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Oriental Fruit Fly Cooperative Eradication Program

Los Angeles County, California

Environmental Assessment August 2015

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**Environmental Assessment,
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I. Need for the Proposal

The oriental fruit fly (OFF), *Bactrocera dorsalis* (Hendel) (synonym—*Dacus dorsalis* Hendel), is a destructive agricultural pest in many parts of the world. It has a long history of being a serious pest of tropical and subtropical fruits in Southwest Asia and most of the Pacific Islands. Following introduction into the Hawaiian Islands in the 1940s (NAPIS, 2015), this fly multiplied rapidly and currently is known to infest more than 125 different host fruits in the State of Hawaii. Worldwide, OFF has been recorded infesting more than 230 kinds of fruit and vegetables, including citrus, guava, mango, papaya, avocado, banana, loquat, tomato, Surinam cherry, rose apple, passion fruit, persimmon, pineapple, peach, pear, apricot, fig, and coffee berries.

OFF adults can travel 30 miles in search of food and breeding sites; one female OFF can lay 1,000 to 3,000 eggs. These abilities allow OFF to infest new areas quickly and make OFF establishment potentially disastrous to agricultural production in states where host plants are grown (Weems et al., 2012; CDFA, 2006 and 2008). Although OFF is not known to be established in California, new infestations are detected on almost an annual basis since it was first identified in California in 1960. Reintroduction is most often due to infected fruits and vegetables that are brought across the border without inspection.

In 2015, OFF was first detected in Los Angeles County, California in the city of Los Angeles, during early January (CDFA, 2015a). The first OFF detection in the Covina region of the county was reported in early May (CDFA, 2015b). An OFF quarantine and eradication program was triggered in the Inglewood region of the county on June 29, 2015 (APHIS 2015a). Between July 8 and August 1, four adult OFF were trapped about 28 miles to the east, in the Covina/West Covina region. On August 3, 2015, an OFF larva was discovered in a grapefruit host in the city of Covina. Confirmation of the larval detection triggered federal participation in a new regulatory quarantine and eradication program for Los Angeles county (CDFA 2015c, 2015d, 2015e and 2015f).

APHIS and the California Department of Food and Agriculture (CDFA) are proposing a cooperative program to eradicate the OFF infestation and prevent the spread of OFF to noninfested areas of the United States. (See map of the proposed program area¹ in appendix A.) APHIS' authority for cooperation in the program is the Plant Protection Act (Title 4 of the Agricultural Risk Protection Act of 2000), which authorizes the Secretary of Agriculture to carry out operations to eradicate insect pests, and to use

¹ For the purposes of this document, "program area" refers to everywhere inside the quarantine boundary, and includes both eradication treatment and regulatory control zones.

emergency measures to prevent the dissemination of plant pests new to, or not widely distributed throughout, the United States.

Working cooperatively with States, the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) identifies and eradicates OFF infestations. APHIS has cooperated with the California, Florida, Puerto Rico, and Texas Departments of Agriculture on fruit fly eradication programs since 1984. To date, every fruit fly population targeted by APHIS cooperative programs was successfully eradicated.

The State of California initiates *Bactrocera* spp. delimitation and eradication programs in locations where the types and number of detections are not yet triggering quarantine regulatory actions. The State of California intensifies surveys for OFF in the neighborhood of each confirmed OFF detection. OFF detection in the cities of Covina and West Covina did not reach federally-actionable levels until the larval find on August 3, 2015. Monitoring for OFF continues throughout all susceptible counties of California.

Many OFF-host plant species are grown in Los Angeles County and adjacent regions, which increases the potential environmental impact of the current infestations. Commercial production of citrus, tomato, pepper, stone fruit, and other OFF-host commodities begins approximately six miles from the Covina region infestation (APHIS, 2015b). There are at least ten garden centers and commercial plant nurseries within six miles of the OFF infestation (see figure 1).

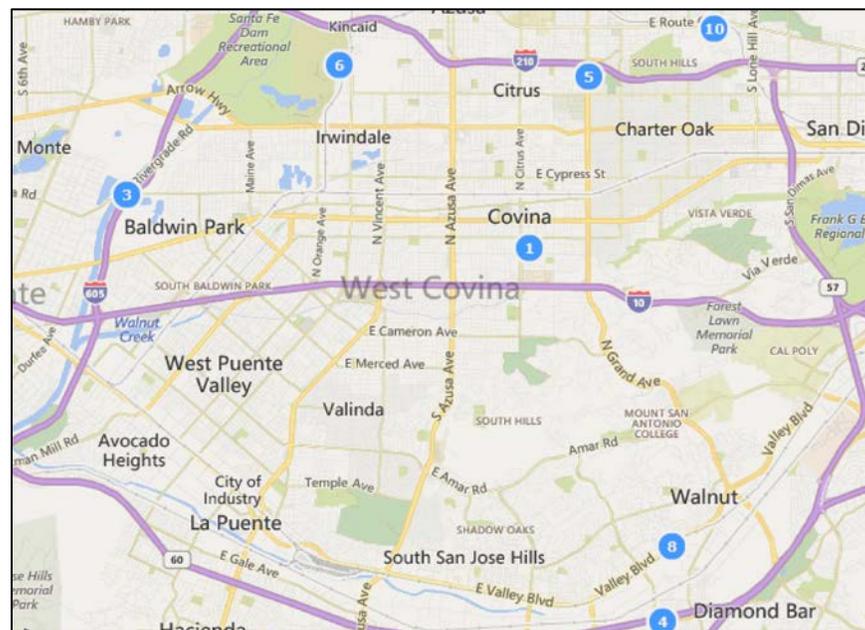


Figure 1. Commercial plant nurseries in the vicinity of the OFF detections. (Bing, 2015)

APHIS and its cooperating partners have discussed and comprehensively analyzed alternatives for OFF eradication since 1984. APHIS first evaluated the environmental impacts of fruit fly control technologies in the *Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001* (EIS1) (APHIS, 2001). APHIS reexamined its findings and introduced an additional tool for eradication in the *Use of Genetically Engineered Fruit Fly and Pink Bollworm in APHIS Plant Pest Control Programs, Final Environmental Impact Statement—2008* (EIS2) (APHIS, 2008). Both EIS1 and EIS2 consider fruit fly risks and mitigations at the programmatic level. This case-specific EA incorporates the findings of EIS1 and EIS2 by reference.

This environmental assessment (EA) analyzes the environmental consequences of alternatives considered for OFF eradication, and analyzes from a site-specific perspective, environmental issues relevant to this particular program. The eradication measures being considered for this program were discussed and comprehensively analyzed within APHIS' fruit fly chemical risk assessments (APHIS, 2014a, 2003, 1999, 1998a, and 1998b). These documents are incorporated by reference and summarized within this EA. Environmental documentation for APHIS fruit fly control programs may be viewed online via the following links: [APHIS fruit fly control program environmental documentation](#) and [APHIS GE control applications for plant health](#).

II. Alternatives

Alternatives considered for this proposed program include (A) no federal action, and (B) the preferred alternative, eradication using an integrated pest management (IPM) approach. Component techniques of alternative B include the use of regulatory controls, high density trapping, host larval survey, and chemical pesticides to facilitate the timely elimination of the current OFF infestation. These alternatives and their component techniques were discussed and comprehensively analyzed within EIS1 and EIS2 (APHIS, 2001 and 2008), and are incorporated by reference and summarized within this EA.

