United States Department of Agriculture

Marketing and Regulatory Programs

Animal and Plant Health Inspection Service

Oriental Fruit Fly Cooperative Eradication Program

Los Angeles and Orange Counties, California

Environmental Assessment
August 2013

Oriental Fruit Fly Cooperative Eradication Program

Los Angeles and Orange Counties, California

Environmental Assessment, August 2013

Agency Contact:
John C. Stewart
National Fruit Fly Policy Manager
Center for Plant Health Science and Technology
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
1730 Varsity Drive, Suite 400
Raleigh, NC 27606

Non-Discrimination Policy

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities.)

To File an Employment Complaint

If you wish to file an employment complaint, you must contact your agency's EEO Counselor (PDF) within 45 days of the date of the alleged discriminatory act, event, or in the case of a personnel action. Additional information can be found online at http://www.ascr.usda.gov/complaint_filing_file.html.

To File a Program Complaint

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form (PDF), found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter to us by mail at U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at program.intake@usda.gov.

Persons With Disabilities

Individuals who are deaf, hard of hearing, or have speech disabilities and you wish to file either an EEO or program complaint please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish).

Persons with disabilities who wish to file a program complaint, please see information above on how to contact us by mail directly or by email. If you require alternative means of communication for program information (e.g., Braille, large print, audiotape, etc.) please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Mention of companies or commercial products in this report does not imply recommendation or endorsement by USDA over others not mentioned. USDA neither guarantees nor warrants the standard of any product mentioned. Product names are mentioned to report factually on available data and to provide specific information.

This publication reports research involving pesticides. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish and other wildlife—if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended label practices for the use and disposal of pesticides and pesticide containers.

Table of Contents

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, n.d.), 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 has been identified and eradicated numerous times in the continental United States since it was first found in California in 1960. Although OFF is not known to be established in California, detection of new infestations occurs on almost an annual basis. Reintroduction is most often due to infected fruits and vegetables that are brought across the border without inspection. Because of the species' rapid population growth and potential for damage, a prompt response is desired to contain and eradicate any infestation found in the conterminous United States.

Between January 1 and August 1, 2013, 69 OFF were collected in southern California. (See detection locations on the map in appendix A.) The State of California undertook an eradication program in the City of Anaheim, Orange County, in June 2013; it was expanded in July 2013 to address an additional OFF infestation (CDFA, 2013a). Multiple OFF detections were also made during July in Los Angeles County in the Artesia/Cerritos vicinity, triggering another State-level pest response (CDFA, 2013b). Because of the detection of OFF larvae in Orange County on July 31, 2013, surveys for OFF intensified in the neighborhood of the find (CDFA, 2013c) and state and federal quarantine response actions began. Additional OFF of different genders and life stages were collected in the subsequent few days (CDFA, 2013d and 2013e).

Many OFF host plant species are grown in Los Angeles and Orange Counties and adjacent counties, which increases the potential environmental impact of the current infestations. An adult OFF can fly over 7 miles unaided but may travel 30 miles or more in 1 day utilizing passive transport such as wind, according to several laboratory and field studies (Froerer et al., 2010; Liang et al., 2001). OFF infestations represent a major threat to the agriculture and environment of California and other U.S. mainland States. The California Department of Food and Agriculture (CDFA) and the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) have proposed a

cooperative program to eradicate the OFF infestation and prevent the spread of OFF to noninfested regions of the United States.

CDFA/USDA cooperative program protocols for OFF eradication employ various action "triggers" for Federal involvement; triggers include fly life stage, location, and timing of detections, among other variables. Because OFF larvae were found, and because the detection was located near regions where there is commercial production of OFF-host commodities, State and Federal eradication and quarantine responses were triggered. OFF detections in Los Angeles and Orange Counties during July 2013 have led to the development of a program area overlapping the two counties (see appendix A). The region surrounding the infestation is a mixture of residential neighborhoods, small commercial districts, schools, major freeways and railroads, airports, harbors and beaches, city parkland, and developed recreational property.

APHIS' authority for cooperation in the program is based upon 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 emergency measures to prevent the dissemination of plant pests new to, or not widely distributed throughout, the United States. Since 1984, APHIS has cooperated with State departments of agriculture on a number of successful OFF eradication programs. The most recent example is the Oriental fruit fly cooperative eradication program conducted with CDFA in the Anaheim region of Orange County, California (APHIS, 2011).

This environmental assessment (EA) analyzes the environmental consequences of alternatives which have been considered for OFF eradication, and considers, from a site-specific perspective, environmental issues relevant to this particular program. Alternatives for OFF eradication have been discussed and analyzed comprehensively by APHIS and its cooperating partners 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 documents consider fruit fly risks and mitigations at the programmatic level. This case-specific EA incorporates the findings of EIS1 and EIS2 by reference. The eradication measures being considered for this program have been discussed and analyzed comprehensively within the fruit fly chemical risk assessments (APHIS, 1998a and 1998b) and risk assessments for spinosad (APHIS, 2003 and 1999). These

documents are also incorporated by reference and summarized within this EA.

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 chemical pesticides to facilitate the timely elimination of the current OFF infestation.

