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Mexican Fruit Fly Cooperative Eradication Program

Rio Grande Valley, Texas

Environmental Assessment, January 2020

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I. Need for the Proposal

The Mexican fruit fly (Mexfly), *Anastrepha ludens* (Loew), is native to southern and central Mexico. It attacks more than 40 different kinds of fruits, and is capable of devastating crops throughout many parts of the Western Hemisphere. Mexfly has been repeatedly introduced into the United States since its first detection in Texas in 1927 (TDA, 2020; NAPIS, 2020). Regions along the Rio Grande Valley (RGV) bordering Mexico continue to experience Mexfly introductions. Prior successful eradication programs prevented Mexfly from becoming an established pest in the conterminous United States.

Adult Mexflies are long lived (up to 11 months), highly fertile, strong fliers (UFL, 2012). Each year, Mexfly enters the lower RGV's 27,000 acres of commercial citrus crops from south of the U.S. border; the fly is also a threat to surrounding citrus-producing regions, including the States of California, Arizona, Louisiana, and Florida. Physical damage to hosts begins when female flies lay eggs in host fruit—the eggs hatch into larvae which makes the fruit unmarketable. Economic losses due to Mexfly infestation are measured not only in damaged crops, but also in costs associated with eradication and host movement restrictions designed to protect consumers (TDA, 2020).

Mexfly quarantines may be triggered when a breeding population is confirmed, or when five wild Mexflies are captured within a 3-mile radius during one life cycle (USDA APHIS, 2013a). In January 2020, a new Mexfly incursion was detected in the RGV region of the State of Texas. On January 13 a wild female Mexfly was collected from a Jackson trap in a sour orange tree in Harlingen, Texas. On January 14 seven larvae were found at the same location. There was laboratory confirmation that the female was gravid and the larvae were Mexfly. This triggered a quarantined area of 81-square miles in a primarily residential section of Cameron County (USDA APHIS, 2020a). (The proposed Mexfly program area is shown in appendix A of this document.)[1]

Many Mexfly-host plant species grow in the RGV, which increases the potential environmental impact of the current Mexfly infestation. There are more than 1815 acres of commercial citrus cultivation and three small packing sheds inside the proposed Harlingen program area (USDA APHIS, 2020a).

[1] For the purpose of this document, "RGV" denotes Brooks, Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties. Unless specified otherwise in the text, the terms "quarantined area" and "program area" signify the same place. A "core" area is where program chemical treatments may be applied, and is located within the quarantine boundary.

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA APHIS) and the Texas Department of Agriculture (TDA) propose a cooperative program to eradicate the Mexfly infestation in the RGV region, and prevent the spread of Mexfly to noninfested areas of the United States. USDA APHIS' authority for pest control and grower support programs is the Plant Protection Act (Title 4 of the Agricultural Risk 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)).

The last Texas Mexfly detections on record occurred in Laredo, Webb County, on December 31, 2019 and in the same area in January 2020 (USDA APHIS, 2020b). Although both finds were mated females, they did not trigger a new quarantine because the preponderance of sterile male Mexflies also on site makes the chances of viable progeny unlikely. Monitoring of the Webb County incursion continues. As an added safeguard, Mexfly bait stations are being placed in the vicinity of the Laredo find sites (R. Johnson, personal communication, 2020-January-09).

According to information received (S. Usnick, personal communication, 2020-January-22) Mexfly detections are occurring in multiple parts of southern Texas. The 2019 RGV Mexfly Program established quarantine areas in six counties: Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata. After successful eradication the quarantines are removed, the last being from Cameron and Willacy Counties on October 23, 2019 (TDA, 2020). The potential environmental impacts of the cooperative Mexfly eradication program proposed for the 2020 season ("RGV Mexfly Program") will be considered in this environmental assessment (EA) for implementation in seven Texas counties: Brooks, Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties.

