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Mediterranean Fruit Fly Cooperative Eradication Program

San Bernardino County, California

Environmental Assessment
October 2019

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I. Need for the Proposal

The Mediterranean fruit fly (Medfly), *Ceratitis capitata* (Wiedemann), is a destructive agricultural pest in many parts of the world. Because of its wide host range (over 300 species of fruits and vegetables (Szyniszewska and Tatem, 2014)), and its potential for rapidly expanding infestation, the Medfly represents a serious threat to U.S. agriculture. Medfly was detected in Hawaii in 1910, and subsequently became established there (NAPIS, 2019). Although Medfly has been periodically introduced to the U.S. mainland since 1929 (USDA APHIS, n.d.), successful eradication programs have prevented it from becoming an established pest in the conterminous United States.

Medfly establishment would be disastrous to agricultural production in States where host plants are grown. The unchecked presence of Medfly on the U.S. mainland could result in the widespread destruction of crops, such as apricot, avocado, grapefruit, nectarine, orange, peach, and cherry. Commercial crops, as well as dooryard production of host fruits, would suffer if Medfly populations became established. Fruit infested by Medfly is unfit to eat because the larvae tunnel through the fleshy part of the fruit, damaging it, and subjecting it to decay from bacteria and fungi.

On October 2, 2019, one unmated female Medfly (no eggs developed) and one adult male Medfly were collected from a McPhail® trap on an apple tree in a rural residential area of San Bernardino County, California (CDFA, 2019a). Delimitation and larval surveys outward from the detection site were initiated. Because of the specimens' inconclusive morphology a DNA analysis was undertaken; both were identified as wild Medflies on October 8, 2019. Also on October 8, another adult male wild Medfly was collected from a ChamP® trap within half a mile of the first detections (CDFA, 2019b). From October 10 to October 12, 68 Medfly larvae were discovered in peach and pear trees and 1 mated female Medfly with developed eggs was collected from a Multilure® trap in a peach tree, all in the same neighborhood of the earlier detections (CDFA, 2019c).

Confirmation of the October 2 detections triggered Federal involvement in California's pest emergency response. The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA APHIS) and the California Department of Food and Agriculture (CDFA) are proposing a cooperative program to eradicate the Medfly infestation, and prevent the spread of Medfly to noninfested areas of the United States. (Map 1 in appendix A of this document shows the proposed program area.[1]) USDA APHIS' authority for pest control and grower support programs is the Plant Protection Act (Title 4 of the Agricultural Risk

[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.

Protection Act of 2000, 7 United States Code (U.S.C.) §§ 7701-7786). Various sections authorize operations to control insect pests (§ 7714); conduct pest detection, surveillance (§ 7721), and inspections (§ 7731); compile information, conduct enforcement investigations (§ 7732), enter into agreements (§ 7752), transfer funds (§ 7772); and to use emergency measures to prevent the dissemination of plant pests new to, or not widely distributed throughout, the United States (§§ 7715, 7721). In particular, the Secretary of Agriculture may cooperate with State authorities or other persons in the administration of programs for the improvement of plants, plant products, and biological control organisms (§ 7751(d)). In connection with an emergency in which a plant pest or noxious weed threatens any segment of the agricultural production of the United States, the Secretary may transfer from other appropriations or funds amounts as the Secretary considers necessary to be available in the emergency for the arrest, control, eradication, and prevention of the spread of the plant pest or noxious weed and for related expenses (§ 7772(a)).

Working cooperatively with States and territories, USDA APHIS identifies and eradicates Medfly infestations. Since 1984, USDA APHIS has cooperated with the California, Florida, Puerto Rico, and Texas Departments of Agriculture on fruit fly eradication programs. To date, every Medfly population targeted by USDA APHIS' cooperative programs has been successfully eradicated.

The State of California intensifies surveys for Medfly in the neighborhood of each confirmed Medfly detection. The State initiates Medfly delimitation and eradication programs in locations where the types and number of detections are not yet sufficient to trigger quarantine regulatory actions. Monitoring for Medfly continues throughout all counties of California where there are susceptible host plants, and an environment conducive for fruit fly establishment.

Many Medfly-host plant species are grown in San Bernardino County and adjacent regions, increasing the potential environmental impact of the current infestations. There are at least ten commercial plant nurseries and garden centers near the proposed program area (data sources listed in appendix B of this document). Medfly-host crop production near the Medfly outbreak (USDA APHIS, 2019; N. Mullaly, personal communication, 10/15/2019) includes

- seasonal produce (apples, apricots, blueberries, figs, guavas, mandarins, nectarines, oranges, peaches, peppers, plums, tomatoes) – about 1/5 mile from Medfly detection site;

- grapes for wine – within 1/2 mile of Medfly detection site; and

- lemons – about 15 miles west of Medfly detection site.

In November 2018, after a comprehensive review of existing and potential action alternatives, USDA APHIS published a new environmental impact statement (EIS1) for its cooperative control fruit fly programs (USDA APHIS, 2018a). EIS1 addresses technological and scientific advances made in the 17 years since the previous environmental impact statement was published, and incorporates feedback received during the public comment period. EIS1 considers fruit fly risks and mitigations at the programmatic level. This environmental assessment (EA) incorporates by reference the findings of EIS1.

This EA analyzes the environmental consequences of alternatives considered for Medfly eradication, and analyzes, from a site-specific perspective, environmental issues relevant to this particular program. USDA APHIS' fruit fly chemical risk assessments (USDA APHIS, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) discuss and comprehensively analyze the eradication measures being considered for this program. This EA summarizes pertinent information, and incorporates these documents by reference. (Environmental documentation for USDA's fruit fly control programs is available online via the following links: USDA APHIS fruit fly control program environmental documentation and USDA APHIS GE control applications for plant health.)

This EA complies with provisions of the National Environmental Policy Act of 1969, as amended (NEPA, 42 U.S.C. §§ 4321-4320m), the implementing regulations adopted by the Council on Environmental Quality (Title 40 Code of Federal Regulations (CFR) parts 1500-1508), the Office of the Secretary of Agriculture's NEPA regulations (Title 7 CFR part 1b), and the NEPA implementing procedures specific to USDA APHIS (Title 7 CFR part 372).

II. Alternatives

Alternatives considered for this proposed program include (A) no action, (B) quarantine and commodity certification, and (C) the preferred alternative, eradication using an integrated pest management (IPM) approach. Under all of these alternatives, trapping and surveys for Medfly will continue under the Devore Medfly Cooperative Eradication Program as a preventive measure. Component methods of alternative C include the use of regulatory controls, high-density trapping, host survey, chemical treatment, and biological control (sterile insect technique (SIT)) to facilitate the timely elimination of the current Medfly infestation. These

alternatives and their component methods are the same as the alternatives considered in EIS1 (USDA APHIS, 2018a).
All pesticides used in USDA APHIS programs are required to comply with the Federal Insecticide, Fungicide, and Rodenticide Act. To fulfill obligations under this statute, USDA APHIS will ensure that a full pesticide registration (i.e. Section 3 registration), a special local needs registration (i.e. Section 24(c) registration) and/or an emergency quarantine exemption (i.e. Section 18 exemption) have been approved by the U.S. Environmental Protection Agency (EPA) for each pesticide use pattern in fruit fly program applications.