A. No Action

Under the no action alternative, there would be no federal efforts to eradicate OFF or restrict expansion of the OFF population from the infested area. In the absence of a federal effort, quarantine and control would remain with the State and local government, grower groups, and individuals. Expansion of the infestation would be influenced by any controls exerted over it, by the proximity of host plants, and by climatic conditions.

“No treatment” might be the only reasonable alternative for some sensitive sites. In such cases, lack of treatment could lead to a continuing and expanding infestation. An expansion of the infestation would likely result in substantial economic losses to growers in the United States, as well as the loss of U.S. export agricultural markets.

Under the no action alternative, APHIS would continue cooperative practices to support the CDFA detection trapping program and research. (For details about the California State program to control OFF, please use the following link: [CDFA OFF project information](#).)

B. Eradication Using an IPM Approach (Preferred Alternative)

APHIS’ preferred alternative for the Covina region OFF program is eradication using an IPM approach. This alternative combines quarantine and commodity certification with eradication treatments, and is designed to be biologically effective while minimizing impacts to the environment, public intrusiveness, and program operating costs (CDFA, 2015g). Successful eradication of an OFF infestation in another part of Los Angeles County, using a similar IPM strategy, was declared in August 2014 (APHIS, 2014b).

CDFA (CDFA, 2015g) determined there are no cultural or biological control methods available that effectively eradicate OFF while allowing CDFA to meet its statutory obligations. APHIS concurs with their assessment. Eradication efforts may therefore employ any or a combination of the following:

- no action,
- regulatory quarantine treatment and control of host materials and regulated articles,
- host survey for evidence of breeding OFF,
- host removal,
- eradication chemical applications, and
- mass trapping to delimit the infestation and monitor post-treatment OFF populations.

The quarantine area for the OFF infestation includes those portions of Los Angeles County which fall within 4.5 miles around each property on which an OFF has been detected (see map in appendix A). The current

boundary may be expanded to include other properties if additional adult flies or life stages are found.

Bactrocera spp. can produce many generations in 1 year (Weeks et al., 2012). The OFF progresses through a four-stage life cycle: egg, larva, pupa, and adult. Breeding is continuous, with several annual generations. Adults live 90 days on average; developmental stages may be extended by periods of cool weather (CDFA, 2008; Weems et al., 2012). APHIS' cooperative programs to eradicate OFF infestations in California use established procedures and treatments (APHIS, 2015b; CDFA, 2015g) designed with the species' life stages in mind:

1. Delimitation McPhail food bait traps and Jackson pheromone lure traps which target female and male OFFs, respectively, are placed in varying densities throughout the program area to delimit the infestation and to monitor post-treatment fly populations. These traps are serviced on a regular schedule for a period equal to three OFF generations beyond the date of the last fly find).

2. Treatment Larval surveys (via fruit sampling) are conducted 100 meters around a site where OFF is detected and on adjacent properties. Where an OFF larva or pupa is discovered, fruit from the infested property and up to 200 meters around the find site is removed and taken for disposal under regulatory compliance.

Male attractant technique (MAT) is the standard eradication treatment practice for *Bactrocera* spp. including OFF. MAT is deployed in a 1.5-mile radius from each OFF detection site for a minimum of 9 square miles. Up to 600 small, gel-like bait stations per square mile are applied to utility poles and street trees at least 6 feet above the ground. Traps may be used where there are no suitable inanimate surfaces to place bait stations. The treatment is repeated every 2 to 6 weeks for a maximum 15 total applications per acre per year, depending on the severity of the infestation (State of California, 2015). These bait stations contain a male attractant (methyl eugenol (ME)) that is mixed with a small amount of the pesticide naled or the pesticide spinosad. The bait stations attract and kill male OFF looking for an opportunity to breed and feed on the attractant. The females go unmated and, therefore, offspring are not produced, effectively eradicating of the population.

Should evidence of a breeding OFF population be confirmed, a targeted, ground-based foliar bait treatment also will be applied. Host trees and plants within a 200-meter radius of the find site are treated with highly localized spray that consists of an organic formulation of the pesticide spinosad and protein hydrolysate, a food bait. Protein hydrolysate is a common attractant used in fruit fly treatments, increasing the efficacy of chemical applications, and reducing the area of pesticide treatments needed for control (Prokopy et al., 1992). Pest fruit flies are attracted to

the protein hydrolysate, which can be derived from plants or yeast, where they then receive a lethal dose of the pesticide that is mixed with the attractant.

Evidence of a breeding population (immature life stages, mated female OFF, or multiple adult captures within a certain distance and time frame) leads to removal of host fruit from all known infested and adjacent properties within a 100-meter radius of each detection site (APHIS, 2015b).

A quarantine boundary will be established to ensure any host material that leaves the program area is free of OFF. Host material may be treated in enclosed areas or containers by cold treatment, vapor heat treatment, irradiation, or fumigation with methyl bromide (APHIS, 2001 and 2004). Should the OFF quarantine spread to federally-protected historical sites, wilderness, or tribal lands, program treatments will be restricted to those approved for the type of site in question.

Growers will be able to move their harvested fruit out of the quarantined area, under a limited permit, to enclosed facilities for processing into juice or for packing, after the fruit receives APHIS-approved methyl bromide treatment in the field or at the packing shed. Growers of host fruits may also treat their production areas using approved program treatments (field and/or premise treatment) and, under compliance agreement, have crops certified for movement to packing sheds.

Before taking action, program officials are to inform the public and impacted industry via press releases, meetings, and other forms of communication appropriate for the recipients. Residents whose property will be treated or whose fruit will be removed are to be notified at least 48 hours in advance. Notification letters will be sent to trading partners as they are identified. Given the potential impacts to commercial production, grove owners, packing sheds, nurseries, vendors, and other industry operations handling OFF host material will be notified of the OFF quarantine location and treatment schedule.

For more detailed information regarding the alternatives considered for OFF control and their component methods, refer to the previously mentioned fruit fly risk assessments (APHIS, 2014a, 2003, 1999, 1998a, and 1998b).

III. Potential Environmental Consequences

This EA analyzes the potential environmental consequences of alternatives considered for OFF control. The site-specific characteristics of the OFF program area were considered with respect to the preferred alternative's potential to affect human health, nontarget species (including threatened and endangered species), and environmental quality. Potentially sensitive sites were identified, considered, and accommodated through special selection of eradication methods and use of specific mitigation measures. APHIS will conduct any necessary additional environmental analyses if OFF detections lead to an expansion of the program boundary.

A. No Action

Lack of federal action would place the burden of eradication on the State of California. It is reasonable to expect OFF populations would continue to expand in size and area, leading to increased quarantine efforts. Any failure of those efforts could lead to the establishment of this pest within the conterminous United States. If eradication attempts are unsuccessful, APHIS expects substantial economic losses to growers in the United States. Crop loss is likely to lead to commodity scarcity, higher costs for U.S. consumers, and the temporary or permanent loss of valuable U.S. export markets.

B. Preferred Alternative

This section considers to what extent implementation of the preferred alternative might affect the human environment. It begins with a brief description of the physical aspects of the region and its residents, both within and near the proposed program area. The preferred alternative, eradication using an IPM approach, may employ any or a combination of the following:

- no action,
- regulatory quarantine treatment and movement control of host materials and regulated articles,
- host survey for evidence of breeding OFF,
- host removal,
- eradication chemical applications (MAT and/or foliar spray spot treatment), and

- mass trapping using pheromone lures or food bait as an attractant.