USDA APHIS participated in cooperative Mexfly eradication programs for one or more of these seven counties during the past 11 years. Three of the seven counties in the potential program area[2]—Cameron, Hidalgo, and Willacy—are home to Texas' major citrus-producing region. The RGV region experiences repeated introductions of Mexfly, presumably because of its proximity to Mexico, as well as its high volume of potentially infested imports.

The State of Texas intensifies surveys for Mexfly in the neighborhood of each confirmed Mexfly detection. The State initiates Mexfly delimitation and eradication programs in locations where the types and number of detections are not yet sufficient to trigger quarantine regulatory actions. Following Texas program protocols for Mexfly depopulation, aerial releases of sterile Mexflies continue throughout the year at rates of at least 500 flies per acre in designated counties (USDA APHIS, 2009). Monitoring for Mexfly continues throughout all counties of Texas where there are susceptible host plants, and an environment conducive for fruit fly establishment.

Since 1984, USDA APHIS cooperated with the California, Florida, Puerto Rico, and Texas Departments of Agriculture on fruit fly eradication programs. To date, every Mexfly population targeted by USDA APHIS' cooperative programs was successfully eradicated.

After a comprehensive review of existing and potential action alternatives USDA APHIS published a new environmental impact statement (EIS1) in November 2018 for its fruit fly cooperative control 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 the contents of EIS1 by reference.

This EA analyzes the environmental consequences of alternatives considered for Mexfly 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 implementation in the potential program area. This EA summarizes pertinent information, and incorporates these documents by reference. (Environmental documentation for USDA APHIS' fruit fly control

[2] For the purpose of this document, "potential program area" refers to seven specific counties in Texas: Brooks, Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata.

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 (40 Code of Federal Regulations (CFR) parts 1500-1508), the Office of the Secretary of Agriculture's NEPA regulations (7 CFR part 1b), and the NEPA implementing procedures specific to USDA APHIS (7 CFR part 372).

II. Alternatives

Alternatives considered for this proposed program include (A) no Federal 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 Mexfly will continue under the RGV Mexfly Program as a preventive measure. Component methods of alternative C include the use of regulatory controls, high-density trapping, host survey, chemical treatments, and biological control (sterile insect technique (SIT)) to facilitate the timely elimination of the current Mexfly 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) are 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 Mexfly or restrict expansion of the Mexfly population from an 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.

"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 TDA detection trapping program and research. (For details about the Texas State program to control Mexfly, please use the following link: Texas Mexfly program 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 be moved, 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 designed to reduce Mexfly movement beyond treated areas, and to reduce human-mediated transport of Mexfly in host plant materials to areas outside the quarantine; however, the infestation might remain established within the quarantine boundaries. Any Mexfly eradication efforts would be managed by, and wholly under the control of, TDA.

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 Mexflies. Eradication methods that may be used in this alternative include treatment with (1) regulated chemicals, (2) cold, (3) vapor heat, and (4) irradiation.

Chemical treatment of regulated commodities may include fumigation with methyl bromide (MB), and bait spray with a mixture of protein hydrolysate (a food bait) and spinosad (an organic pesticide). (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 IPM Approach (Preferred Alternative)

USDA APHIS' preferred alternative for the RGV Mexfly 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).

USDA APHIS and TDA's cooperative Mexfly eradication programs rely primarily on surveillance, bait sprays, and SIT. Successful eradication of a Mexfly infestation using a similar IPM strategy, allowed the last Federal quarantine in 2019 to be removed from Cameron and Willacy Counties in October 2019 (USDA APHIS, 2019a). The analysis in this document is substantively similar to the EA supporting that action, despite updated wording and site-specific considerations (USDA APHIS, 2019b).

Program areas for Mexfly infestations are centered on Mexfly detection sites. Program surveillance, quarantine, and treatment boundaries may be expanded to include other properties if additional adult flies or life stages are found. USDA APHIS' cooperative programs to eradicate exotic fruit fly populations use established procedures and treatments (USDA APHIS, 2018a, 2004) designed with the species' life stages in mind:

1. Delimitation

Multilure traps would be placed in varying densities throughout the program area to delimit the infestation, and to monitor posttreatment fly populations (USDA APHIS, 2020a). Servicing of these traps occurs on a regular schedule for a period equal to three Mexfly life cycles beyond the date of the last fly find. 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 around each Mexfly detection site.