A. No Action

The no action alternative would involve no Federal effort to eradicate OFF or restrict its expansion from the infested area. In the absence of a Federal effort, quarantine and control would be left to 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. (For details about the California State program for OFF, please visit the CDFA Web site at: http://www.cdfa.ca.gov/phpps/pdep/treatment/oriental_ff.html.)

It should be noted that "no treatment" might be the only reasonable alternative for some sensitive sites. Under the no action alternative, APHIS would continue cooperative practices to support the CDFA detection trapping program and research.

B. Eradication Using an IPM Approach (Preferred Alternative)

APHIS' preferred alternative for the OFF program in Los Angeles and Orange Counties is eradication using an IPM approach. This alternative combines quarantine and commodity certification with eradication treatments. It has been determined that no non-pesticidal options available will effectively eradicate OFF (CDFA, 2013a and 2013b). Eradication efforts may include any or all of the following:

- no action,
- regulatory quarantine treatment and movement control of host materials,
- host removal,
- eradication chemical applications (male annihilation bait stations and/or foliar spray spot treatment), and
- mass trapping for monitoring and surveillance purposes.

An APHIS cooperative OFF program has well-established procedures and treatments. Successful eradication of a previous Anaheim OFF infestation using a similar IPM strategy was declared in June 2012 and the quarantine was removed (CDFA, 2012). Monitoring for OFF continues throughout all counties of California.

The program area for the current infestation includes those portions of Los Angeles and Orange Counties which fall within an 81 square mile boundary (approximately 9 miles by 9 miles) centered on each infestation site.[1] The current boundary encompasses about 130 square miles and may be expanded, as necessary, to include other properties if additional adult flies or life stages are found to be present. McPhail and Jackson traps are placed 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 (CDFA, 2013a and 2013b). According to established OFF program protocol, treatment placement is determined by encompassing an approximate radius of 1.5 miles around each infested property on which an adult fly is trapped, or on which property another life stage of OFF is present. The portion of the county thus encompassed within the program area will be treated for the current OFF infestation.

For the mass trapping portion of this program, three types of traps—Jackson, yellow panel, and Multilure® traps—are placed throughout the 81 square mile program area surrounding the detection site in order to delimit the infestation and to determine the efficacy of treatments. All monitoring traps are serviced for a period equal to three OFF life cycles beyond the date of the last fly detection (CDFA, 2013a and 2013b). Treatments will be repeated at 6- to 14-day intervals for one OFF life cycle. The eradication program will continue for three life cycles past the date of the last OFF trapped (CDFA, 2013a and 2013b). The OFF progresses through a four-stage life cycle: egg, larva, pupa and adult. Breeding is continuous, with several annual generations. The adult fly usually lives from 1 to 3 months (but up to a year in cool climates) (FDACS, 1999).

Male attractant technique (MAT) is the standard eradication treatment practice for OFF. The OFF MAT is deployed in a 1.5-mile radius from each fly detection site for a minimum of 9 square miles. Approximately 600 small, gel-like bait stations per square mile are applied to utility poles and street trees at least 6 feet above the ground. The treatment is repeated every 2 weeks for a minimum of four applications, or one to two life cycles, depending on the severity of the infestation. These bait stations contain a male attractant (methyl eugenol) that is mixed with a small

[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.

amount of the pesticide naled. The bait stations attract male OFF looking for an opportunity to breed. The females go unmated and, therefore, no offspring are produced, effectively causing eradication of the population (CDFA, 2013f).

Because evidence of a breeding OFF population has been confirmed, a foliar bait ground treatment will also be applied. For such treatment, host trees and plants within a 200-meter radius of the find site are treated with highly localized spray from a hand-held hose that consists of an organic formulation of the pesticide spinosad and protein bait. If trap catches warrant it, foliar bait ground treatments will be extended up to a 200-meter radius to mitigate the spread of OFF (CDFA, 2013a and 2013b). Also, the evidence of a breeding population will result in the removal of host fruit from all known infested and adjacent properties within a 100-meter radius (CDFA, 2013a and 2013b).

Also, because of the larval OFF detections and more than eight adults were detected in the vicinity, a quarantine boundary will be established to ensure that any host material that leaves the program area is free of OFF (CDFA, 2013a and 2013b). Host material may be treated by cold treatment, vapor heat treatment, irradiation, or fumigation with methyl bromide (APHIS, 2001 and 1989).

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 after methyl bromide treatment in the field or at the packing shed. 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.

Program officials are to inform the public and impacted industry before taking action via press releases, meetings, and other forms of communication appropriate for the recipients. 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 citrus industry operations will be notified of the OFF quarantine location and treatment schedule.

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

III. Potential Environmental Consequences

This EA analyzes the potential environmental consequences of alternatives which have been considered for OFF control, and considers, from a site-specific perspective, environmental issues that are relevant to this particular program. Alternatives for OFF control have been discussed and analyzed comprehensively within EIS1 and EIS2 (APHIS, 2001 and 2008), and are incorporated by reference and summarized within this EA.

A. No Action

It is possible that Federal support of OFF research could result in the discovery of improved methods of OFF control. In certain situations, however, lack of Federal control action 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, commodity scarcity and higher costs for U.S. consumers, and the temporary or permanent loss of U.S. export markets.