The pheromone attractant used in the OFF MAT poses a slight risk to certain terrestrial invertebrates that are attracted to the bait due to the presence of methyl eugenol (ME) as they could receive a lethal dose of naled or spinosad. However, based on the selective nature and targeted application of the attractant, such impacts are expected to be localized and transient for sensitive taxa populations, including beneficial arthropods (APHIS, 2014a).

Pheromone lures such as ME present little or no risk to human health or to the general environment, based on their low toxicity in animal testing, high target specificity, and low exposure to humans and the environment (NAFTA, 2003). Review of the treatment protocols by CDFR and APHIS indicates the naled and spinosad formulations used for OFF MAT are not likely to cause adverse environmental or human health risks (APHIS, 2014a, 2003, 1999, 1998a, and 1998b). Therefore, the discussion in this section will focus on the other eradication measures of the preferred alternative.

1. Affected Environment

a. Land Characteristics and Demographics

Los Angeles County is highly developed and has the highest population of any county in the United States with approximately 10.4 million residents. Tourism is the county's third largest industry, attracting millions of visitors annually (LA County, 2015a). The county forms part of the Los Angeles–Long Beach–Anaheim, California Metro Area. The city of Covina occupies over 7 square miles and reported population of 47,796 in 2010. Census figures for the city of West Covina recorded a population of 106,098 in 2010; the city occupies about 16 square miles of the county (USCB, 2015a). Land use in the immediate program area is residential.

The State of California continues to experience extreme drought, that is broken to a limited extent by storms bearing unusually heavy rainfall. Los Angeles County normally enjoys a temperate climate: summer weather that is moderate to hot, and mild winters. The average annual temperature for the region is 70 °F, and its average annual rainfall is normally 10 to 14 inches.

Major roadways in the immediate program area include Interstate Routes 10, and 210, and California State Highway 39. The OFF infestation currently is concentrated in a residential neighborhood; schools, municipal parks, biking and hiking trails, golf courses, and other public and private recreational facilities also occur within or near the program area. OFF-

host vegetation in the proposed program area occurs on both private and public property. Table 1 shows distances from the center of the program area to sites of potential concern.

Table 1. Distance from Core of Detections to Certain Land Sites.*

Designated Land Use	Distance Rounded Off to Nearest Tenth of a Mile
Nearest Airport	<ul style="list-style-type: none"> • Long Beach Airport, 3.5
Local, State and Federal Lands	<ul style="list-style-type: none"> • Angeles National Forest, 5.1 • 5 within proposed treatment area: Palm View Park, Covina Park, Cypress Bell Park, Cortez Park, Barranca Park
Nearest Historic Sites	<ul style="list-style-type: none"> • 8 registered sites, <6.0 • 138 registered sites, <15.0
Nearest International Seaports	<ul style="list-style-type: none"> • Long Beach Harbor, 9.5 • Los Angeles Harbor, 13.7
Nearest Native American Reservation	<ul style="list-style-type: none"> • San Manuel Reservation, 45.0
Organic Production and Farmers Markets	<ul style="list-style-type: none"> • No organic farms within proposed treatment area • 4 organic farms within proposed quarantine boundary • No farmers markets within proposed treatment area • 1 farmers market within proposed quarantine boundary
Schools and Academic Institutions	<ul style="list-style-type: none"> • 53 within 2.2 miles • 173 within 6.0 miles
U.S./Mexico Border	<ul style="list-style-type: none"> • 130.0 south

* See appendix B for data sources.

b. Water Resources

Los Angeles County obtains electric power, irrigation, and drinking water from various local and imported resources. The regional water supply for Covina and West Covina is furnished by local streams and reservoirs, ground water, the Colorado River, and State Water Project reservoirs (WEF, 2014). Water located beneath the proposed treatment area for the OFF program, or surface water that drains off of it, may enter the San Gabriel Watershed. Freshwater forested/shrub, pond and riverine types of wetland occupy about 84.8 acres of the proposed treatment area (data sources in appendix B). Table 2 shows the distance between the current

OFF program and other water resources.

Severe drought conditions since 2012 led to unusual surface and ground water loss in California. Both short-term (i.e., less than 6 months' duration) and long-term adverse impacts are predicted for California's agriculture, ecology, and hydrology (Svoboda, 2015). See figure 2 for a map of drought intensity.

Table 2. Distance from Core of Detections to Certain Water Resources.*

Type of Resource	Distance Rounded Off to Nearest Tenth of a Mile
Water Bodies within 5 miles	<ul style="list-style-type: none"> • 7 creeks and washes within 2.0 miles • 8 (lake, river, creeks, wash, reservoir) within 6.0 miles • 31 within 15.0 miles
Closest Impaired Waterbodies	<ul style="list-style-type: none"> • CAL4053100020000303202907 (Santa Fe Dam Park Lake), 3.3 • CAL4055200019980918113803 (Puddingstone Reservoir), 5.2 • CAL4053100019980917155807 (Legg Lake), 9.4

* See appendix B for data sources.

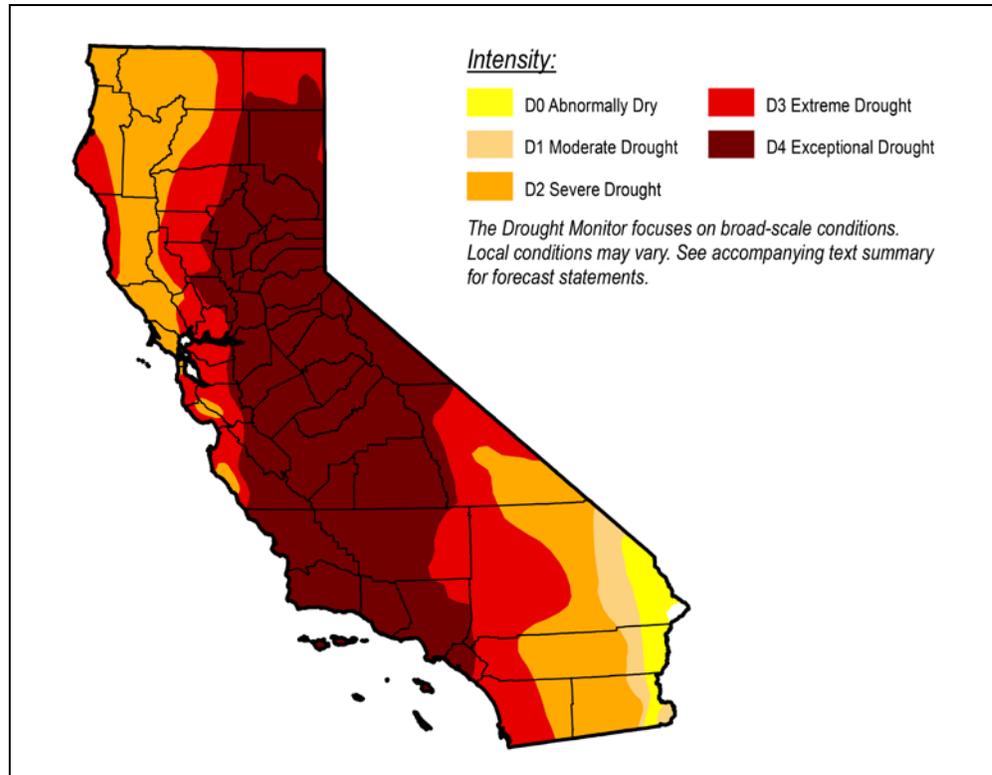


Figure 2. Drought status in California as of August 4, 2015. (Svoboda, 2015)

The State implemented water conservation programs and continues to seek additional ways to reduce water use. The Governor declared a drought State of Emergency in January 2014. On April 1, 2015, the State Water Resource Control Board (SWB) was ordered to implement mandatory water reductions in cities and towns across California to reduce potable urban water usage by 25 percent statewide. Cities with higher per capita use are facing mandatory water use reductions up to 36 percent based on their usage in 2013. The SWB required these areas to achieve proportionally greater reductions than those with lower use, to help reduce statewide water consumption by 25 percent (LA County, 2015b).