A. No Action

Under the no action alternative, there would be no Federal efforts to eradicate Medfly, or restrict expansion of the Medfly population from the infested area. In the absence of Federal efforts, 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.

"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 could result in substantial economic losses to growers in the United States, as well as negative impacts to U.S. export agricultural markets.

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

B. Quarantine and Commodity Certification

This alternative combines a Federal quarantine with commodity treatment and certification, as described in the Fruit Fly subpart of Title 7 CFR § 301.32. Regulated commodities harvested within the quarantine area would not be allowed to move unless treated with prescribed applications, and certified for movement outside the area.

For a large infestation, intensive quarantine enforcement activities could be necessary, including safeguarding of local fruit stands, mandatory baggage inspection at airports, and judicious use of road patrols and regulatory checks. The quarantine actions of this alternative are expected to reduce Medfly movement outside treated areas, and reduce human-

mediated transport of Medfly in host plant materials to areas outside the quarantined area; however, Medfly could remain established within the quarantine boundaries. Any Medfly eradication efforts would be managed by, and wholly under the control of, CDFA.

Interstate movement of regulated commodities would require the issuance of a limited permit, contingent upon commodity treatment. The grower or shipper would need to comply with specific conditions to minimize the pest risk and prevent the spread of Medflies. Eradication methods that may be used in this alternative include treatment with (1) regulated chemicals, (2) cold, (3) vapor heat, and (4) irradiation.

Treatment with regulated chemicals may include fumigation with methyl bromide (MB), bait spray with a mixture of spinosad and protein hydrolysate. (Refer to EIS1 (USDA APHIS, 2018a) for more detailed information about these chemicals and their uses.) Cold, vapor heat, and irradiation treatments of certain produce, as a requirement for certification and shipping, must be done in facilities that are inspected and approved by USDA APHIS.

C. Eradication Using an Integrated Pest Management (IPM) Approach (Preferred Alternative)

USDA APHIS' preferred alternative for the Devore Medfly Program is eradication using an IPM approach. This alternative combines quarantine and commodity certification with eradication treatments; these options were selected based upon biological effectiveness, minimal intrusion on the public, cost, and minimal impacts to the environment (USDA APHIS, 2001).

Successful eradication of a Medfly infestation in San Mateo County, California, using a similar IPM strategy, was declared in October 2018 (USDA APHIS, 2018h). The analysis in this document is substantively similar to the EA supporting that action, despite updated wording and site-specific considerations (USDA APHIS, 2017).

The current Medfly infestation in San Bernardino County is located in Devore (also known as Devore Heights), California. Homes, schools, businesses, and recreational spaces are located in the same area as the fly detections. The Devore Medfly Quarantine includes those portions of San Bernardino County which fall within 4.5 miles around each property on which a Medfly was detected (see map 1 in appendix A of this document). Program areas for Medfly infestations are centered on Medfly detection sites. Program surveillance, quarantine, and treatment boundaries may be expanded to include other properties if additional adult Medflies or other life stages are found.

Medflies can produce multiple generations per year. Adults can fly short distances, but winds may carry them a mile or more away, making it possible for host plant growing areas outside an eradication zone to become infested. Mating occurs at any time of day. A female Medfly may lay up to 800 eggs in a lifetime (although 300 is a more usual amount). The Medfly progresses through a four-stage life cycle—egg, larva, pupa, and adult. The duration of the developmental stages may be increased by lower temperatures, while the kind and condition of the host fruit also influence the length of the larval stage. For example, larvae require 14 to 26 days to reach maturity in a ripe lemon, as compared with 10 to 15 days in a green peach (Thomas et al., 2010). USDA APHIS' cooperative programs to eradicate Medfly infestations in California use established procedures and treatments (USDA APHIS, 2019, 2004; CDFA, 2019d) designed with the species' life stages in mind:

1. Delimitation

Several types of traps—McPhail® funnel traps baited with either torula yeast or Nu-Lure®, ChamP® sticky traps baited with trimedlure, and Multilure® container traps baited with a blend of ammonium acetate, putrescine, and trimethylamine—are placed in varying densities throughout the program area to delimit the infestation, and to monitor posttreatment fly populations (USDA APHIS, 2019). Servicing of these traps occurs on a regular schedule for a period equal to three Medfly life cycles beyond the date of the last fly find (CDFA, 2019d). Mass trapping involves the use of natural or synthetic lures to attract fruit flies to traps, bait stations, sticky panels, wicks, or fiberboard squares where they are killed, either by becoming stuck to a sticky substance, by drowning, or by being exposed to minute quantities of pesticide. As part of the ongoing surveillance inside the quarantine, fruit of potential host plants is sampled for the presence of eggs and larvae in a 200-meter radius around each Medfly detection site.

2. Eradication Treatments

For many species of exotic fruit flies, effective nonchemical control or eradication techniques do not exist (USDA APHIS, 2001). CDFA (CDFA, 2019d) has determined there are no cultural options available that effectively eradicate Medfly while allowing the State to meet its statutory obligations. USDA APHIS concurs with this assessment. Eradication efforts may, therefore, include any or a combination of the following:

- no Federal action
- regulatory treatment and movement control of host materials and regulated articles
- host survey for evidence of breeding Medflies
- host removal

- eradication chemical applications
- mass trapping to delimit the infestation and monitor posttreatment Medfly populations
- SIT

If evidence of a breeding Medfly population is confirmed, a targeted, ground-based foliar treatment is applied. Host trees and plants within a 200-meter radius of each find site are treated with highly localized spray that consists of an organic formulation of spinosad (pesticide) and protein hydrolysate (a food bait) (USDA APHIS, 2019). 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 receive a lethal exposure to the pesticide that is mixed with the attractant. Treatments are repeated every 1 to 2 weeks for one life cycle of the fly (typically 2 to 3 months, dependent on temperature).

Evidence of a breeding fly population results in additional program action. In the case of multiple-Medfly finds, mated female Medfly finds, and immature Medfly life stage finds, all fruit will be removed from Medfly-host species in a 100-meter radius around each find site (USDA APHIS, 2019).

SIT will be used to limit expansion of the Medfly infestation—the eradication area will receive a periodic release of sterilized male Medflies to disrupt the reproduction cycle, thus controlling the wild population. The release area currently proposed is a 3.5-mile radius around each find site. Applications will be repeated weekly at a rate of 500,000 sterile male Medflies per square mile (USDA APHIS, 2019). SIT will continue for two life cycles beyond the last Medfly detection date (typically 4 to 6 months, depending on outdoor temperatures).

Establishment of a quarantine boundary will ensure any host material that leaves the program area is free of Medfly. Host material may be treated in enclosed areas or containers by treatment consisting of cold, vapor heat, irradiation, or fumigation with MB (USDA APHIS, 2018a, 2004). After host fruit receives USDA APHIS-approved MB treatment in the field and/or on the premises, growers will be able to move their harvested frit out of the quarantined area, under a temporary certificate, to enclosed facilities for packing. Program treatments will be restricted to those approved for the type of site if the Medfly quarantine spreads to federally protected historical sites, wilderness, or Tribal lands.

Before taking action, program officials 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 Medfly-host material will be notified of the Medfly quarantine location and treatment schedule.

For more information regarding the alternatives considered for Medfly control and their component methods, refer to the previously mentioned EIS1 and supporting risk assessments (USDA APHIS, 2018a, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003).