2. Eradication Treatments

For many species of exotic fruit flies, effective nonchemical control or eradication techniques do not exist (USDA APHIS, 2001). Eradication strategies may, therefore, include any or a combination of the following:

- no Federal action;
- regulatory quarantine treatment, and movement control of host materials and regulated articles;
- host survey for evidence of breeding Mexflies;
- host removal;

- eradication chemical applications;
- mass trapping to delimit the infestation and monitor post-treatment Mexfly populations;
- SIT.

Evidence of a breeding population (immature life stages, mated female Mexfly, or multiple adult captures within a certain distance and timeframe) results in the stripping and removal of host fruit from all known infested and adjacent properties within an approximately 200-meter radius of each detection site.

Confirmation of a breeding Mexfly population also leads to application of a targeted, ground-based foliar bait treatment to host trees and plants within a 500-meter radius of each find site (USDA APHIS, 2020a). Treatments are highly localized sprays consisting of a formulation of spinosad and protein hydrolysate. Spinosad applications in Texas occur at 7- to 10-day intervals for three Mexfly life cycles (USDA APHIS, 2009).

- Spinosad is an organic pesticide derived from the fermentation juices of a soil bacterium called *Saccharopolyspora spinosa* (Merchant, 2004). Spinosad is relatively nontoxic to mammals and beneficial arthropods; it has approved uses for the control of certain pests of agriculture, livestock, pets, and humans (DeAngelis, 2004).

- Protein hydrolysate is a common food bait used in fruit fly treatments, increasing the efficacy of chemical applications, and reducing the area of pesticide treatments needed for control (Prokopy et al., 1992). Pest fruit flies are attracted to the protein hydrolysate (which can be derived from plants or yeast), where they then receive a lethal dose of the pesticide that is mixed with the food bait.

SIT is used to prevent and or eradicate the Mexfly infestation. The eradication area receives a periodic release of sterilized male Mexflies in order to disrupt the reproduction cycle, thus suppressing the wild population. Releases over Mexfly program areas are planned to achieve a minimum weekly release rate equivalent to at least 500 sterile Mexflies per acre, and continue for a minimum of two life cycles beyond the last Mexfly detection date (typically 4 to 6 months, dependent on temperature). USDA APHIS maintains a Mexfly preventative release program in Texas and also conducts sterile Mexfly releases south of the border in Mexico to reduce pest pressure (USDA APHIS, 2019c).

Establishment of a quarantine boundary will ensure any host material that leaves the program area is free of Mexfly. 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 harvest fruit 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 Mexfly 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 Mexfly host material will be notified of the Mexfly quarantine location and treatment schedule.

For more detailed information regarding the alternatives considered for Mexfly 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 a Mexfly program area in the RGV. The information serves as background to understanding environmental conditions in potential program areas. Additional Mexfly program areas within the RGV would be identified on an as-needed basis as infestations and incursions occur.

A. Land Characteristics and Demographics

The initial proposed Mexfly cooperative eradication program would occur in the Harlingen region of Cameron County, extending into a small portion of eastern Hidalgo County. Local land use is a mix of agricultural production, light commercial development and residential neighborhoods. U.S. Highway 83 and 69E, Texas routes 77 and 83, Farm-to-Market Roads 506, 733, 800, 1479, 2994, and 3067, and a railway line cross the proposed program area.