In 1985, California enacted legislation to protect the potability of its ground water; potential contaminants are identified and pesticide use restrictions are implemented for vulnerable areas (State of California, 2013). Ongoing surveys of California's waters continue to show substantial pollutant and toxicity levels; the percentage increases, however, may reflect more thorough site assessment rather than increasing pesticide discharge and runoff (EPA, 2012).

The OFF eradication program calls for highly localized chemical applications in designated properties and no-spray buffers around all sensitive areas, including all water bodies. This method of application is designed to minimize the potential for introduction of program chemicals to local water resources.

2. Human Health

The three major factors influencing the human health risk associated with pesticide use include the fate of the pesticides in the environment, their toxicity to humans, and their exposure to humans. The principal concerns for human health are related to the program use of chemical pesticides including naled lure, spinosad protein bait, and methyl bromide (a fumigant). Naled is toxic to humans, birds, and invertebrates. Spinosad is toxic to specific invertebrate species but is considered to be nontoxic to humans and other animals. The ME attractant used as a lure is considered low hazard to human health (APHIS, 2014a). Limited data exists regarding the toxicity of the protein hydrolysate; the available data suggests low acute toxicity to human health.

Exposure to program pesticides can vary, depending on the pesticide and the use pattern. The OFF eradication program will initially employ naled lure or spinosad lure bait stations and traps, and ground-based targeted applications of spinosad bait. Potential exposure to naled is expected to be low because treatments are limited to spot applications of the pesticide formulation to areas of non-food plants, fence posts, utility poles, and other inanimate surfaces that are not readily accessible to the general public. Commercial applications, should they become necessary, will be

applied to properties owned by commercial growers and producers where exposure to the general public is unlikely.

If spinosad bait application is restricted to target surfaces and made in accordance with EPA label instructions, effects to human health and the environment are expected to be incrementally negligible; in cases where spinosad is used as a replacement for naled, effects to human health and the environment are likely to be beneficial (Vargas et al., 2009). The use of ME or protein hydrolysate as attractants in the OFF program is also expected to present a low risk to human health. The attractants have low toxicity and their method of application results in a low probability of exposure and risk to workers and the general public.

Should treatment by methyl bromide fumigation be indicated, adherence to EPA label restrictions and application in enclosed areas or containers will protect applicators and the general public from risk of exposure to the fumigant (APHIS, 2007 and 2002).

The analyses and data of EIS1 and EIS2 and the associated human health risk assessments indicate exposures to pesticides from normal program operations are not likely to result in substantial adverse human health effects. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) and the human health risk assessments (APHIS, 2014, 1999 and 1998a) for more detailed information relative to human health risk.)

Another mitigation measure designed to minimize exposure of humans to program pesticides is the requirement for public notification. Information concerning the OFF eradication project will be shared via press releases and media announcements to the general public. Either the county agricultural commissioner or public information officer will serve as the primary contact to the media. Any resident with property to be treated will be notified in writing at least 48 hours prior to treatment. Following the treatment, notices will be left with homeowners detailing precautions to take and safe intervals of time that should elapse before harvesting fruit on the property. Treatments are repeated at 7 to 14 day intervals for two life cycles of the fly (typically 4 to 6 months, sometimes longer dependent on temperature) (CDFA, 2015g).

APHIS recognizes a small portion of the population may have greater than usual sensitivity to certain chemicals, and program treatments may pose higher risk for these individuals. Special communication strategies to mitigate this risk are discussed in detail in appendix C of EIS1 (APHIS, 2001).

Trap placement and chemical applications may be rescheduled if strong winds or rainfall is forecast for the program area. Site inspections will

continue to ensure existing program treatments are not likely to affect humans. The destruction or relocation of traps and treatments due to weather events is unlikely to result in adverse impacts to the human environment, because the potential pesticide toxicity is reduced by dilution during the storm's water and air movement.

Of the two alternatives considered, a well-coordinated eradication program using IPM technologies results in the least use of chemical pesticides and minimizes their potential to adversely affect human health. The no action alternative is not expected to eliminate OFF as readily or as effectively as the preferred alternative. Over a protracted period of no action, there would likely be broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts to human health.

3. Other Aspects of the Human Environment

APHIS summarizes its findings on potential environmental impacts of implementing the action alternatives on historic sites, minority and/or low-income communities, and tribal interactions in the proposed quarantine program area in this section.

The National Historic Preservation Act of 1966, as amended (16 U.S. Code § 470 et seq.), requires federal agencies to consider the impact on properties included in, or eligible for inclusion in the National Register of Historic Places (36 Code of Federal Regulations §§ 63 and 800). APHIS determined its fruit fly eradication programs are undertakings with no potential to affect historic properties. The California State Historic Preservation Office concurred with this finding for the OFF eradication program in Los Angeles County in December 2014. There are more than 500 registered historic sites in Los Angeles County. The majority of the historic sites are buildings associated with landscaping. Many are privately owned properties with plantings that may be OFF hosts. The Glendora Bougainvillea park is a notable historic property near the program area; however, plants in the Nyctaginaceae plant family are not reported as OFF hosts (Leblanc et al., 2012). Parks with unique soil and rock habitat, such as Vasquez Rocks, are not likely to have fruit-bearing plants that are OFF hosts. In general, APHIS' fruit fly eradication programs are compatible with the preservation of historic sites because control activities are inconspicuously integrated into the site, do not disturb the ground, do not affect human-made structures, and APHIS restricts program treatments and activities to an as-needed basis.

In this program, APHIS intends to use bait treatments and, when necessary, fruit stripping by hand. Produce at farmer's markets will be inspected, and infested fruit may be confiscated and destroyed. APHIS will not conduct aerial chemical applications; spraying will be ground-based, targeted directly to foliage. This may include hand spraying with a

backpack sprayer. Modifications of normal program activities at these types of locations are designed to reduce pesticide release. If APHIS discovers any archaeological resources, the appropriate individuals will be notified.