III. Affected Environment

This chapter briefly discusses pertinent physical and demographic features of the area proposed for the Devore Medfly Program. The information serves as background to understanding the current local program area in the context of potential program areas. Additional Medfly program areas within the region would be identified on an as-needed basis as infestations and incursions occur.

A. Land Characteristics and Demographics

San Bernardino County is the largest county in the contiguous United States, covering over 20,000 square miles of land in southeastern California. The current Medfly outbreak is located in what is known as the Mountain Region (see figure 1). The smaller Valley Region is the most densely populated while the Desert Region covers approximately 93% of the county's land area. The county's diverse geography and proximity to major economic and population centers drive its business, education, tourism, and recreation industries (SBC, 2015). Agriculture is a critical component of the county's economy; farm and ranch production, including a wide variety of fruit and nut crops, totaled $464,728,000 in 2017 (SBC, 2017).

More than 80% of the county is outside local jurisdictional control; the majority of non-jurisdictional land is owned and managed by federal agencies. San Bernardino County is mostly undeveloped: 80% of the county is vacant land; 15% is used for military purposes (SBC, 2015). There are dozens of protected wilderness areas in the county; most are managed by the U.S. Department of the Interior's Bureau of Land Management. San Bernardino County reported 2,035,210 residents in the

2010 U.S. Census. The City of San Bernardino is the largest city and is also the county seat; it occupies over 59 square miles of land, and reported a population of 209,924 in 2010 (USCB, 2019).

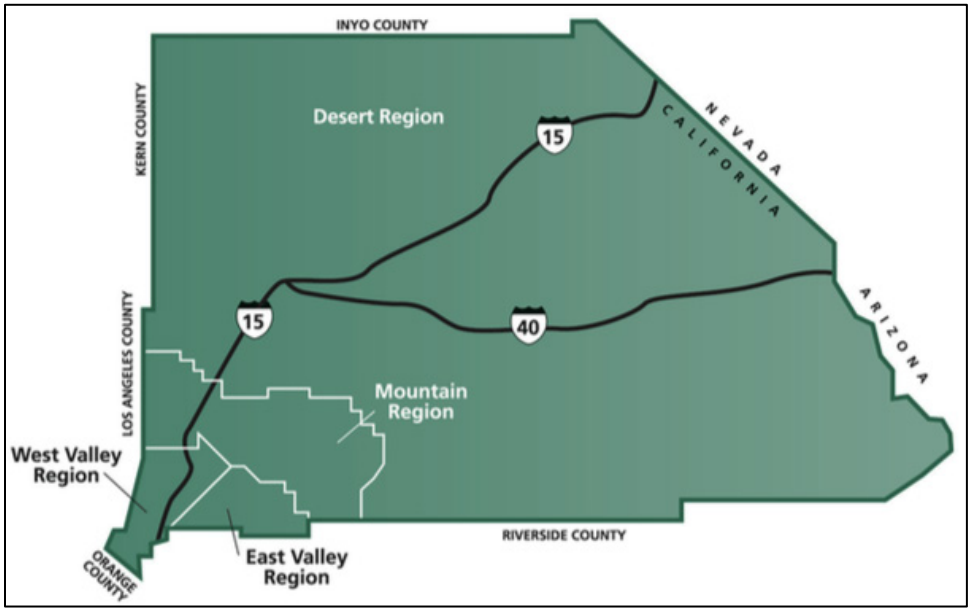

Figure 1. Map of San Bernardino County identifying neighboring and interior regions. (Source: SBC, 2015)

Devore is a rural residential community about 12 miles northwest of downtown San Bernardino and just outside the San Bernardino National Forest. Mountain lions occasionally pass through Devore and its major roadways which include Interstate Routes 15 and 215 (KABC-TV 2019a; Shin and Khan, 2014; Brooks 2010). The Medfly infestation currently is concentrated in one Devore neighborhood; canyons, national forest, railroad lines, schools, small businesses, and public and private recreational facilities occur within or near the proposed program area. Both Medfly-hosts in cultivation and Medfly-hosts in natural vegetation occur within the proposed program area (see appendix B in this document for data source). Table 1 shows the relationship between the Devore Medfly Program and land sites of potential concern.

B. Water Resources

Cities in San Bernardino County rely on a mixture of ground water and surface water for electric power, irrigation, and drinking. The State Water Project delivers water to southern California via a 444-mile long aquaduct. Local reservoirs, streams and ground water are also important sources of supply for the San Bernardino metropolitan region (WEF, 2019). At the time of preparation of this EA, abnormally dry to moderate drought conditions existed only in the eastern end of the county (Fuchs, 2019). Occasional drought contributes to wildfire outbreaks in the San Bernardino

Table 1. Distance from Medfly Detection Cores to Certain Land Sites.*

Designated Land Use	Distance Rounded Off to Nearest Tenth of a Mile
Nearest Airports	• Tri City Airport, 15.0 • LA/Ontario International Airport, 17.0 • San Bernardino International Airport, 18.0 • Morrow Field, 19.0 • Cable Airport, 21.0 • Redlands Municipal Airport, 22.0 • Flabob Airport, 24.0 • Riverside Municipal Airport, 26.0 • Brackette Field, 26.0 • Chino Airport, 27.0 • Hesperia Airport, 28.0 • John Wayne Airport, 57.0 • Bob Hope Airport, 64.0 • Palm Springs International Airport, 68.0 • Los Angeles International Airport, 72.0 • McClellan-Palomar Airport, 92.0
Mexico	• 138.0 miles to nearest border with the United States
City, State, and Federal Lands	Within proposed treatment area and most of the proposed quarantine • San Bernardino National Forest, 0.4 Within proposed quarantine • Cucamonga Wilderness, 8.4 • 3 public parks
National Register Historic Sites	• None within proposed treatment area • 2 sites within proposed quarantine
International Seaports	(Distance to the quarantine boundary) • Port of Long Beach, 63.0 • Port of Los Angeles, 67.0 • Port of Hueneme, 120.0 • San Diego Bay, 135.0
Nearest Federal Native American Lands	Within proposed treatment area and quarantine • Ceded lands of the present-day Cahuilla, Cupeno, and Luiseno Mission tribes Outside proposed quarantine • San Manual Reservation, 10.0 • Morongo Reservation, 43.0
Organic Production and Farmers' Markets	Organic production • None within proposed treatment area or quarantine • At least 2 within 10 miles Farmers' markets • None within proposed treatment area or quarantine • At least 2 within 10 miles
Schools and Academic Institutions	• At least 3 within proposed treatment area • At least 4 within proposed quarantine

* See appendix B in this document for data sources.

Mountains; two wildfires in 2016 burned thousands of acres of forest and residential property near the proposed Devore Medfly program area (KABC-TV, 2019b).

Water located beneath the proposed treatment area for the Devore Medfly Program, or surface water that drains off of it, may enter a number of watersheds (see table 2). USDA APHIS' Medfly program treatments are designed to prevent contamination and degradation of water quality in watersheds.

Riverine and freshwater pond types of wetland occupy about 60 acres of the proposed treatment area. There are over 680 acres of riverine, freshwater forested/shrub, freshwater pond, and freshwater emergent types of wetland inside the proposed quarantine (data source listed in appendix B of this document.). Table 2 shows the distance between the current Medfly program and water resources of potential concern.