B. Preferred Alternative

The preferred alternative, eradication, would involve an IPM approach which may employ any or a combination of the following:

- no action,
- regulatory quarantine treatment and movement control of host materials,
- host removal,
- eradication chemical applications (male annihilation bait stations and/or foliar spray spot treatment), and
- mass trapping for monitoring and surveillance purposes.

The attractant used in the OFF MAT is very specific for this group of fruit flies, so much so that other insects (e.g., bees or butterflies) will not be harmed because they are not attracted to the lure. Review of the treatment protocols by CDFA and USDA has determined that OFF MAT does not cause any measurable adverse environmental or health risks (CDFA, 2013f). Therefore, the discussion in this section will focus on the other eradication measures of the preferred alternative.

The site-specific characteristics of the OFF program area were considered with respect to the program's potential to affect human health, nontarget species (including threatened and endangered species), and environmental quality. In addition, potentially sensitive sites have been identified,

considered, and accommodated through special selection of eradication methods and use of specific mitigation measures. Further analysis will be required regarding any expansion of the current program area boundaries.

1. Affected Environment

a. Land Characteristics and Demographics

At present, the OFF program area covers about 130 square miles of land in Los Angeles and Orange Counties. Land use in the program area is overwhelmingly residential; commercial agricultural activity is minimal (OC, 2013a; LA County, 2013a), and includes a number of farmers markets and organic farms (see figure 1). The region enjoys a temperate climate: summer weather is moderate to hot with cool evenings; winters are mild. The average annual temperature for the region is 70 °F and its average annual rainfall is 10 to 14 inches.

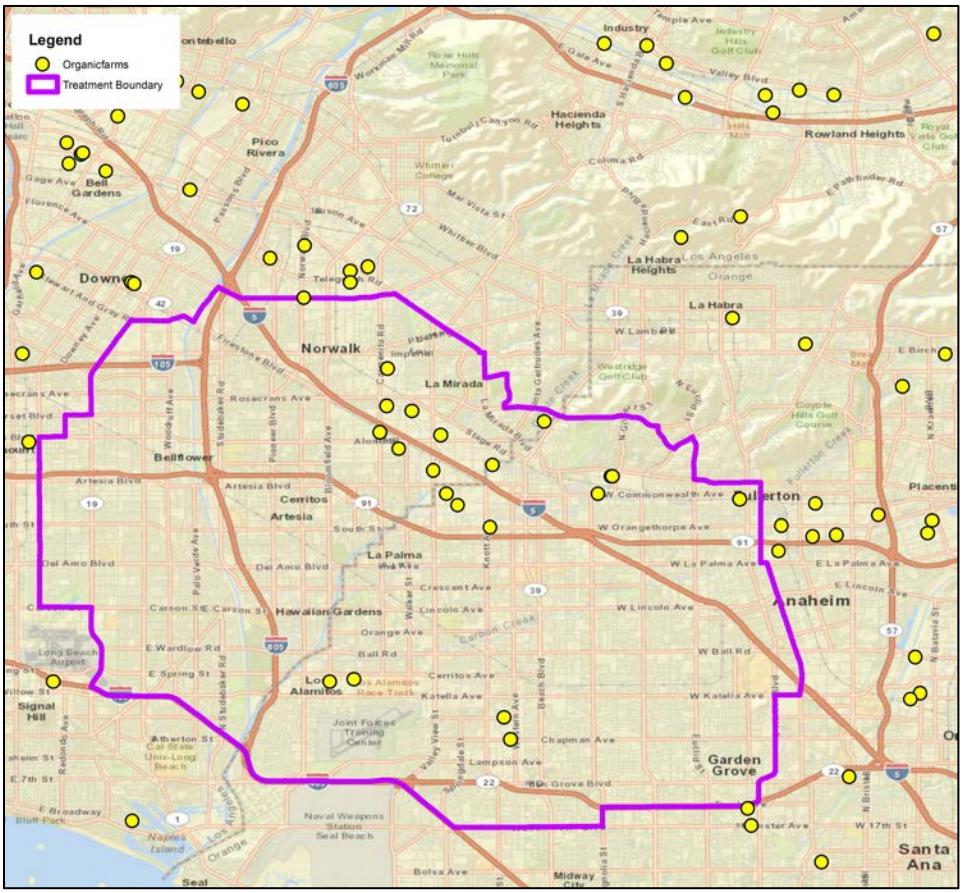


Figure 1. Organic farms located in the current program area. (Source: USDA–APHIS–ERAS)

Both counties are highly developed and share a common geographical border. Los Angeles County has the highest population of any county in the United States: approximately 10.4 million residents. Tourism is the county's third largest industry, attracting millions of visitors annually (LA

County, 2013b). Orange County has a population of more than 3 million, and also receives many visitors (OC, 2013b). The two counties form part of the Los Angeles–Long Beach–Santa Ana, California Metro Area (USCB, 2013a). The most numerous OFF finds to date during 2013 have occurred in or near the cities of Artesia and Anaheim.

Artesia had an estimated population of almost 16,700 in 2012 (USCB, 2013b). The city is located in an urban region of southeast Los Angeles County, less than 10 miles from the coast and about 14 miles east of the seaport of Los Angeles. It was named for the many artesian wells in the area. The Joint Forces Training Center lies about 5 miles to the south, in Los Alamitos, California. The closest domestic airport (Long Beach) is less than 13 miles outside Artesia, and the nearest two major airports are Los Angeles International (24 miles away) and Ontario International (42 miles).