Federal agencies identify and address disproportionately high and adverse human health or environmental effects of its proposed activities, as described in Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Using the 2010 Census Bureau estimates, in the 15-mile area around the new quarantine zone, approximately 54 percent of the population identified itself as speaking English “not at all”, “not well”, “less than well”, or “less than very well” (USCB, 2015b). Approximately 40 percent of residents report a household income base of \$50,000 per year or less; 22 percent report educational attainment less than a high school diploma. The population reporting their race as Hispanic is about 50 percent; Asian as about 22 percent; and Black as 3 percent. In addition, 57 percent of individuals in the quarantine zone speak a language other than English at home (USCB, 2015b). To meet the needs of these individuals, APHIS will provide advance notice of program activities and potential exposure hazards in a variety of languages to members of non-English-speaking populations. APHIS will provide similar advanced notice to people in areas that lack access to news media. Because the preferred method of bait/pesticide application is to use poles above the height humans can reach unassisted, these segments of the population are not likely to be disproportionately adversely affected by the bait/pesticide treatments or their methods of application.

Federal agencies comply with Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. The preferred alternative does not pose any disproportionate adverse effects to children because maintenance of traps and any pesticide applications would not occur when children are present in the immediate area. Although there are approximately 52 schools listed as being located within the treatment core, bait stations will not be placed on school property. Any exposure of children to applied products is negligible based on the program’s application methods and the product formulations.

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, calls for agency communication and collaboration with tribal officials when proposed federal actions have potential tribal implications. Using the Native American Graves Protection and Repatriation Act Online Databases (NPS, 2015; 25 U.S. Code § 3001 et seq.), APHIS finds the nearest Federal Indian Reservation is more than 45 miles from the treatment area, and there are no federally registered Native American Tribes residing in Los Angeles County. The program area contains ceded land from the Ho-lo-cla-me, Te-jon, To-ci-a, and Uva

Tribes. The ceded lands are not from federally recognized tribes; only federally recognized tribes are able to participate in Section 106 consultation. Individual tribal members living within the quarantine zone will not be disproportionately affected in comparison to other individuals in the area because eradication treatments are applied to poles above the unassisted reach of most humans, and foliar canopy spraying is highly targeted. The proposed action will not disturb the ground, so it is unlikely to affect Native American sites or artifacts. For these reasons, APHIS does not expect any tribal members to be directly affected by program activities. If fruit fly detections warrant expansion of the program area onto tribal lands, program officials will initiate consultation.

A lack of federal action could result in adverse economic and health impacts on affected producers and consumers, such as decreased harvests, higher consumer prices, loss of local employment, reduced nutritional options, loss of market share, compromised mental and physical health, loss of property, and so on. These indirect impacts are expected to occur to a lesser extent under the quarantine and commodity certification alternative. Adverse effects are not anticipated as a result of carrying out the preferred alternative's surveillance activities, trapping, SIT, or program chemical applications.

4. Nontarget Species

The principal concerns for nontarget species, including threatened and endangered species, relate to potential harm from the use of program pesticides to eradicate OFF populations. Paralleling human health risk, the risk to nontarget species is related to the pesticides' fate in the environment, their toxicity, and exposure to nontarget species. APHIS' OFF programs are designed to prevent the introduction of program chemicals into nontarget areas.

All of the pesticides considered in this EA are highly toxic to invertebrates, even though the likelihood of exposure (and any ensuing impacts) varies among the pesticides and with the specified use pattern (APHIS, 2014b; 2003). In general, a well-coordinated OFF eradication program using IPM technologies would result in the least use of chemical pesticides, overall, with minimal adverse impacts to nontarget species. The no action alternative is less likely to be effective at eliminating OFF, and would be expected to result in broader and more widespread use of pesticides by homeowners and commercial growers, with a correspondingly greater potential for adverse impacts.

Trap placement and chemical applications may be rescheduled if strong winds and rain storms are forecast for the program area. Site inspections will continue to ensure existing program treatments are not likely to affect nontarget organisms. The destruction or relocation of traps and treatments due to weather events is unlikely to result in adverse impacts to animal species and their habitats, as the potential toxicity should be greatly reduced

by dilution of the program materials in water and air.

The MAT portion of the OFF eradication program will employ a naled or spinosad formulation. The pesticide naled is practically nonpersistent in the environment, with reported field half-lives of less than 1 day. It rapidly degrades in the presence of sunlight and is not strongly bound to soils. It is rapidly broken down if wet (a reported half-life of about 2 days), and it is moderately volatile (Extoxnet, 1996). (See below for a discussion of the pesticide spinosad.) Potential exposure of nontarget species to naled and spinosad are expected to be low because treatments are limited to spot applications of pesticide to areas of non-food plants, fence posts, utility poles, and other inanimate surfaces that are not readily accessible to most nontarget species.

Methyl eugenol, the lure ingredient in the MAT formulation, is considered moderately toxic to mammals if ingested, and can attract certain nontarget invertebrates (APHIS, 2014a). The attractant used in the OFF bait stations poses a slight risk to certain terrestrial invertebrates that are attracted to the bait due to the presence of ME, and they could receive a lethal dose of naled or spinosad. However, based on the selective nature of the attractant, the impacts would be localized and transient, and are not anticipated to result in population level effects to sensitive taxa, including beneficial arthropods.

The eradication program will also apply a targeted, ground-based foliar bait treatment if evidence of a breeding OFF population is detected. For this, host trees and plants within a 200-meter radius of the OFF find site are treated with a highly localized spray that consists of an organic formulation of the pesticide spinosad combined with protein hydrolysate bait.

Protein hydrolysate is a common attractant used in fruit fly treatments, increasing the efficacy of chemical applications and reducing the area of pesticide treatments needed for control (Prokopy et al., 1992). OFF are attracted to the protein hydrolysate where they then receive a lethal dose of the pesticide (spinosad) that is mixed with the attractant. The protein hydrolysate is expected to have minimal impacts to environmental quality based on its use pattern and rapid degradation. The protein is not expected to result in impacts to nontarget species.

The pesticide spinosad has low to moderate toxicity to wild mammals and birds. Spinosad toxicity to fish is moderate while aquatic invertebrates are more sensitive in acute and chronic exposures. Toxicity to terrestrial invertebrates is variable; however, spinosad is considered highly toxic to honey bees. Risks to nontarget fish and wildlife are anticipated to be negligible based on the proposed use pattern that would result in a low

potential for exposure to most taxa. A favorable environmental fate profile and low toxicity to most nontarget organisms further reduces the risk to terrestrial and aquatic animals (APHIS, 2014a).

For the fumigant methyl bromide, the sealed methods for its application are designed to protect nontarget species by preventing their exposure to the pesticide (APHIS, 2007 and 2002). Potential cumulative impacts of methyl bromide released to the global environment are considered in section 6 of this chapter.

Sites near the program area that might require special consideration, should the program area expand, include irrigation canals, coastal wetlands, and salt lakes of potential ecological importance. Program chemical applications will not be permitted at these sites or within refuges or other protected areas. Fruit survey and surveillance trapping will continue, and fruit stripping by hand will be undertaken if OFF detections occur at these types of locations.

a. Migratory Birds

The Migratory Bird Treaty Act of 1918 (16 U.S. Code §§ 703–712) established a federal prohibition, unless permitted by regulations, to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird or any part, nest, or egg of any such bird.

Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, directs federal agencies taking actions with a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service (FWS) that promotes the conservation of migratory bird populations. On August 2, 2012, APHIS and FWS signed an MOU to facilitate the implementation of this Executive order.