Table 2. Distance from Proposed Treatment Area to Certain Water Resources.*

Type of Resource	Distance Rounded Off to Nearest Tenth of a Mile
Watersheds	Within proposed treatment area: • Lower Cajun Wash (HUC12 ID: 180702030303) • Cable Creek (HUC 12 ID: 180702030304) Within proposed quarantine: • Cajon Wash-Lytle Creek (HUC12 ID: 180702030305) • Upper Cajon Wash (HUC12 ID: 180702030301) • Silverwood Lake-West Fork Mojave River (HUC12 ID: 180902080201)
Waterbodies within 6 Miles	Within proposed treatment area: • Cajon Creek Wash, 0.6 • Unnamed waterbody, 0.8 Within proposed quarantine: • Cajon Wash, 1.8 • West Fork Mojave River, 2.2 • Lytle Creek, 2.95 • Lytle Creek Wash, 3.2 • Unnamed waterbody, 4.2 • North Fork Lytle Creek, 4.9
Impaired Waters within 15 Miles	None within proposed treatment area or quarantine

* See appendix B in this document for data sources.

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, 2019a). The State and Regional Water Boards assess water quality data for California's waters every 2 years to determine if they contain pollutants

at levels that exceed protective water quality criteria and standards (State of California, 2019b).

The Medfly eradication program calls for highly localized chemical applications in designated properties, and no-foliar-spray buffers around all sensitive areas, including all waterbodies. This method of application is designed to minimize the potential for the introduction of program chemicals to local water resources.
In 2017 the California governor lifted the drought emergency declaration while retaining prohibions on wasteful practices and advancing measures to make water conservation a way of life in the State (CA.gov, 2017). Generally areas with higher per capita use are required to achieve proportionally greater reductions than those with lower use. USDA APHIS' Medfly program activities are designed to have minimal to no impact on California water supply and water quality.

IV. Potential Environmental Consequences

This EA analyzes the potential environmental consequences of alternatives considered for Medfly control and eradication. The site-specific characteristics of the proposed program area were considered with respect to the potential of the preferred alternative 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 the use of specific mitigation measures. USDA APHIS will conduct any necessary additional environmental analyses if Medfly detections lead to an expansion of the program boundary.

The features identified in chapter III, Affected Environment, are not expected to experience direct or indirect impacts under any of the alternatives as a result of program activities. Under all of the alternatives, program operations are highly unlikely to impact soil and water features in the affected environment.

A. No Action

Lack of Federal action would place the burden of eradication on the State of California. It is reasonable to expect Medfly 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, USDA APHIS expects substantial economic losses to

growers in the United States. Crop loss could lead to commodity scarcity, higher costs for U.S. consumers, and the temporary or permanent loss of valuable local and U.S. export markets.

B. Quarantine and Commodity Certification

The quarantine actions of this alternative reduce the human-mediated movement of Medfly by preventing the transportation of host plant materials beyond the quarantine boundary. As in the no action alternative, USDA APHIS expects a resident Medfly population would persist within the quarantine boundary. Any failure in quarantine actions could lead to Medfly establishment outside the program area and the need for expanded quarantine boundaries. The commodity certification requirement would create a necessary but new layer of ongoing governmental presence in the marketplace. This situation could create inspection jobs; however, it would restrict trade until the produce was inspected and certified for sale. Crop loss is likely to lead to commodity scarcity and higher costs for U.S. consumers.

C. Preferred Alternative

This section considers to what extent implementation of the preferred alternative might affect the human environment. The preferred alternative, eradication using an IPM approach, may employ any or a combination of the following measures:

- no Federal action
- regulatory treatment and movement control of host materials and regulated articles
- host survey for evidence of breeding Medflies
- host removal
- eradication chemical applications
- mass trapping using pheromone lures or food bait as an attractant
- SIT

A thorough analysis of trap application was completed in fruit fly program risk assessments (USDA APHIS, 2018c, 2018f, 2018g); this information is revised as new materials and chemical formulations are approved for trap use. Review of the treatment protocols by USDA APHIS indicates the chemical formulations used as fruit fly pheromone lures and food baits are

unlikely to result in adverse environmental or human health risks, based on their low toxicity in animal testing, high target specificity, and low exposure to humans and the general environment (USDA APHIS, 2018c, 2018e, 2018f, 2018g, 2014, 2003; Reilly, 2003). The types of pheromone lures, food baits, and sticky panels approved for trapping Medflies are expected to pose little threat to nontarget plants and animals when used as directed; the small number of nontarget arthropods that may be caught in program traps is anticipated to have a minimal, transitory effect on the overall populations of their species. Program traps are placed out of the reach of the general public, and are labeled as a hazard so individuals living in the treatment areas are not likely to be exposed to the chemical compounds used in the traps. Trap preparation and placement might constitute some small exposure risk to applicators; the prescribed use of personal protective equipment and adherence to proper application procedures is expected to mitigate such risk. The effects of trap chemical compounds to air quality, water quality, and soil quality are negligible because of the small quantities involved. Depending on the frequency of trap placement and monitoring, slight soil impacts could result from vehicular and foot traffic.

Implementation of "no Federal action" and quarantine and commodity certification is not expected to result in impacts on the environment other than described for alternatives A and B at the beginning of this chapter. The IPM strategy prescribed under the preferred alternative would likely result in a shorter period of quarantine and commodity certification requirements, reducing potentially adverse impacts to agriculture and trade-related industries. Therefore, the discussion in the remainder of this chapter will focus on the eradication measures of the preferred alternative.

1. Human Health

The principal concerns for human health are related to potential program use of chemical pesticides, including spinosad and MB. Factors that affect the human health risk are associated with pesticide use, and include pesticide toxicity and exposure to humans. These factors are influenced by the use pattern and environmental fate for a particular pesticide.

Exposure to program pesticides can vary, depending upon the pesticide and the use pattern. Medfly cooperative eradication programs in California may employ ground-based, targeted applications of spinosad with protein bait, and MB (as a fumigant). Workers who mix, load, and apply pesticides, and the general public who live or visit the Medfly eradication area are the potentially exposed human populations. Based on the proper use of personal protective equipment and engineering control, exposure for program workers is not expected. Based on program methods of application and the impact of mitigation measures through program practices, exposure to the general public is unlikely.

A standard mitigation measure designed to minimize exposure of humans to program pesticides is the requirement for public notification. Information concerning program control actions will be shared via press releases and media announcements to the general public. Depending on the location of the fruit fly program, either a county's agricultural commissioner, extension agent, or public information officer will serve as the primary contact to the media. Any resident with property to be treated will be contacted directly or 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.

Spinosad (a combination of spinosyns A and D) is an insecticide derived from the fermentation of soil micro-organisms. Spinosad is a neurotoxin (disruption of the nicotinic acetylcholine receptors) to insects, and is used to control a variety of insect species (EPA, 2016). Spinosad has low acute toxicity for oral, dermal, and inhalation routes of exposures. It is not an eye or skin irritant. EPA studies indicate spinosad is unlikely to be neurotoxic, mutagenic, carcinogenic, or immunotoxic in mammals. Ground-based targeted applications of spinosad bait or spinosad spray by USDA APHIS fruit fly eradication programs are unlikely to pose adverse risks to human health, due to spinosad's low toxicity and low potential for exposure from the bait's prescribed method of spot application as well as the spray application in accordance with EPA label instructions (USDA APHIS, 2014, 2003).