Anaheim is the largest municipality in the program area. It is the second largest city in Orange County (the tenth largest in California) with an estimated resident population of nearly 343,250 (USCB, 2013c). World-famous theme parks, athletic associations, and other recreational attractions attract more than 18 million visitors each year and, in many ways, have shaped the development of Anaheim and its surrounding communities. The city is located in an urban region of southern California, about 19 miles southeast of the seaport of Los Angeles. The closest domestic airport (Fullerton Municipal) is less than 5 miles from the site of the infestation; two major international airports are within 25 miles in Ontario and Los Angeles.

California freeways passing through the program area include Interstates 5, 405, and 605, and State Routes 19, 22, 39, 42, 72, 90, and 91. The OFF infestation is located in a highly developed region; however, schools, municipal parks, biking and hiking trails, golf courses, and other public and private recreational facilities occur within or near the program area. As mentioned at the start of this subsection, organic farms are scattered throughout the program area (see figure 1), as is OFF host vegetation on private property. There are numerous State and regional parks in the surrounding region. The largest wilderness and natural conservation areas within 30 miles of the program area are the Angeles and San Bernardino National Forests, about 25 miles to the north and east, and the Cleveland National Forest, located about 25 miles south and east. Bolsa Chica Ecological Reserve is located about 5 miles south of the program area, along the seacoast.

b. Water Resources

The current program area crosses 3 watersheds—areas of land where all of the water that is under it or drains off of it goes into the same place—Anaheim–Huntington Harbor, San Gabriel–Coyote Creek, and Santa Ana River (OC, 2013a; LA County, 2013a; EPA, 2012a). The two counties obtain irrigation and drinking water from ground water, the Colorado River, and State water project reservoirs (WEF, 2006).

Ongoing surveys of California's waters continue to show substantial pollutant and toxicity levels; percentage increases, however, may reflect more thorough site assessment than increasing pesticide discharge and runoff (EPA, 2012b). Coyote Creek and the San Gabriel River are major water bodies within the program area that have been designated as impaired due to illegal dumping and other pollutants (see map in appendix B) (EPA, 2013). 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 principal concerns for human health are related to the program use of three chemical pesticides including naled trap lure, spinosad bait spray, and methyl bromide (a fumigant). Three major factors influence the human health risk associated with pesticide use, including fate of the pesticides in the environment, their toxicity to humans, and their exposure to humans. Each of the program pesticides is known to be toxic to humans.

Exposure to program pesticides can vary, depending upon the pesticide, but is likely to be minimal due to program use patterns. The OFF eradication program will initially employ naled lure trapping and ground-based spot applications of spinosad bait. Potential human exposure to naled lure is unlikely when used according to label instructions. Potential exposure is low for the spinosad bait spray to be used in this eradication program because treatments are limited to ground-based applications to plants at the find site and on adjacent properties. 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. The analyses and data of EIS1 and EIS2 and the associated human health risk assessments indicate that 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, 1999 and 1998a) for more detailed information relative to human health risk.)

Another mitigation measure that will further minimize exposure of humans to program pesticides is the requirement for public notification. The public will be kept informed of the OFF eradication program via written notices and news releases to the media. Residents will be notified at least 48 hours prior to insecticidal treatment or physical removal of potentially infested fruit from their property; guidelines will be provided for post-treatment precautions and harvest protocols (CDFA, 2013a and 2013b). To adequately notify the diverse populations in these counties, APHIS anticipates preparing documentation in several languages (Chinese, Japanese, Korean, Spanish, Tagalog, and Vietnamese), as well as Braille; the various versions will be distributed as needed.

In general, a well-coordinated eradication program using IPM technologies is expected to result in the least usage of chemical pesticides, overall, and to have the least potential to adversely affect human health. A no-action alternative is not expected to eliminate OFF as readily or as effectively as the eradication alternative. Over a protracted time period, 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. Environmental Justice and Other Considerations

APHIS is committed to achieving environmental justice throughout every community that may be affected by agency actions. Environmental justice as defined by USDA is achieved when—

> "To the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by government programs and activities affecting the environment and its impact on human health." (USDA, 2012)

Some Executive orders (EO), such as EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks, EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and EO 13166, "Improving Access to Services for Persons with Limited English Proficiency," as well as departmental and/or agency directives call for special environmental reviews in certain circumstances. There are no circumstances that trigger special environmental reviews in implementing the program considered in this document. The OFF program does not pose any disproportionate adverse effects to children, minority populations, or low-income populations over those effects to the general population. The program quarantine will affect what type of produce can be sold at farmer markets or moved outside the

area because of the potential for fruit flies to lay eggs on host fruit and vegetables. Compliance agreements and hold notices are either in place or under discussion with producers and vendors in the program area (J Stewart communication, August 2013

