. "Based on the biology of this species and preliminary data regarding the clonal structure of this species, attention should be given to preservation of as many genotypes as possible. This is most easily accomplished by preserving as many different occurrences as possible, determining their clonal structure, and protecting the occurrences from direct effects of habitat destruction or

degradation and the indirect effects of encroachment by invasive and non-native species” (Service 2002, 2009).

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of State and private actions which are contemporaneous with the consultation in progress.

The 0.45 ha (1.1-ac) portion of the action area located within the Gillespie Field Airport in the City of El Cajon is surrounded by development and disturbed land and is densely covered with non-native invasive species, such as wild oat (*Avena* spp.), bromes, (*Bromus* spp.) and mustards (*Brassica nigra*, *Hirschfeldia incana*). This portion of the action area also supports a naturally-occurring population of San Diego ambrosia.

Ambrosia surveys were conducted in 2006 by TAIC, and at that time ambrosia covered an area of approximately 0.06 ha (0.16 ac). In 2009, EDAW resurveyed the area and discovered that the ambrosia had expanded to cover an area of approximately 0.073 ha (0.18 ac). EDAW estimated the density to range between 5-250 aerial shoots per square meter (EDAW 2009). However, due to the clonal nature of ambrosia and because surveys were conducted during low rainfall years (2005-2006, and 2008), the precise number of plants within the action area cannot be determined.

At MTRP, the receptor site encompasses approximately 4.05 ha (10 ac) of native and non-native grasses with soils suitable for ambrosia. However, while small populations of ambrosia are located at various places throughout the park, no ambrosia are currently located within the action area at MTRP. The nearest known ambrosia population is located approximately 0.30 km (1,000 ft) to the northeast of the receptor site.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Direct Effects

Direct, permanent impacts to 0.073 ha (0.18 ac) of San Diego ambrosia found within the project footprint will occur due to the redevelopment of Gillespie Field Airport. The affected ambrosia population occurs within and immediately south of a 0.45 ha (1.1 ac) fenced enclosure in a disturbed area of non-native grassland. It is expected that all ambrosia within the enclosure will be destroyed as a result of redevelopment activities. However, the precise number of individual plants cannot be quantified due to the clonal nature of the species. Therefore, the impact is determined based on the spatial extent of the population rather than the number of plants.

Direct impacts to ambrosia will be minimized by salvaging all individual propagules in cut-blocks and transplanting them into a 1.17 ha (2.9-ac) receptor site at MTRP, in accordance with a Service-approved transplantation plan. The transplantation process may result in the loss of individual propagules due to the difficulty in salvaging and transplanting efforts. However, personnel experienced in transplanting rare perennial plants will conduct and oversee the transplantation effort, which should minimize this loss.

It is expected that the transplantation effort will result in an ambrosia population similar in size and distribution to the population being impacted by the project. In addition, 10 percent of individual stems with roots will be removed from the cut-blocks and propagated in containers in a nursery/greenhouse, with the ultimate goal of achieving twice as many above-ground stems at the receptor site as that being impacted at the donor site (i.e., the project footprint within Gillespie Field Airport). All container plants will be transplanted within the receptor site at the MTRP in accordance with a Service-approved transplantation plan. The transplanted population, including the transplanted container plants, will be monitored for at least 5 years to evaluate the success of the transplantation efforts.

Direct impacts to the transplanted ambrosia population during management of the MTRP could occur as a result of trampling and inadvertent spraying with herbicides. However, restoration activities at MTRP will be monitored by the transplantation biologist. The transplantation biologist overseeing the transplantation and maintenance of the ambrosia population at MTRP will ensure that all of the conservation measures in this biological opinion and the guidelines included in the Service approved transplantation plan are followed.

Long-term conservation of the ambrosia population transplanted to MTRP is expected to be as good as it was at Gillespie Field Airport because the transplanted population will be managed and monitored in perpetuity by the City of San Diego Department of Parks and Recreation in accordance with a Service-approved long-term management strategy and the transplanted population will be protected from future impact by a conservation easement. Management and monitoring will be funded through a non-wasting endowment provided by the County DPW, which will further ensure management and monitoring tasks will be carried out as anticipated in the long-term management strategy. In addition, while the existing population would be surrounded by existing and future development at Gillespie Field if left intact, transplanting the

population within MTRP where it will be conserved and managed in perpetuity will better contribute to the overall recovery of the species.

Indirect Effects

The transplanted ambrosia population at the receptor site may be subject to future impacts brought about by habitat conversion, invasive plants, and herbivory. San Diego ambrosia generally is limited to disturbed sites and habitats with limited cover. The colonization and establishment of trees, shrubs, or invasive plant species and the development of thatch may shade out the transplanted population resulting in a reduction or loss of the population. To minimize loss or reduction of the transplanted population at the receptor site, a Service-approved long-term management strategy will be implemented that uses disturbance to maintain the cover requirements for ambrosia while ensuring that adverse effects to ambrosia from the disturbance do not occur. Disturbance may include activities such as mowing, weeding, and removal of encroaching trees and shrubs to ensure that open grassland is maintained within the ambrosia transplantation areas.