More than 500 species of birds occur in Los Angeles County (Garrett and San Miguel, 2006). This southern region of California, which is part of the Pacific Flyway, is an important migration corridor providing suitable habitat for many bird species. APHIS evaluated the proposed OFF program in terms of potential impact on migratory avian species. Given the extent of urbanization within the treatment area and the methods of application, implementation of the preferred alternative is not expected to have any adverse effect on migratory birds or their flight corridors. The proposed program would not involve removal or disturbance of any trees,

shrubs, or other vegetation on the project site that could be used by birds. In addition, birds would not be exposed to program treatments because of the targeted nature of the applications.

b. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) and ESA's implementing regulations require federal agencies to consult with the FWS and/or the National Marine Fisheries Service to ensure that their actions are not likely to jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of critical habitat. APHIS coordinates with the FWS Ecological Services Field Office, as well as with State authorities, before implementing OFF program activities. FWS reviews maps of the quarantined area and notifies APHIS if listed species are present in the program area. If listed species are present, APHIS implements protection measures for those species as approved by FWS.

APHIS reviewed the program area and proposed treatment activities for potential co-occurrence of federally-listed species and critical habitat to determine if any proposed program treatments may affect listed species or critical habitat. APHIS examined the program area and adjacent regions for the presence of listed species and critical habitat. No federally listed species or critical habitat occur within the treatment area. Additionally, no species proposed for listing or critical habitat proposed for designation occur within the treatment area.

Therefore, APHIS did not identify any potential co-occurrence of listed species or critical habitat within the program area. Because the current program activities are limited to developed residential areas, APHIS determined there is no potential for effects to listed species or critical habitat. Should the program area expand or further outbreaks be detected, APHIS, in cooperation with CDFA, will consult with FWS and other appropriate agencies, as necessary. A complete administrative record of this review is available upon request. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) and the supporting nontarget risk assessments (APHIS, 2014a, 2003 and 1998b) for more information on risks to all classes of nontarget species.)

5. Environmental Quality

The principal environmental quality concerns are for the protection of air quality, water quality, and the minimization of the potential for environmental contamination. In relation to preserving environmental quality, program pesticides remain the major concern for the public and the program. Although program pesticide use is limited, especially in comparison to other agricultural pesticide use, the proposed action would result in a controlled release of chemicals into the environment. The fate

of those chemicals varies with respect to the environmental component (air, water, or other substrate) and its characteristics (temperature, pH, dilution, etc.). The environmental fates of naled, spinosad, ME, and methyl bromide are outlined below. Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) and the risk assessments (APHIS, 2014a, 2003, 1998a and 1998b) for a more detailed consideration of program pesticides' environmental fates.

Attractant ingredients such as pheromone lures and protein hydrolysate food bait have minimal affect on environmental quality, based on EPA-approved use patterns and the ingredients' rapid degradation. Use of these attractants in OFF program treatments is not expected to result in impacts to environmental quality beyond those described for the below chemicals (EPA, 2011; NAFTA, 2003; Prokopy et al., 1992).

- **Naled** is practically nonpersistent in the environment, with reported field half-lives of less than 1 day. It rapidly degrades in the presence of sunlight. Naled is not strongly bound to soils. It is rapidly broken down if wet (a reported half-life of about 2 days), and it is moderately volatile. Soil microbes break down most of the naled in the soil; therefore, it should not present a hazard to ground water. The half-life of naled on foliage ranges from 2.3 to 2.5 days. Plants remove bromine from naled to form dichlorvos, which may evaporate or be further metabolized (Extoxnet, 1996).
- **Spinosad** is not considered mobile in soil; it adsorbs strongly to soil particles and is unlikely to leach to great depths. Dissipation half-lives for spinosad in the field may last 0.3 to 0.5 day. It is photodegraded quickly on soil exposed to sunlight. Spinosad is quickly metabolized by soil micro-organisms under aerobic conditions, and has a half-life of 9.4 to 17.3 days. Spinosad is not sensitive to hydrolysis, but aqueous photolysis is rapid in natural sunlight (half-life of less than 1.0 to 1.6 days), and is the primary route of degradation in aquatic systems exposed to sunlight. Under anaerobic conditions, the degradation rate is slower, between 161 and 250 days. Spinosad has a half-life of 2.0 to 11.7 days on plant surfaces. After initial photodegradation, residues are available for metabolism by plant biochemical processes. Effects from residues of individual treatments are no longer detectable in environmental substrates within a few weeks of application (APHIS, 2014a; Kollman, 2003).
- **Methyl eugenol (ME)** is a volatile compound. In the atmosphere, ME is degraded by reaction with hydroxyl radicals. ME is not expected to undergo hydrolysis in the environment. In water, it adsorbs moderately well to suspended solids and sediment. ME is

expected to have high mobility in soil. Dissipation of ME from soil and from water is slower in colder temperatures. Half-lives of ME are estimated to be 5 hours in the atmosphere, 8 days in soil, 8 days in water, and 32 days in sediment (APHIS, 2014a).

- **Methyl bromide (MB)** will not be used as an eradication treatment but may be employed as a regulatory treatment. MB volatilizes into air from soil and water, and is known to contribute to stratospheric ozone depletion. The volatilization half-life for MB from surface water ranges from 3.1 hours to 5 days. The degradation half-life of MB in water ranges from 20 to 38 days, depending on temperature and pH. Volatilization of MB from surface soil is rapid, with a half-life ranging from 0.2 to 0.5 days. The degradation half-life of MB in soil ranges from 31 to 55 days. MB has a low affinity to bind to soils, but is not considered a major contaminant of ground water (NPIC, 2000). The small quantities used to treat for OFF disperse when fumigation chambers are vented. (See section 6 of this chapter regarding MB's potential cumulative impacts to the environment.)

Urban and agricultural runoff may flow directly into local waters, picking up trash, dirt, chemicals, and other contaminants along the way. If treatment is indicated in close proximity to a body of water where pesticides might be directly discharged into the water, CDFA will analyze the environmental setting, and establish and follow site-specific best management practices. The prescribed method of spray application directly to host plants is designed to minimize drift and runoff. Mitigation measures will be applied to protect marine and freshwater resources. Personnel will maintain a minimum distance of 98 feet (30 meters) from surface water. Personnel applying pesticides will adhere to label directions, State and federal laws, and recommendations of the environmental compliance staff associated with the program. Water body contact is not anticipated due to the targeted application measures and the environmental fate of the pesticides used in *Bactrocera* spp. cooperative eradication programs.

The alternatives were compared with respect to their potential to affect environmental quality. Risk to environmental quality is considered minimal for the preferred alternative. Again, a well-coordinated eradication program using IPM technologies would result in the least use of chemical pesticides overall, with minimal adverse impacts on environmental quality. The no action alternative would likely result in broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts.

The proposed program area was examined to identify characteristics that would tend to influence the effects of program operations. Potentially sensitive areas were identified, considered, and accommodated, as necessary, through special selection of control methods and use of specific mitigation measures. Allowances were made for the special site-specific characteristics that would require a departure from the standard operating procedures. The approaches used to mitigate for adverse impacts to bodies of water are described in EIS1 (APHIS, 2001).

6. Cumulative Impacts

This section considers the potential of the alternatives to cause cumulative impacts on the human environment. Not taking federal action is expected to result in the cumulative impacts that arise from tolerating uncontrolled OFF infestations in the United States. Imposed quarantine and commodity certification would likely place the burden of control efforts and expense on producers already engaged in complying with other quarantine and commodity certification requirements. Federal non-action may increase the time it takes for commodities to reach their intended markets, or may prevent them from reaching consumers at all, which may contribute to negative public perception of the affected industry.