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

If the spinosad 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. After pesticide application, the potential for exposure to the general public is low because spinosad is not persistent in the environment with a half-life of 2.0 to 11.7 days on plant surfaces. An additional summary of the environmental fate of program pesticides is discussed in the Environmental Quality section (IV.C.4) of this document.

The analyses and data of EIS1 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 (USDA APHIS, 2018a) and the human health sections of the supporting risk assessments (USDA APHIS, 2018b, 2018c,

2018d, 2018e, 2018f, 2018g, 2014, 2003) for more detailed information relative to human health risk.)

USDA 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. Program personnel will notify the general public before treating public-access areas, and will seek to communicate with individuals identified as sensitive before treatments to their properties, in order to mitigate this risk.

Site inspections will be continued to ensure existing program treatments are not likely to affect humans. Trap placement and chemical applications may be rescheduled if strong winds or rainfall is forecast for the program area. 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 three 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. Neither (A) the no action alternative nor (B) the quarantine/commodity certification alternative is expected to eliminate Medfly as readily, or as effectively, as the preferred alternative. Implementation of alternatives A or B over a protracted period would likely result in broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts to human health.

2. Other Aspects of the Human Environment

In this section, USDA 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 program area.

The National Historic Preservation Act of 1966, as amended (16 U.S.C. §§ 470 et seq.), requires Federal agencies to consider the impact of their proposed actions on properties included in, or eligible for inclusion in, the National Register of Historic Places (Title 36 CFR parts 63 and 800). USDA APHIS determined its fruit fly eradication programs are undertakings with no potential to affect historic properties. USDA APHIS consulted with the California State Historic Preservation Office (SHPO) during prior Medfly outbreaks, and received concurrence from the SHPO with the finding that applications used in the program have no potential to adversely affect historic properties.

USDA APHIS' actions will not disturb the ground or facilities, the deployed chemicals do not affect building materials, and the deployed chemicals rapidly degrade in the environment. USDA APHIS' program

activities are designed not to alter, change (restore or rehabilitate), modify, relocate, abandon, or destroy any historic buildings, edifices, or nearby infrastructure. There are no building demolitions, excavations, or other physical activities with the potential to adversely affect historic properties. USDA APHIS does not find that any of the program activities would cause reasonably foreseeable effects to historic properties later in time or be cumulative. For these reasons, USDA APHIS activities considered in this assessment are not likely to affect historic properties, and program activities are unlikely to directly or indirectly alter characteristics of a historic property that qualify it for inclusion in the National Register of Historic Properties.

In general, USDA APHIS' fruit fly eradication programs are compatible with the preservation of historic sites because USDA APHIS discreetly integrates control activities into the site; these activities do not disturb the ground, and the treatments do not affect human-made structures. USDA APHIS restricts program treatments and activities to an as-needed basis, and can modify normal program activities at historically significant locations to reduce pesticide release, if necessary. Program workers will not conduct aerial chemical applications. Spray applications will be ground-based, directly targeting foliage. This may include use of a backpack sprayer. Surveillance trapping and fruit stripping by hand may occur.

There are approximately 70 National Historic Places registered in San Bernardino County; none of them is within the proposed Devore Quarantine boundary (American Dreams, Inc., 2019; Wikipedia, 2019). Since the USDA APHIS Medfly consultation with the SHPO in 2016, there are five new historic places.[2]

All of the Nationally Listed Historic Places consist of publically or privately owned buildings with associated landscaping except for about a dozen archeological sites with restricted addresses. Although USDA APHIS cannot determine these precise locations, none of the program treatments disturb the ground, so there is no potential to affect the archeological features at those sites. If USDA APHIS discovers any archaeological resources, it will notify the appropriate individuals. Additionally, there are two National Landmarks within the 4.5 mile quarantine boundary: the Garces-Smith Monument on the Mohave Indian Trail in the San Bernardino National Forest, and Sycamore Grove at a rest and water spot at the bottom of Cajon Pass in the Glen Helen Regional Park (see appendix B in this

[2] (1) Cucamonga Service Station [listed July 23, 2018 as #100002675 at 8670 Foothill Blvd in Rancho Cucamonga], (2) Robert J. Dunn House [listed July 24, 2017 as #100001336 at 1621 Garden St. in Redlands], (3) Integratron [listed April 23, 2018 as #100002317 at 2477 Belfield Blvd. in Landers], (4) Providence Townsite [listed August 16, 2016 as #16000522 off Essex Rd. in Essex], and (5) Vulcan Mine Historic District [listed July 15, 2019 as #100004180 onVulcan Mine Road in the Kelso area].

document for data source). Program activities will not impact historic landmarks or the use of these sites. Treatments and trap maintainence will not occur in the immediate vicinity of visitors. Everyone asking for information will be directed to publications on fruit fly eradication programs, for example, those available through https://www.aphis.usda.gov/aphis/newsroom/publications. If the treatment zone expands to include any of these sites, then program workers may handpick fruit from surrounding landscape plants and, whenever possible, place bait stations outside of the property or unobtrusively within the viewshed.

Federal agencies identify and address the disproportionately high and adverse human health or environmental impacts of its proposed activities, as described in Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." USDA APHIS engages locally impacted people in collaborative decisions on trap placement, whenever possible, and considers the potential environmental impacts of implementing the action alternatives on minority and/or low-income communities in the program area. The proposed program is not expected to pose any highly disproportionate or adverse impacts to minority or low-income people because (1) individuals are unlikely to be present when USDA APHIS applies treatments or maintains bait traps, and (2) exposure to applied pesticides is likely to be negligible.

Using City-Data.com estimates developed by the housing industry (City-Data.com, 2019), comparisons between the northern suburban Devore (zip code 92407) and southwest neighborhood of Rana (zip code 92324) indicate Devore is not reasonably characterized as an environmental justice community of concern, in that the residents are generally not low-income nor predominantly minority. For example, in 2016 Devore residents reportedly had a median household income of $86,364 in contrast to Rana, estimated at $37,653. An estimated 4.6 percent of Devore is reported below the poverty level, while Rana reportedly was 30.8 percent. Devore residents were identified as a mixture of about 25 percent white, 25 percent native Hawaiian and other Pacific Islander, and 25 percent Hispanic; whereas in Rana, more than 75 percent of the population was identified as Hispanic. In Devore, more than 30 percent of the population was reported to have completed one or more years of college, whereas in Rana, more than 50 percent of the people were reported as not having earned a high school diploma. In Rana, more than 13 percent of the population was reported to speak English not well or not at all; in Devore, all of the population was reported to speak English (City-Data.com, 2019). Based on these comparisons, USDA APHIS finds that program activities within Devore are not likely to highly disproportionately and adversely impact minorities or low-income individuals. The educational level and English fluency in Devore does not suggest that providing advance notice of program activities or potential exposure hazards in a variety of languages is likely to reach substantially

more members of the local population than providing information only in English.