There are no potential environmental impacts or adverse effects to historical and archeological sites anticipated as a result of surveillance activities, trapping, or program chemical applications in the program area. Within the treatment area, the majority of registered historic sites are buildings with associated landscaping. There are four historic sites with enhanced vegetation issues that are not on the national register, but are within the treatment area: Bellflower Golf Center, Bellflower Airport, Little Lake, and Big Tec Golf Course. Any removal of fruit from landscape plants is likely to have a short-term effect that does not reduce the visual aesthetics of the property. Outside of the treatment area, the registered historic sites include fewer than 10 parks and gardens (e.g., Irvine Park, Brea City Hall and Park, Storrier-Stearns Japanese Gardens, Marengo Gardens, and General Charles S. Farnsworth County Park). Program activities are unlikely to expand into these areas and, even if activities occur at some time in the future, there is not expected to be any lasting impact on the visual aesthetics, vegetation canopies, or soil. Consequently, adverse effects to historic sites are not anticipated as a result of program pesticide applications and pest monitoring. Program officials will consult with the State Historical Preservation officer, or other appropriate authorities, if program activities expand to include historic sites or permanent alterations to the vegetation. Program treatments and activities will be restricted as necessary if site protection is needed.

EO 13175, "Consultation and Coordination with Indian Tribal Governments," ensures consultation and collaboration with tribal officials when proposed Federal actions have tribal implications. There are no federally registered tribal lands located within the current program boundary; the nearest federally registered tribal lands are outside Orange and Los Angeles Counties (specifically in San Diego and Riverside Counties), over 40 miles away. APHIS does not expect any tribal populations to be affected by program activities. The program does not anticipate creating any ground disturbances, therefore, treatment is unlikely to affect any sacred sites or affect the physical integrity of Native American sites or artifacts (under NAPGPRA, 25 U.S. Code (U.S.C.) 3301–3013). If detections of OFF warrant expansion of the program area into tribal lands, program officials will initiate consultation with the governing tribal authorities and local Tribal Historic Preservation officers before taking action.

EO 13166 requires Federal agencies to ensure that their programs and activities are accessible to persons with limited English proficiency. The

U.S. Census Bureau identifies a diverse population in these counties in comparison to the rest of the State; the percentage identifying their ability to speak English as less than "very well" also is proportionately higher (USCB, 2013d). Speakers fluent in Chinese, Japanese, Korean, Spanish, Tagalog, and/or Vietnamese (LA County, 2013c) are likely to benefit from communications in these languages. To meet the requirements of EO 13166, APHIS expects to conduct outreach to appropriate individuals in these various languages as their needs are identified.

4. Nontarget Species

The principal concerns for nontarget species, including threatened and endangered species, relate to potential harm from the use of program pesticides. Paralleling human health risk, the risk to nontarget species is related to the pesticides' fate in the environment, their toxicity to the nontarget species, and their exposure to nontarget species. All of the pesticides considered in this EA are highly toxic to invertebrates, although the likelihood of exposure (and thus, impacts) varies a great deal from pesticide to pesticide and with the specified use pattern. 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 potentially less effective at eliminating OFF, and would be expected to result in broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) and the supporting nontarget risk assessments (APHIS, 2003 and 1998b) for more information on risks to all classes of nontarget species.)

APHIS' OFF programs are designed to prevent the introduction of program chemicals into nontargeted areas. The Artesia and Anaheim program areas were considered with respect to special characteristics that could influence the implementation of program operations. This potentially affected region consists primarily of developed residential, agricultural and light industrial districts.

In particular, APHIS considered potential program effects on federally listed species and critical habitat. Section 7 of the Endangered Species Act and its implementing regulations govern consultation with the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) to ensure that agency actions are not likely to jeopardize and continued existence of threatened or endangered species, or result in the destruction or adverse modification of critical habitat.

APHIS reviewed the program area and potential treatment activities for the 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 or critical habitat and did not identify any potential co-occurrence of listed species or critical habitat. Upon considering the program actions undertaken in these localities, APHIS has determined that there is no potential for effects to listed species or critical habitat. Should the program area expand or additional outbreaks be detected that are not considered herein, APHIS, in cooperation with CDFA, will consult with the appropriate consulting agency, as necessary.

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. No program chemical applications will 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 such 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, an MOU between APHIS and FWS was signed to facilitate the implementation of this Executive order.

More than 500 species of birds have been documented in Artesia and Anaheim. This southern region of California, which is part of the Pacific Flyway, is an important migration corridor that provides suitable habitat for many bird species. APHIS evaluated the proposed OFF program in terms of potential impact on migratory avian species. Implementation of the preferred alternative is not expected to have any adverse effect on migratory birds or their flight corridors.

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 the 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 and did not identify any potential co-occurrence of listed species or critical habitat. Because the current program activities are limited to developed residential areas, APHIS has determined there is no potential for effects to listed species or critical habitat. Should the program area expand or further outbreaks be detected that are not considered herein, APHIS, in cooperation with CDFA, will consult with the appropriate consulting agency, as necessary. A complete administrative record of this review is available upon request.

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, and methyl bromide are outlined below. (Refer to EIS1 and EIS2 (APHIS, 2001 and 2008) for a more detailed consideration of program pesticides' environmental fates.)

- 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 micro-organisms 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 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, but the degradation rate is decreased at longer exposure times. Spinosad is quickly metabolized by soil micro-organisms under aerobic conditions, and has a half-life of 9.4 to 17.3 days. Because natural water bodies and rain are generally not of basic pH, spinosad will not hydrolyze in them or on moist plant surfaces. 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 5.3 days on foliar 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 (Kollman, 2003).