Invasive species are now recognized as a threat to biodiversity within native vegetation, second only to direct habitat loss and fragmentation (Pimm and Gilpin 1989, Scott and Wilcove 1998). Non-native, weedy species may out-compete and exclude native species potentially altering the structure of the vegetation, degrading or eliminating habitat needed by San Diego ambrosia (Bossard et al. 2000). To reduce the potential for exotic plant invasion into natural habitat, all areas disturbed during construction at the MTRP will be revegetated with native plant species, and a weed management program will be included in the long-term management strategy.

In addition, San Diego ambrosia could be threatened by herbivory from gophers, snails and other herbivores. To minimize the potential effects of herbivory, the receptor site will be fenced off to deter small mammals from entering the areas containing the transplanted San Diego ambrosia.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

We have not identified any cumulative effects within the action area.

CONCLUSION

After reviewing the current status of the San Diego ambrosia, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued

existence of the San Diego ambrosia. Although proposed critical habitat has been designated for San Diego ambrosia, none will be negatively affected by the proposed action.

We reached this conclusion by considering the following :

1. The impacted population, if left in place, would likely not contribute to the recovery of the species as a whole because it represents a small, isolated population surrounded by development.
2. Impacts to San Diego ambrosia will be minimized through transplantation of all ambrosia within the project footprint to Mission Trails Regional Park, consistent with a Service-approved transplantation plan;
3. Impacts to San Diego ambrosia will be minimized because a biologist with a history of transplanting sensitive plant species will be responsible for oversight of the transplantation efforts and monitoring of the transplantation site during the initial 5-year monitoring period;
4. The ambrosia transplantation site will be conserved, managed, and monitored in perpetuity by the City of San Diego Department of Parks and Recreation consistent with a Service-approved long-term management strategy and funded through a non-wasting endowment established by the DPW;
5. An unprotected (i.e., not conserved or managed) population of ambrosia outside of the project footprint will either be conserved, managed, or monitored in perpetuity, or some combination thereof. This action will contribute to the range-wide conservation (recovery) of San Diego ambrosia; and
6. Transplantation of the Gillespie Field Airport ambrosia population to Mission Trails Regional Park will increase the long-term viability of the ambrosia population and contribute to the recovery of the species because the genetic material will be preserved and the transplanted population at Mission Trails Regional Park will be conserved, managed, and monitored in perpetuity.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act prohibits the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by us to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. We defined harass as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful

activity. Under the terms of section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information.

1. FAA and its designated representative, DPW, should develop a long-term management strategy for the populations of ambrosia that occur on lands that they or DPW own throughout San Diego County. The strategy should include weed management, disturbance processes, and enhancement activities to help ensure the long-term survival of ambrosia in San Diego County.
2. FAA and its designated representative, DPW, should design future projects to completely avoid all San Diego ambrosia individuals.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request for consultation. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (3) a new species is listed or critical habitat designated that may be affected by the action.

Mr. Victor Globa (FWS-SDG-08B0338-09F0902)

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If you have any questions or concerns about this biological opinion, please contact Amber Himes of my staff at (760) 431-9440.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim A. Bartel". The signature is stylized with a large initial "J" and a long horizontal stroke at the end.

Jim A. Bartel
Field Supervisor

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Appendix 1. Current Status of CNDDDB Populations

CNDDDB Number*	Year of Data	Current Status	CNDDDB Number*	Year of Data	Current Status
1	1998	Existing	28	1997	Extirpated
2	1938	Extirpated	29	1996	Existing
3	1998	2 populations transplanted to 47 – 1 is existing	30	1996	Extirpated
4	1994	Existing	31	1994	Extirpated
5	1992	Possibly existing	32	1996	Extirpated
6	1996	Extirpated	33	1996	Misidentified
7	1998	Possibly misidentified	34	1998	Existing, closer to road
8	1996	Possibly misidentified	35	1996	Existing
9	1976	Extirpated	36	1998	Possibly existing
11	1996	Extirpated	37	1991	Extirpated – transplanted to CNDDDB 23
12	1998	Existing	38	1996	Possibly extirpated or misidentified
13	1996	Extirpated	39	1996	Existing – Bainbridge transplant
14	1936	Unknown	40	1996	Possibly 10 plants left
15	1936	Extirpated	41	1996	Possibly extirpated – failed transplant at Pilgrim Creek
16	1996	Mismapped; existing south of Olive Hill	42	1996	Extirpated – transplanted nearby (transplant unverified)
17	Unknown	Possibly misidentified	43	1996	Existing
18	Unknown	Extirpated	45	1997	Existing
19	1996	Extirpated or misidentified	46	1998	Extirpated
23	1996	Existing - transplant	47	1995	Existing – transplant
25	1996	Possibly extirpated	48	1998	Existing
26	1996	Extirpated	53	unknown	Status unknown
27	1996	Extirpated-possibly transplanted			

* CNDDDB Nos. 10, 20-22, 24, 44, 49-52 were not included in the original CNDDDB dataset.