APHIS considered implementation of the preferred alternative in the context of, and in conjunction with, other pest insect eradication and quarantine projects in the Covina regional program area (such as light brown apple moth and glassy-winged sharpshooter eradication efforts). These programs use pesticides with different chemistries. They target different pests, and are applied at different times. The combination of these different pesticide chemistries, targets for application, and application timings suggest limited interacting or multiple exposures that are not likely to create significant cumulative impacts in the human environment.

Current and future in-State OFF programs potentially could merge into one larger program area. When OFF eradication programs are combined with trapping and eradication actions across California counties, APHIS expects a beneficial cumulative impact on the environment from reduced OFF populations causing damage to fruit combined with overall fewer chemical treatments.

The OFF program for the Covina region was examined for potential synergistic and cumulative environmental impacts. Program pesticides approved for use against OFF are also prescribed treatments for other *Bactrocera* spp. programs. As of August 7, 2015, there are three other active quarantines and one active eradication site in California targeted at *Bactrocera* spp.—specifically, at guava fruit fly and OFF infestations in Los Angeles and Santa Clara Counties (CDFA, 2015h). At present no active treatment areas overlap one another, and none overlaps the

proposed Covina treatment area. Use of program pesticides in an OFF program that overlap with another *Bactrocera* spp. program are monitored and adjusted, where necessary, to minimize environmental impacts. Due to the passage of time and the prevailing weather conditions in southern California during 2015, no chemical residues are believed to remain from previous *Bactrocera* spp. programs that could result in additive or synergistic chemical effects with previous program chemical applications.

No significant environmental impacts are expected to result from proper implementation of this OFF eradication and control program. The differences in pesticide chemistries, targets for application, affected species and resources, and application timing between the OFF program and other pest control programs in California are not likely to create significant cumulative impacts in the human environment. No synergistic or cumulative impacts from pesticide applications are expected with the following active programs (CDFA, 2015i)—

- Asian citrus psyllid in 16 counties including Los Angeles County;
- glassy-winged sharpshooter in 43 counties, not including Los Angeles County.

Care should be taken when multiple pest species in the same area are targeted for treatment using the same chemical. Spinosad, for example, has other labeled food and non-food uses, and is currently used in a variety of pest control efforts, including the control of termites and European grapevine moth (APHIS, 2014a). Implementation of an OFF eradication program could lead to an increase in spinosad use and the possible overlap of APHIS and non-APHIS program treatments. The OFF treatment schedule will be adjusted in locations where another CDFa or APHIS program may have scheduled similar treatments to avoid additive chemical impacts.

Additional programs in place at the time of preparation of this EA which may employ spinosad treatments (CDFA, 2015h and 2015i) that could combine with OFF spinosad treatments to have an additive-impact have been designed to target the following—

- Mexican fruit fly in Los Angeles County;
- European grapevine moth in 31 California counties, including Los Angeles County;
- light brown apple moth in portions of many California counties,

including the City of Los Angeles and other portions of Los Angeles County.

It is uncertain how pesticides may be used by private entities in the OFF program area. In terms of federal and California State program activity, there are no significant cumulative impacts anticipated as a consequence of implementing the preferred alternative or its component treatment measures. The preferred alternative is designed for pesticide applications to avoid overlapping treatment areas, and to prevent nontarget exposure until pesticide residues are degraded.

APHIS determined uses of MB for fruit fly quarantine treatments pose negligible potential for cumulative impacts to the environment. For information on potential depletion of the ozone layer related to MB released into the atmosphere, see the *Rule for the Importation of Unmanufactured Wood Articles from Mexico, with Consideration for Cumulative Impact of Methyl Bromide Use, Final Environmental Impact Statement* (APHIS, 2002), and subsequent analyses, such as the *Importation of Solid Wood Packing Material, Supplement to the Final Environmental Impact Statement* (APHIS, 2007).

There were no residual impacts from previous federal and non-federal actions targeting fruit fly infestations in the State of California, and there are no reasonably foreseeable future actions that could result in incremental increases in environmental effects. Based on APHIS' review of the context and intensity of the existing, ongoing, and potential future treatments, there will be no cumulative impacts to the human environment resulting from this OFF cooperative eradication program.

As discussed previously, additional actions may be implemented in this program, including additional quarantines and regulatory treatments. The anticipated use of these treatments is considered to pose minimal risk to the human environment, as determined in EIS1 and EIS2 (APHIS, 2001 and 2008), and the nontarget species and human health risk assessments (APHIS, 2014a, 2003, 1999, 1998a, and 1998b).

IV. Agencies Consulted

California Department of Food and Agriculture
Plant Health and Pest Prevention Services
Environmental Policy and Compliance
1220 N Street, Room 221
Sacramento, CA 95814

California Department of Food and Agriculture
Plant Health and Pest Prevention Services
Pest Detection/Emergency Projects
1220 N Street, Room 315
Sacramento, CA 95814

State Historic Preservation Officer
California State Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Center for Plant Health Science and Technology
1730 Varsity Drive, Suite 400
Raleigh, NC 27606

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Policy and Program Development
Environmental and Risk Analysis Services
4700 River Road, Unit 149
Riverdale, MD 20737