Federal agencies comply with EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks." The preferred alternative does not pose any disproportionate effects to children because maintenance of traps and any pesticide applications do not occur when children are present in the immediate area. The intermittent presence of children at shelters, playgrounds, parks and picnic areas, religious centers, public/private campgrounds and trailer parks, athletic fields, bus depots, and outdoor community facilities means they are likely to be at locations where bait traps are in use. However, USDA APHIS places these traps a minimum of 8 feet above ground, which is well above a child's reach.

Residential areas, schools, outdoor play areas, and the roads children use for transit among these sites are located throughout the proposed quarantine area. Kimbark Elementary School, Mountainside Private School, and the Cajon High School are within the treatment area. North Verdemont Elementary School, Palm Avenue Elementary School, Dikaios Christian Academy, and the Doctor Edward M. Fitzgerald Elementary School are inside the quarantine boundary (see appendix B in this document for data source).

USDA APHIS will maintain traps and apply any pesticide applications only when children are not present in the immediate area. Where possible, USDA APHIS will not apply baits on school properties. When pesticide applications are essential, USDA APHIS will use either a bait trap or backpack sprayer. Exposure of children to applied products is expected to be negligible based on the program's application methods and the product formulations. The proposed program is not expected to pose any disproportionate affects to children because (1) individuals are unlikely to be present when USDA APHIS applies treatments or maintains bait traps, and (2) exposure to applied pesticides is likely to be negligible.

EO 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. Program activities do not interfere with the use or enjoyment of viewsheds, hunting or fishing areas. USDA APHIS finds there are two federally recognized Tribes located outside of the quarantine boundary. The San Manual Reservation (San Manual Band of Serrano Mission Indians of the San Manual Reservation, California) is 10 miles outside Quarantine Boundary, and the Morongo Reservation (Morongo Band of Cahuilla Mission Indians of the Morongo Reservation, California) is 43 miles outside Quarantine Boundary (see appendix B in this document for data source). USDA APHIS finds the proposed treatment and quarantine areas correspond to ceded lands of California Indians currently located

outside of the quarantine boundary. At this time, USDA APHIS does not find there are potential Tribal implications arising from ceded lands.

The Archaeological Resources Protection Act of 1979 (16 U.S.C. §§ 470aa-mm), secures the protection of archaeological resources and sites on public and tribal lands. The proposed action will not disturb the ground, therefore, it is unlikely to affect Native American sites or artifacts. If USDA APHIS discovers any archaeological Tribal resources or potential Tribal implications, it will notify the appropriate individuals. USDA APHIS will provide the federally recognized Tribes in the region with information about the Fruit Fly Cooperative Eradication Program, and will offer the Tribes with lands in the treatment and quarantine areas the opportunity to consult with USDA APHIS.

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, and loss of property. These same types of impacts could occur to minority and/or low-income communities, children, or Tribal members in the program area. These indirect impacts may occur to a lesser extent under the quarantine and commodity certification alternative. USDA APHIS does not anticipate these types of adverse effects as a result of carrying out the preferred alternative's surveillance activities, trapping, SIT, and program ground-based chemical applications.

3. Nontarget Species

The principal concerns for nontarget species, including threatened and endangered species, relate to the program use of pesticides. Paralleling human health risk, the risk to nontarget species is related to pesticide exposure and toxicity to the nontarget species, and fate of the pesticide in the environment. USDA APHIS' Medfly programs are designed to prevent the introduction of program chemicals into nontarget areas. In general, a well-coordinated Medfly 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 and quarantine/commodity certification alternatives are less likely to be effective at eliminating Medfly, 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.

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 eradication program in San Bernardino County will be limited to a targeted, ground-based foliar bait treatment and the use of SIT to control invasive Medfly populations. Host trees and plants within a 200-meter radius of a Medfly find site are treated with a highly localized spray that consists of an organic formulation of the pesticide spinosad, combined with protein hydrolysate food bait. The spinosad treatments target Medfly life stages on host plants in a manner that minimizes potential exposure and associated risks to nontarget species.

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). Medflies are attracted to the protein hydrolysate where they are exposed to a lethal dose of the pesticide spinosad that is mixed with the attractant. The protein hydrolysate selected for program use is expected to have minimal impacts to environmental quality based on its use pattern and rapid degradation; because of its low toxicity, no impacts to nontarget species are likely.

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 (USDA APHIS, 2014).

The release of sterile Medflies over the eradication zone will occur after the spinosad treatment has lowered the invasive Medfly population, and thus reduced the population of sexually mature female Medflies. SIT is expected to have no adverse effect on nontarget species.

For MB, the methods for its application are designed to protect nontarget species by preventing their exposure to the fumigant (USDA APHIS, 2007, 2002). Potential cumulative impacts of MB released to the global environment are considered in section 5 of this chapter (IV.C.5.).

Sites near the program area may require special consideration should the program area expand to include the San Bernardino National Forest and/or the Cucamonga Wilderness area. However, the program does not plan to treat open or riparian habitats or areas that do not have Medfly host plants. Aerial SIT and surveillance trapping would continue, and fruit stripping by hand will be undertaken if Medfly detections occur at these types of locations. Spinosad bait will only be used in these areas if applications can be made without resulting in adverse impacts to protected species and

habitats. Additionally, a 30-foot treatment buffer will be used around all waterways in accordance with the CDFA National Pollutant Discharge Elimination System (NPDES) Permit.

a. Migratory Birds

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 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.

EO 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) which promotes the conservation of migratory bird populations. On August 2, 2012, an MOU between USDA APHIS and FWS was signed to facilitate the implementation of this EO.

More 470 bird species have been recorded in San Bernardino County (eBird, 2019). Some species in San Bernardino County are of conservation concern, such as Allen's hummingbird (*Selasphorus sasin*), Bendire's thrasher (*Toxostoma bendirei*), black rail (*Laterallus jamaicensis*), black skimmer (*Rhynchops niger*), black swift (*Cypseloides niger*), black-chinned sparrow (*Spizella atrogularis*), burrowing owl (*Athene cunicularia*), California spotted owl (*Strix occidentalis occidentalis*), California thrasher (*Toxostoma redivivum*), Clark's grebe (*Aechmophorus clarkia*), common yellowthroat (*Geothlypis trichas sinuosa*), Costa's hummingbird (*Calypte costae*), elf owl (*Micrathene whitneyi*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chrysoides*), gray vireo (*Vireo vicinior*), Lawrence's goldfinch (*Carduelis lawrencei*), Le Conte's thrasher (*Toxostoma lecontei*), Lewis's woodpecker (*Melanerpes lewis*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), mountain plover (*Charadrius montanus*), Nuttall's woodpecker (*Picoides nuttallii*), oak titmouse (*Baeolophus inornatus*), rufous hummingbird (*Selasphorus rufus*), rufous-winged sparrow (*Aimophila carpalis*), short-billed dowitcher (*Limnodromus griseus*), song sparrow (*Melospiza melodia pusillula*), spotted towhee (*Pipilo maculatus clementae*), tricolored blackbird (*Agelaius tricolor*), whimbrel (*Numenius phaeopus*), white headed woodpecker (*Picoides albolarvatus*), willet (*Tringa semipalmata*) and wrentit (*Chamaea fasciata*) (FWS, 2019a). This region of California,

which is part of the Pacific Flyway, is an important migration corridor providing suitable habitat for many bird species.

USDA APHIS evaluated the proposed Medfly 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 FWS and/or the National Marine Fisheries Service (NMFS) 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. If listed species or critical habitat are present in the area and program activities may affect them, USDA APHIS consults with FWS and NMFS, as appropriate. USDA 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.