The potential RGV Mexfly Program area could occur in part or all of seven counties. A map of Texas ecoregions is shown in figure 1. Brooks, Hidalgo, Starr, Webb, and Zapata Counties are classified as part of the South Texas Plains, primarily brush country, which features a mixture of

native grasses and scrub vegetation, mesquite, live oaks, and chaparral. The plains stretch from the edges of Texas Hill Country into the subtropical regions of the lower RGV. Soils of the Southern Texas Plains consist of alkaline to slightly acidic clays and clay loams. The deeper soils support tall brush, such as mesquite and spiny hackberry, whereas short, dense brush grows in the shallow, caliche soils (TPWD, 2017). Willacy and Cameron Counties contain prairies, sand sheets, and coastal marshland along the Gulf of Mexico. Much of the Southern Texas Plains tends to be dry. The lower RGV contains good quality agricultural land, the region being a true delta and the soils alluvial, varying from sandy and silty loam through loam to clay (Vigness and Odintz, 2015).

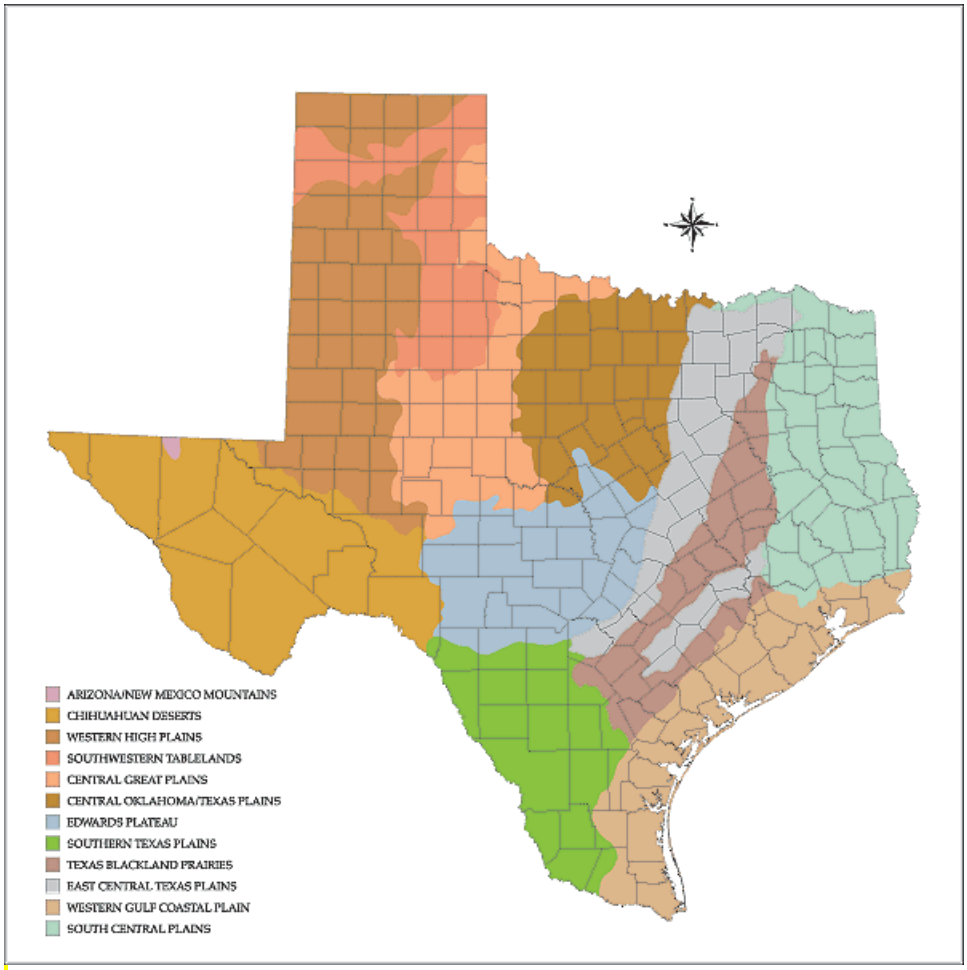

Figure 1. Major ecoregions in Texas. (Source: TPWD, 2004)

The RGV climate ranges from subtropical to semi-arid, tending to hot summers and mild winters. Willacy and Cameron Counties border the Gulf of Mexico where many different types of coastal natural hazards can occur, such as high winds, flooding, tornadoes, subsidence, coastal erosion, and relative sea level rise (GOMA, 2013). Normal rainfall across the region is less than 25 inches annually; hot summers cause heavy evaporation so that cultivation without irrigation is limited. Crop-

damaging freezes can occur, even in the lower RGV (TSHA, 2018a). Examples of South Texas wildlife are listed in table 1.