- Methyl bromide (MBr) will not be used as an eradication treatment, but may be employed as a regulatory treatment. MBr volatilizes into air from soil and water, and is known to contribute to stratospheric ozone depletion. The volatilization half-life for MBr from surface water ranges from 3.1 hours to 5 days. The degradation half-life of MBr in water ranges from 20 to 38 days, depending on temperature and pH. Volatilization of MBr from surface soil is rapid, with a half-life ranging from 0.2 to 0.5 days. The degradation half-life of MBr in soil ranges from 31 to 55 days. MBr 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.

Urban and agricultural runoff may flow directly into local waters, picking up trash, dirt, chemicals, and other contaminants along the way. The OFF eradication plan calls for ground-based spray applications to host plants inside treatment area boundaries. As an added protection to local water resources, standard mitigation measures will be applied to protect marine and freshwater resources.

The alternatives were compared with respect to their potential to affect environmental quality. Risk to environmental quality is considered

minimal. 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 and the quarantine and commodity certification 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

The program has been considered with respect to its potential to cause cumulative impacts on the human environment. APHIS has considered implementation of the preferred alternative in the context of other pest insect eradication and quarantine projects in Los Angeles and Orange Counties. APHIS has also considered implementation of the preferred alternative in conjunction with other pest insect eradication and quarantine projects in the remainder of the State of California.

OFF program boundaries may expand when there is an expansion of a known infested area. As of August 5, 2013, there are five other sites in California targeted at *Bactrocera* species, specifically, Oriental, guava, and peach fruit fly infestations in Los Angeles, Orange, San Bernardino, and Santa Clara Counties (CDFA, 2013f). . California conducts continual surveillance trapping and monitoring in designated counties at risk of OFF infestation.

The OFF program for Los Angeles and Orange Counties was examined for potential synergistic and cumulative environmental impacts. Program pesticides approved for use against OFF are also prescribed treatments for other *Bactrocera* species programs. At this time, none of the five active fruit fly sites mentioned above have overlapping boundaries. Use of program pesticides in an OFF program that overlap other *Bactrocera* spp. programs should be monitored and adjusted, where necessary, to minimize environmental impacts. No significant environmental impacts are expected to result from proper implementation of this OFF eradication and control program. There are no other regulated areas for OFF apart from those currently in California.

Treatments for potentially overlapping eradication programs in California for other plant pests employ different chemicals, target different insect species, and do not affect the same nontarget organisms. No synergistic or cumulative impacts are expected with the following active programs—

- Asian citrus psyllid in 9 counties including Los Angeles and Orange Counties;

- glassy-winged sharpshooter in 14 counties including Los Angeles and Orange Counties.

Care should be taken when multiple pest species in the same area are targeted for treatment using the same chemical. Additional programs in place at the time of preparation of this EA which may employ spinosad treatments (CDFA, 2013g) that could combine with OFF spinosad treatments to have a cumulative impact have been designed to target the following—

- European grapevine moth in 31 California counties, including Los Angeles County but not Orange County;

- light brown apple moth in 16 California counties, including portions of Los Angeles County (currently outside the OFF program area) and not including Orange County.

No significant cumulative impacts are anticipated as a consequence of the program or its use of component treatment measures. No residual impacts have been reported from previous Federal and non-Federal actions targeting fruit fly infestations in the proposed program area, and no reasonably foreseeable future actions that could result in incremental increases in environmental effects are anticipated. 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 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, 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

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 Risk and Analysis Services
4700 River Road, Unit 149
Riverdale, MD 20737–1238

V. References Cited

APHIS—See U.S. Department of Agriculture, Animal and Plant Health Inspection Service

California Department of Food and Agriculture, 2013a. Plant Health: Pest Detection/Emergency Projects. Official Notice for the City of Anaheim: Amendment to the Proclamation of an Eradication Project Regarding the Oriental Fruit Fly. July 15, 2013.

California Department of Food and Agriculture, 2013b. Plant Health: Pest Detection/Emergency Projects. Official Notice for the City of Cerritos: Proclamation of an Eradication Project Regarding the Oriental Fruit Fly. July 17, 2013.

California Department of Food and Agriculture, 2013c. Plant Health and Pest Prevention Services. Pest and Damage Record. PDR number AHOP06000053. Collection date: July 31, 2013.

California Department of Food and Agriculture, 2013d. Plant Health and Pest Prevention Services. Pest and Damage Record. PDR number AHOP06000055. Collection date: August 1, 2013.

California Department of Food and Agriculture, 2013e. Plant Health and Pest Prevention Services. Pest and Damage Record. PDR number AHOP06000062. Collection date: August 4, 2013.

California Department of Food and Agriculture, 2013f. Plant Health: Pest Detection/Emergency Projects. Exotic Fruit Fly Projects: PEPs and Maps. [Online]. Available: http://www.cdfa.ca.gov/plant/pdep/treatment/treatment_maps.html# (2013, Aug. 7).

California Department of Food and Agriculture, 2013g. Quarantines in California. [Online]. Available: http://www.cdfa.ca.gov/plant/PE/InteriorExclusion/quarantine.html (2013, Aug.7).