For species under the jurisdiction of FWS, USDA APHIS received an official species list for the program area dated October 9, 2019 (FWS, 2019b). The species considered in the program area are: San Bernardino Merriam's kangaroo rat (*Dipodomys merriami parvus*) and its critical habitat, California condor (*Gymnogyps californianus*), Coastal California gnatcatcher (*Polioptilia californica californica*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), Arroyo toad (*Anaxyrus californicus*) and its critical habitat, Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*), and slender-horned spineflower (*Dodecahema leptoceras*). USDA APHIS contacted the Carlsbad FWS field office requesting concurrence that the proposed program would not adversely affect listed species or critical habitat in the program area. FWS indicated in an email that because no federally listed species or critical habitat overlap with treatment areas where spinosad bait will be applied, no impacts are expected to occur to any listed species. However, in the larger quarantine area, FWS requested that USDA APHIS apply a 25-foot buffer for trap placement from sensitive areas to avoid trampling of listed species on the ground. FWS provided maps of locations of listed species and critical habitat in the quarantine area (K. Zeeman, personal communication, 10/10/2019).

USDA APHIS completed a programmatic consultation with NMFS for exotic fruit fly eradication programs in California (NMFS, 2018). From the consultation, 30-foot no-treatment buffers for ground applications of spinosad bait are to be applied to water bodies, including designated critical habitat, for salmonid Evolutionarily Significant Units and the southern Distinct Population Segment of the green sturgeon where insecticide treatments may occur for exotic fruit flies. These no-treatment buffers are designed to protect listed fish from direct effects of program treatments as well as any indirect effects resulting from impacts to prey items and habitat.

USDA APHIS used the NMFS California tools website (located at http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html) to determine the listed species and designated critical habitat under NMFS jurisdiction in the program area. No species of NMFS concern, anadromous fish critical habitat, nor essential fish habitat occur within the treatment area. Therefore, the program will have no effect on federally listed species or their critical habitats under NMFS jurisdiction in the treatment area.

Should the program area expand or further outbreaks be detected, USDA APHIS, in cooperation with CDFA, will consult with FWS and NMFS, as necessary. A complete administrative record of this review is available upon request. (Refer to EIS1 (USDA APHIS, 2018a) and the nontarget sections of the supporting risk assessments (USDA APHIS, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) for more information on risks to all classes of nontarget species.)

4. 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 in the county, 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 MB and spinosad are outlined below. (Refer to EIS1 (USDA APHIS, 2018a) and the supporting risk assessments (USDA APHIS, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) for a more detailed consideration of the program pesticides' environmental fates.)

Attractants in USDA APHIS fruit fly program treatments (i.e. fruit fly pheromone lures and food baits) have minimal affect on environmental quality, based on EPA-approved use patterns and the rapid degradation of

the ingredients. Use of these attractants in the Devore Medfly Program is not expected to result in impacts to environmental quality beyond those described for the chemicals listed below (USDA APHIS, 2018g).

- **MB** fumigation 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, however, is not considered a major contaminant of ground water (NPIC, 2000). The small quantities used to treat for Medfly disperse when fumigation chambers are vented. (See section 5 of this chapter (IV.C.5) regarding MB's potential cumulative impacts to the environment.)

- **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 days. 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 (USDA APHIS, 2014; Kollman, 2003).

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 may 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 applying pesticides will adhere to label directions, Federal and State laws, and recommendations of the environmental compliance staff

associated with the program. Waterbody contact is not anticipated due to the targeted application methods, the use of distance buffers, and the environmental fate of the pesticides used in Medfly 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. Implementing the no action alternative or the quarantine/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 waterbodies are described in EIS1 (USDA APHIS, 2018a).

5. Cumulative Impacts

This section considers the potential of the alternatives to cause cumulative impacts on the human environment. Taking no Federal action is expected to result in similar cumulative impacts to those that arise from tolerating uncontrolled Medfly 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. Either of these alternatives 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 consumer shortages and negative public perception of the affected industry.

The proposed Medfly program was examined for potential cumulative environmental impacts. USDA APHIS considered implementation of the preferred alternative in the context of, and in conjunction with, other pest insect eradication and quarantine projects in the proposed program area (such as Japanese beetle, light brown apple moth and glassy-winged sharpshooter control efforts). These programs use pesticides with different mechanisms of toxic action; they target different pests, and are applied at different times. The nature of these differences suggests limited potential for pesticide interaction or for multiple exposures; the sum of

their use by programs in the same location is, therefore, not expected to create significant cumulative impacts in the human environment.

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

Trapping and surveys for Medfly continue under the California State fruit fly detection and monitoring program; sterile Medflies continue to be released over high-risk regions as a preventive measure (CDFA, 2019e). No adverse cumulative impacts are expected to result from these actions.

Program pesticides approved for use against Medfly are also prescribed treatments for other Medfly programs. As of October 16, 2019, there are no other active quarantine and eradication programs in the contiguous United States targeting Medfly. Use of program pesticides in a Medfly program that overlaps with another Medfly 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 2019, no chemical residues are believed to remain from previous Medfly programs that could result in additive or synergistic chemical effects with the proposed program's chemical applications.

No significant environmental impacts are expected to result from proper implementation of the proposed Medfly eradication and control program. The differences in pesticide mechanisms of toxic action, targets for application, affected species and resources, and application timing between the Devore Medfly Program and other pest control programs in California are not likely to create significant cumulative impacts in the human environment.

Care should be taken, however, when multiple pest species in the same area are targeted for treatment using the same chemical. No synergistic or cumulative impacts from Medfly pesticide applications are likely with the following active control programs (CDFA, 2019f):

- Asian citrus psyllid in 29 counties, including San Bernardino County, and

- glassy-winged sharpshooter in 43 counties, not including San Bernardino County.

As of October 16, 2019, the only USDA APHIS cooperative fruit fly control program in California is the Medfly eradication program proposed for Devore. USDA APHIS may prescribe the use of spinosad and MB to eradicate infestations of Medfly and pest species. To avoid additive chemical impacts, program treatment schedules are adjusted in locations where another State or USDA APHIS program may have scheduled similar treatments.

Active CDFA programs that may employ spinosad treatments (CDFA, 2019f) were operating outside San Bernardino County at the time of preparation of this EA and are considered, therefore, unlikely to combine with the Devore Medfly Program's spinosad treatments. The State programs target the following pests:

- guava fruit fly in Orange County
- Oriental fruit fly in Los Angeles, Sacramento, San Joaquin, Santa Clara and Ventura Counties
- peach fruit fly in Contra Costa and Santa Clara Counties
- light brown apple moth in portions of many California counties, not including San Bernardino County

Spinosad and MB formulations may be used in California for other purposes than fruit fly eradication:

- **MB** is a regulatory treatment that may be used in order to move Medfly-host materials outside the program quarantine. MB is a fumigant used to control insects, mites, rodents, plant pathogens, nematodes, termites, and weeds. Registered uses of MB have included preplanting soil fumigation; stored commodities (both raw agricultural commodities and processed foods/feeds); greenhouses; termite control; grain elevators; and mills, ships, and transportation vehicles (Chin, 2003). USDA 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—September 2002" (USDA APHIS, 2002)), and subsequent analyses, such as the "Importation of Solid Wood Packing Material, Supplement to the Final Environmental Impact Statement—October 2007" (USDA APHIS, 2007).