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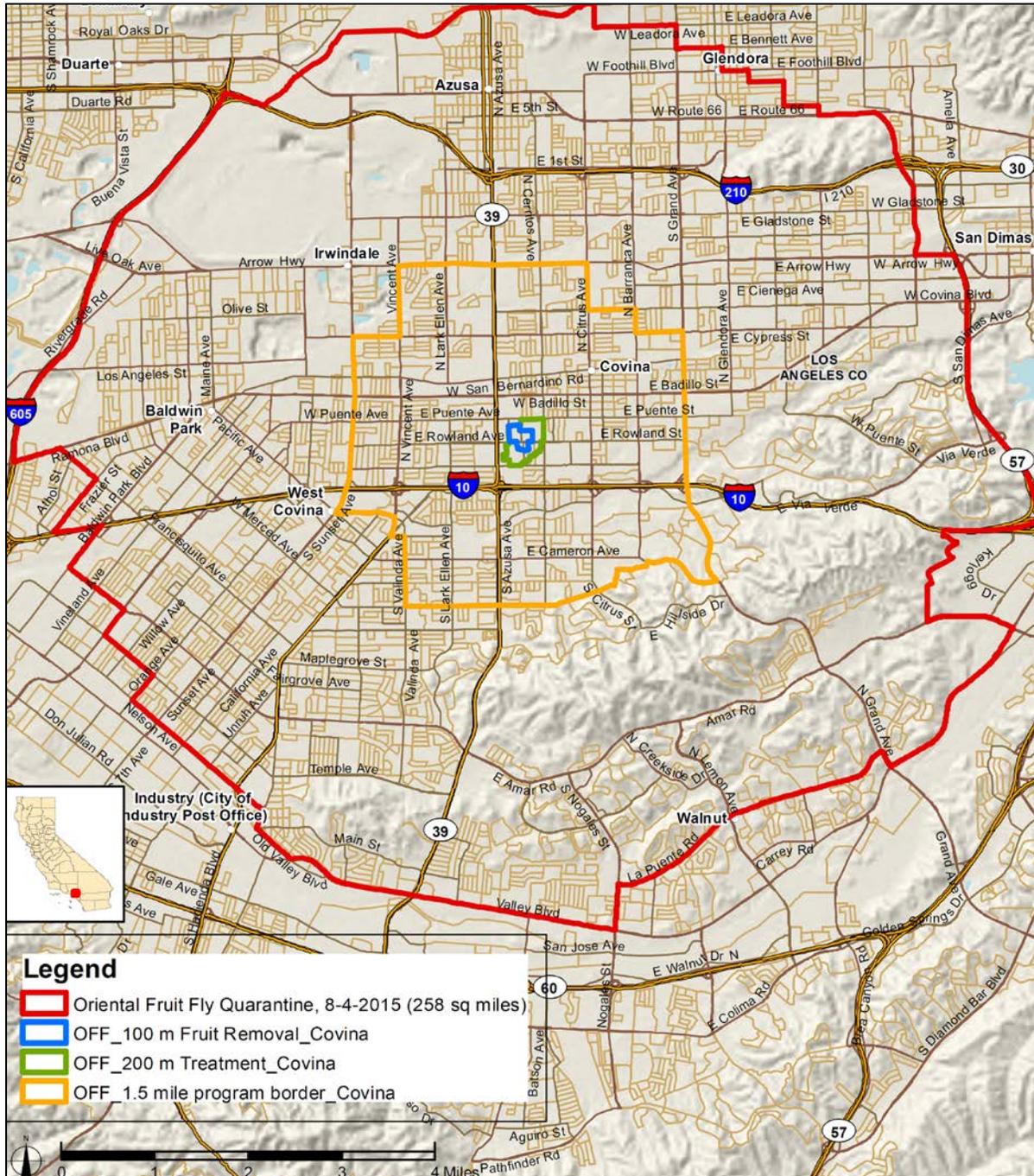
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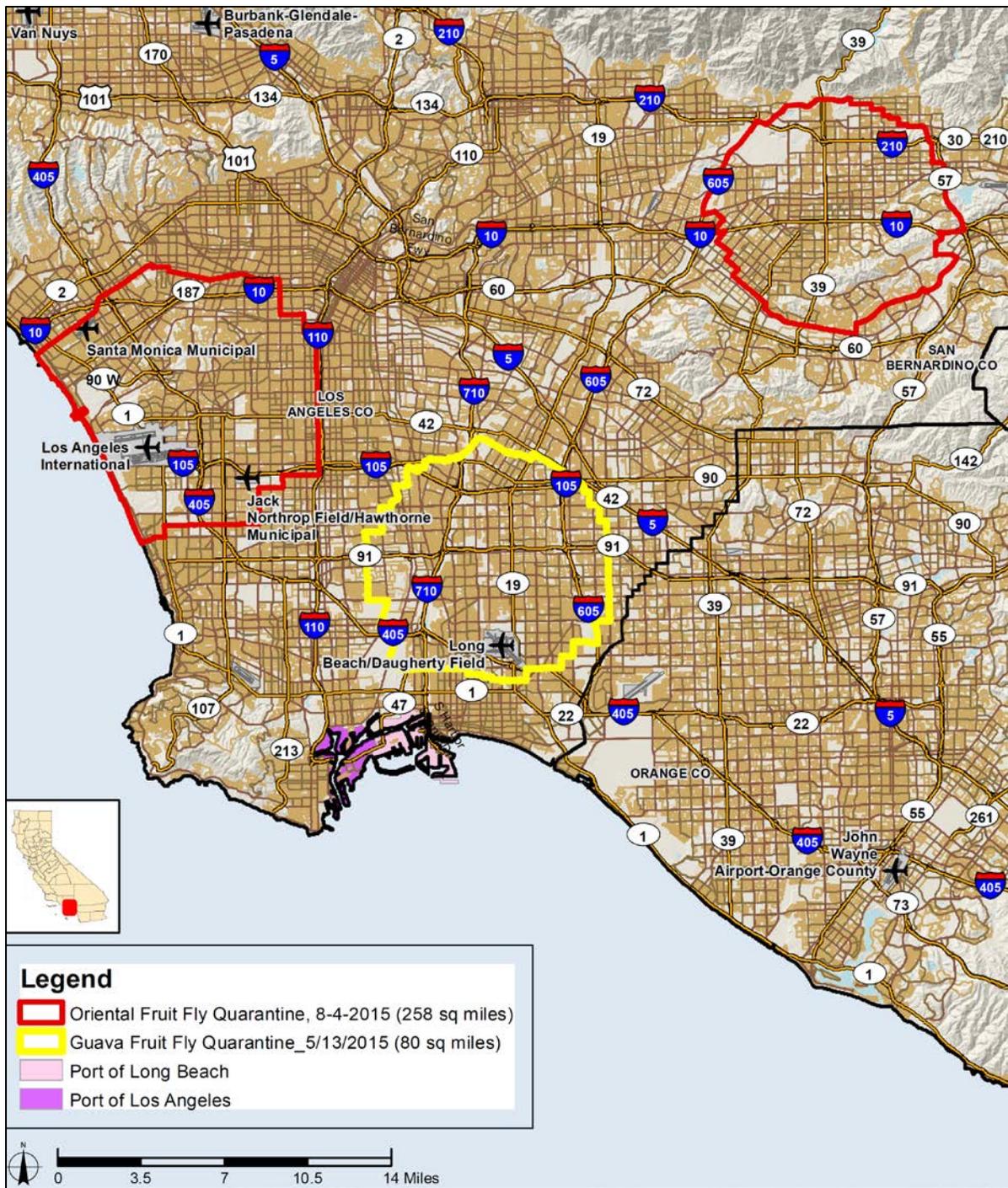
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WEF—See Water Education Foundation

Appendix A. *Bactrocera* spp. Quarantines in Los Angeles County, California as of August 12, 2015



Proposed program area for the Covina region of Los Angeles County, as of August 12, 2015.
 Source: USDA-APHIS-PPQ



Overview of active *Bactrocera* spp. quarantines in Los Angeles County as of August 10, 2015.
 Source: USDA-APHIS-PPQ

Appendix B. Outside-APHIS Spatial Data Resources Used to Prepare this Document

The following resources were used by USDA-APHIS-PPD 4 August 2015.

Web-Based Mapping Application for Environmental Assessments

- **NepaAssist:** <http://nepassisttool.epa.gov/nepassist/entry.aspx>

For Information on—

- **Bing Maps Road:** <http://www.esri.com/software/arcgis/arcgisonline/bing-maps.html>
- **Boundaries:** <http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Boundaries/MapServer>
- **Historic Sites:** <http://www.nps.gov/nr/>
- **Native American Areas:** <http://viewer.nationalmap.gov/>
- **Nonattainment Areas:** http://geoplatform2.epa.gov/arcgis/rest/services/PM_Designations_Mapping/Nonattainment_Areas/MapServer
- **Organic Farms:** <http://www.ams.usda.gov/AMSV1.0/nop>
- **Places:** <http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Places/MapServer>
- **Threatened and Endangered Species:** <http://www.dfg.ca.gov/biogeodata/cnddb/>
- **Transportation:** <http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Transportation/MapServer>
- **Water:** <http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Water/MapServer>