California Department of Food and Agriculture, 2012. Plant Quarantine Manual 410.1 section 3423. Oriental fruit fly. State interior quarantine. B. Area under quarantine. (07-17-12 edition) [Online]. Available: http://pi.cdfa.ca.gov/pqm/manual/pdf/410.pdf (2013, Aug. 7).
CDFA—See California Department of Food and Agriculture

County of Orange, 2013a. OC Public Works. Our Watersheds. [Online]. Available: http://ocwatersheds.com/programs/ourws/ (2013, Aug. 5).

County of Orange, 2013b. About the County. [Online]. Available: http://ocgov.com/about/ (2013, Aug. 6).

EIS1—See U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2001

EIS2—See U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2008

EPA—See U.S. Environmental Protection Agency

Extension Toxicology Network, 1996. Extension Toxicology Network of Cornell University, Oregon State University, the University of Idaho, the University of California at Davis, and the Institute for Environmental Toxicology, Michigan State University. Pesticide Information Profiles: Naled. (1996, June–last update). [Online]. Available: http://extoxnet.orst.edu/pips/naled.htm (2013, Aug. 6).

Extoxnet—See Extension Toxicology Network

FDACS—See Florida Department of Agriculture and Consumer Services

Florida Department of Agriculture and Consumer Services, 1999. OFF Facts and Photos. [Online]. Available: http://www.freshfromflorida.com/pi/enpp/ento/off-facts.html (2013, Aug. 5).

Froerer, K.M., Peck, S.L., McQuate, G.T., Vargas, R.I., Jang, E.B, and McInnis, D.O., 2010. Long-Distance Movement of *Bactrocera dorsalis* (Diptera: Tephritidae) in Puna, Hawaii: How Far Can They Go? American Entomologist. 2nd ed. Vol. 56.2 (2010): 88–94.

Kollman, W.S., 2003. Environmental Fate of Spinosad. California Department of Pesticide Regulation, Environmental Monitoring Branch. [Online]. Available: http://www.cdpr.ca.gov/docs/emon/pubs/fatememo/spinosad_fate.pdf (2013, Aug. 6)

LA County—See Los Angeles County

Liang, F., Wu, J-J., Liang, G-Q., 2001. The First Report of the Test on the Flight Ability of Oriental Fruit Fly. Acta Agriculturae Universitas Jiangxiensis. 2001–2002. [Online]. Available: http://en.cnki.com.cn/Article_en/CJFDTOTAL-JXND200102024.htm (2013, Aug. 6).

Los Angeles County, 2013a. Department of Public Works. Major Watersheds of Los Angeles County. San Gabriel River Watershed. [Online]. Available: http://ladpw.org/wmd/watershed/sg/ (2013, Aug. 5).

Los Angeles County, 2013b. Los Angeles County Sitemap. [Online]. Available: http://www.lacounty.gov/wps/portal/lac/map/ (2013, Aug. 5).

Los Angeles County, 2013c. Registrar-Recorder/County Clerk. Frequently Asked Questions: questions about multilingual services. [Online]. Available: http://www.lavote.net/voter/faqs.cfm#top5.1 (2013, Aug. 6).

NAPIS—See National Agricultural Pest Information System

National Agricultural Pest Information System, n.d. Pest Tracker. Oriental Fruit Fly (OFF), *Bactrocera dorsalis*. http://pest.ceris.purdue.edu/pest.php?code=IOBMAFA (2013, Aug. 6).

National Pesticide Information Center, 2000. Methyl Bromide. Technical Fact Sheet. [Online]. Available: http://npic.orst.edu/factsheets/MBtech.pdf (2013, Aug. 6).

NPIC—See National Pesticide Information Center

OC—See County of Orange

U.S. Census Bureau, 2013a. State and County Quickfacts. Orange County, California. [Online]. Available: http://quickfacts.census.gov/qfd/states/06/06059.html (2013, Aug. 5).

U.S. Census Bureau, 2013b. State and County Quickfacts. Artesia (city), California. [Online]. Available: http://quickfacts.census.gov/qfd/states/06/0602896.html (2013, Aug. 5).

U.S. Census Bureau, 2013c. State and County Quickfacts. Anaheim (city), California. [Online]. Available: http://quickfacts.census.gov/qfd/states/06/0602000.html (2013, Aug. 5).

U.S. Census Bureau, 2013d. Ability to speak English. [Online advanced search by county]. Available: http://factfinder2.census.gov (2013, Aug. 6).

U.S. Department of Agriculture, 2012. Environmental Justice Strategic Plan: 2012-2014. Washington, DC. February 7, 2012. [Online]. Available: http://www.dm.usda.gov/emd/responserestoration/docs/Final%20USDA%20EJ%20STRAT%20Scan_1.pdf (2013, Aug. 6).

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2011. Oriental Fruit Fly Cooperative Eradication Program, City of Anaheim, Orange County, California. Environmental Assessment—October 2011. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2008. Use of Genetically Engineered Fruit Fly and Pink Bollworm in APHIS Plant Pest Control Programs. Final Environmental Impact Statement—October 2008. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2003. Spinosad Bait Spray Applications. Nontarget Risk Assessment, October, 2003. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2001. Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1999. Spinosad Bait Spray Applications. Human Health Risk Assessment, March 1999. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998a. Human Health Risk Assessment for Fruit Fly Cooperative Control Programs. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998b. Nontarget Species Risk Assessment for Fruit Fly Cooperative Control Programs. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1989. Action Plan, Oriental Fruit Fly, *Bactrocera dorsalis*, October 1989. New Pest Response Guideline by USDA APHIS/Plant Protection and Quarantine and Cooperating State Departments of Agriculture. 56 pp.