- **Spinosad** 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 (USDA APHIS, 2014).

It is uncertain how pesticides may be used by private entities in the Medfly 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. Under the preferred alternative, program pesticide applications are designed to avoid overlapping treatment cores, and to prevent nontarget exposure until pesticide residues are degraded.

No reasonably foreseeable future actions have been identified that could result in incremental increases in environmental effects. Based on USDA 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 proper implementation of this Medfly cooperative eradication program.

Should the Devore Medfly infestation expand, additional actions may be implemented by the program, including additional quarantines and regulatory treatments. Evaluation of potential environmental impacts and mitigations for such impacts will be undertaken for sensitive sites identified in the new program area. No significant environmental impacts are expected to result from proper implementation of the Devore Medfly Cooperative Eradication Program. The prescribed use of program treatments is considered to pose minimal risk to the human environment, as determined in EIS1 (USDA APHIS, 2018a), and the supporting risk assessments (USDA APHIS, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003).

V. Agencies Consulted

California Department of Food and Agriculture
Plant Health and Pest Prevention Services
Environmental Policy and Compliance
1220 N Street, Suite 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
Emergency and Domestic Programs
4700 River Road, Unit 26
Riverdale, MD 20737

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

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

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NPIC—See National Pesticide Information Center

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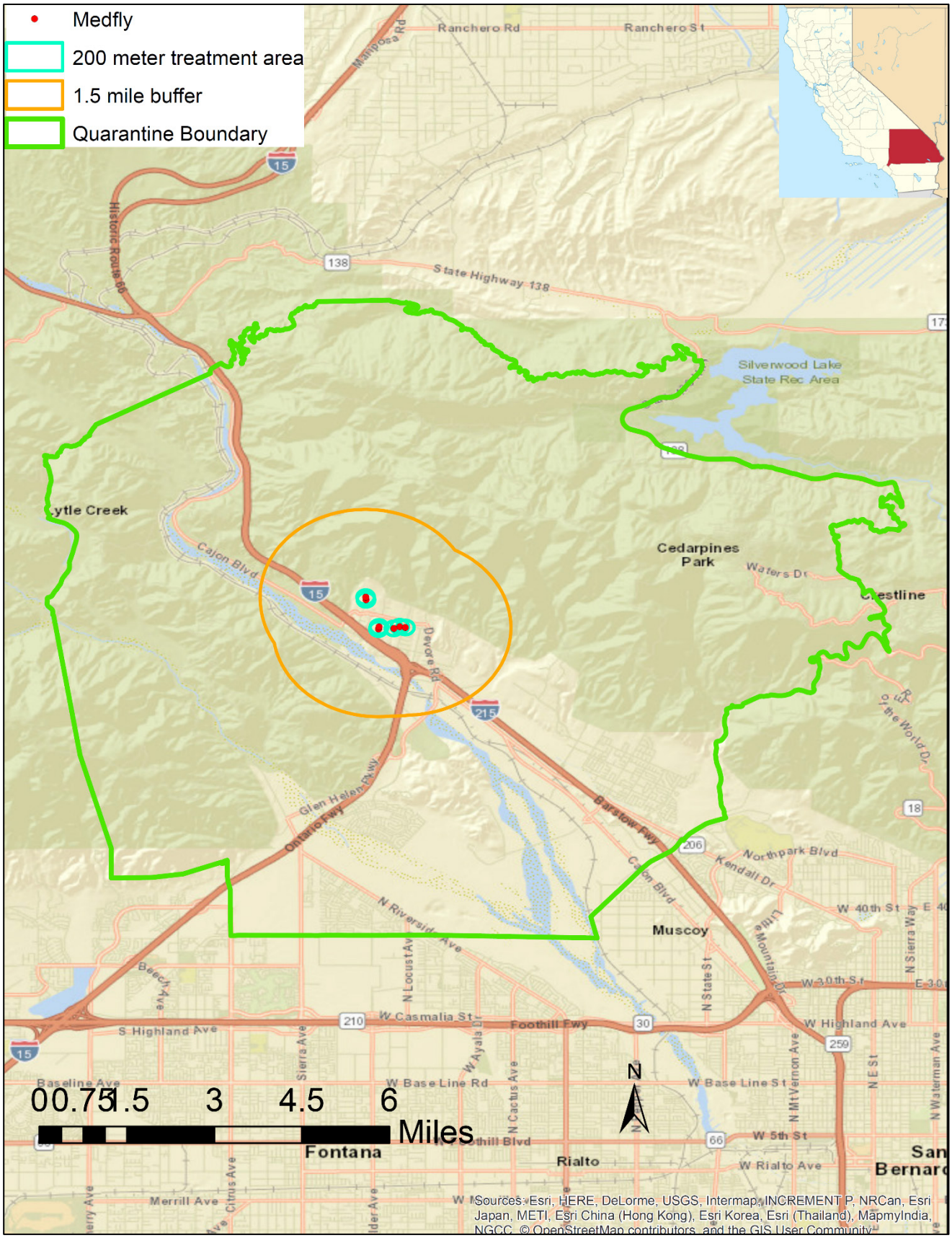
Appendix A. Devore Medfly Quarantine as of 10/11/2019.



Map source: USDA APHIS

Appendix B. Spatial Data Resources Used to Prepare This Document

USDA APHIS accessed the following resources on October 13, 2019.

Web-Based Mapping Application for Environmental Assessments

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

For Information on—

- **Airports:** www.googlemaps.com
- **Bing Maps Road:** http://www.esri.com/software/arcgis/arcgisonline/bing-maps.html
- **Boundaries:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Boundaries/MapServer
- **Crop Data:** http://nassgeodata.gmu.edu/CropScape/
- **Environmental Justice:** https://www.epa.gov/environmentaljustice
- **Farmers Markets:** https://www.ams.usda.gov/local-food-directories/farmersmarkets
- **Historic Sites:** http://www.nps.gov/nr/
- **Land Use:** http://nassgeodata.gmu.edu/CropScape/
- **Local Parks:** www.googlemaps.com
- **National Wildlife Refuges:** http://viewer.nationalmap.gov/
- **Native American Areas:** http://viewer.nationalmap.gov/ and http://viewer.nationalmap.gov/
- **Nonattainment Areas:** http://geoplatform2.epa.gov/arcgis/rest/services/PM_Designations_Mapping/Nonattainment_Areas/MapServer
- **Nurseries and Garden Centers:** www.googlemaps.com
- **Organic Farms:** http://www.ams.usda.gov/AMSv1.0/nop
- **Places:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Places/MapServer
- **Pesticides**: https://cida.usgs.gov/warp/about/
- **Seaports:** www.googlemaps.com
- **Transportation:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Transportation/MapServer
- **Tribal Ceded Lands/Tribal Connections:** https://www.arcgis.com/home/item.html?id=91a950377c264b7e84415ef2e91c3a49
- **U.S. FWS (Critical Habitat, Migratory Birds):** http://ecos.fws.gov/crithab and http://ecos.fws.gov/ipac/
- **Water:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Water/MapServer
- **Wetlands:** http://nassgeodata.gmu.edu/CropScape/