U.S. Environmental Protection Agency, 2013. How's My Waterway? [Online searches using cities within the proposed program area]. Available: http://watersgeo.epa.gov/mywaterway/mywaterway.html#/mywaterway/search.html (2013, Aug. 6).

U.S. Environmental Protection Agency, 2012a. Surf Your Watershed. [Online]. Available: http://cfpub.epa.gov/surf/locate/index.cfm [2013, Aug. 6].

U.S. Environmental Protection Agency, 2012b. California Impaired Waters. Summary of California's 303(d) Listing Pollutant Trends. Last updated 09-20-2012. [Online]. Available: http://www.epa.gov/region9/mediacenter/impaired-waters/trends.html [2013, Aug. 6].

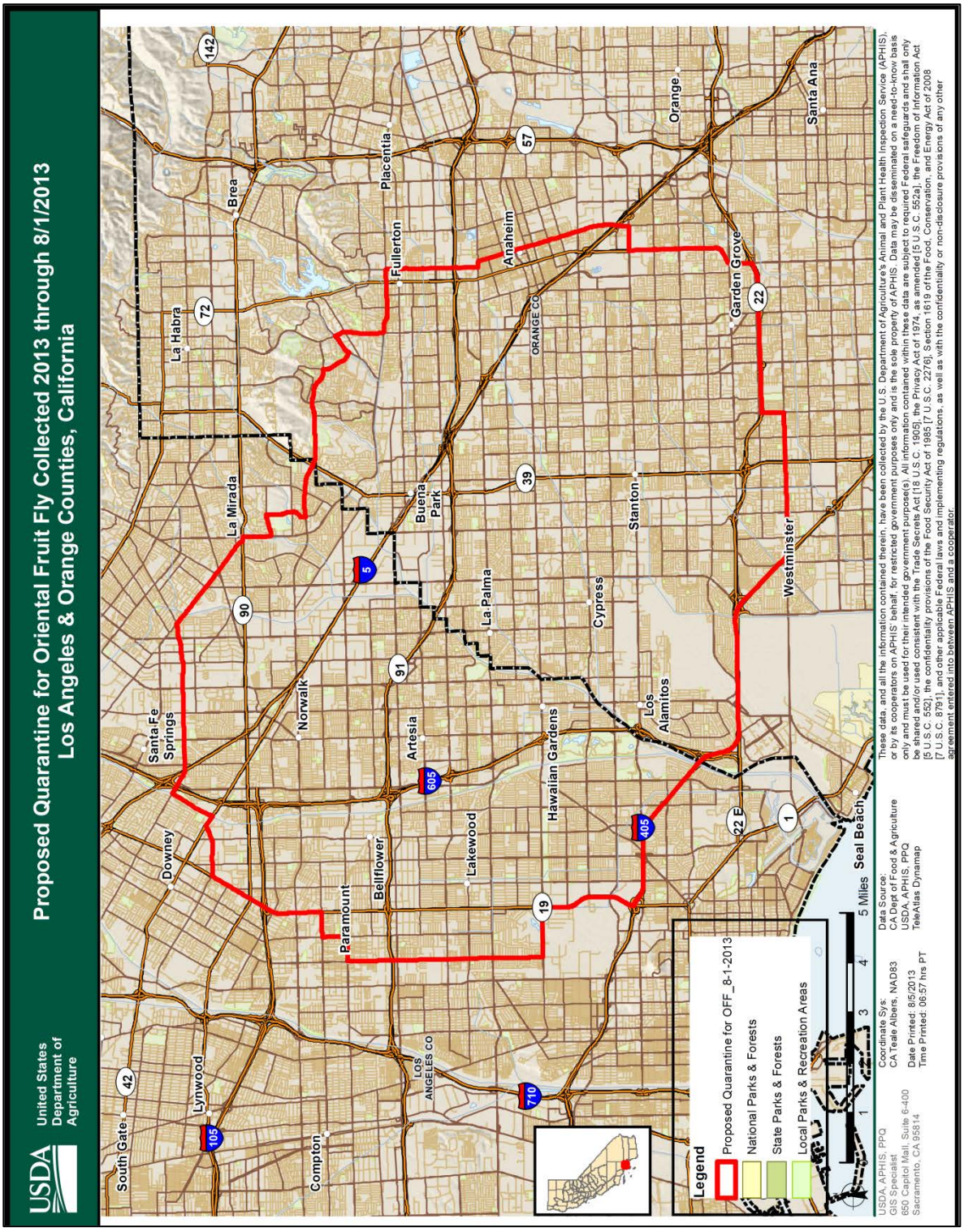
USCB—See U.S. Census Bureau

USDA—See U.S. Department of Agriculture

Water Education Foundation, 2006. Where Does MY Water Come From? Los Angeles Region. [Online]. Available: http://www.water-ed.org/watersources/region.asp?rid=9 (2013, Aug. 6).

WEF—See Water Education Foundation

Appendix A. OFF Program in Los Angeles and Orange Counties, California—August 2013



Appendix B. Impaired Waters in the Vicinity of the Program Area