Table 1. Wild Flora and Fauna Commonly Found in South Texas.

Vegetation	Animals
Anaqua	Caracara
Brasil	Catfish
Common Cattail	Chachalaca
Desert Yaupon	Elf Owl
Duckweed	Ferruginous Pygmy-Owl
Fiddlewood	Green Jay
Fresno	Grooved-Billed Anis
Great Leadtree	Indigo Snake
Honey Mesquite	Leopard Frog
Live Oak	Mexican Burrowing Toad
Panic Grass	Redwing Blackbird
Plantain	Road Runner
Retama	Sunfish
Saffron Plum	Swallowtail Butterfly
Saltmarsh Spikerush	Texas Longnose Snake
Silverleaf Sunflower	Texas Tortoise
Smartweed	
Southern Live Oak	
Sugarberry	
Texas Ebony	
Texas Kidneywood	
Texas Wild Olive	
Wax Myrtle	

(Source: TPWD, 2017)

Mexfly-host plant species are widely grown by residents in all seven counties of the potential program area. The Texas citrus industry is almost totally located in the lower RGV, with about 85 percent of the acreage in Hidalgo County and the remainder in Willacy and Cameron Counties (Sauls, 2008).

Oranges, grapefruit, and other types of citrus are not the only commercial crops cultivated in the proposed Harlingen Mexfly program area. Land use statistics also indicate local production of cabbage, corn, cotton, dry beans, herbs, oats, onions, pecans, rice, rye, sod/grass seed/other hay/non-alfalfa, sorghum, soybeans, sugarbeets, sugarcane, sunflowers, triticale, watermelons, and wheat. Most of the acreage was planted with cotton. (See appendix B in this document for data source.)

Cameron County reports having 196 colonias, part of the more than 2,294 colonias in Texas (Cameron County, 2019; TOSS, 2017).[3] USDA APHIS assumes that multiple colonias occupy land in the area currently

[3] The term "colonia," in Spanish means a community or neighborhood. The Office of the Texas Secretary of State defines a "colonia" as an unincorporated residential area located in a county in which any part of that county is within 150 miles of the Texas-Mexico border. Colonias may lack some basic living necessities, such as potable water and sewer systems, electricity, paved roads, and safe and sanitary housing (TOSS, 2017).

proposed for the Harlingen Mexfly program.[4] For more information about land features in relation to the proposed Mexfly program areas, see table 2.

Table 2. Proposed Mexfly Program in Relation to Certain Land Sites.*

Designated Land Use	**Harlingen Program Area** (Distance Rounded Off to Nearest Tenth of a Mile)
City, State, Federal Lands	Within treatment core • 1 cemetery Within quarantine • Dunlap House (La Feria landmark) • At least 3 golf courses and country clubs • 1 city park • Lower Rio Grande National Wildlife Refuge (3 sections)
Country of Mexico	Nearest quarantine boundary, 2.5
National Register Historic Sites	1 property 0.5 miles outside the quarantine.
Nearest Airports	• Valley International, 3.7 • Brownsville South Padre Island International, 25.8 • McAllen Miller International, 33.7 • Corpus Christi International, 109.8 • Laredo International, 143.5 • Victoria Regional, 190.0 • San Antonio International, 235.8
Nearest Seaports	• Port of Harlingen, 6.5 • Port of Brownsville, 23.0 • Port of Isabel, 32.1
Nearest Tribal Lands	Kickapoo Reservation, 225.0
Colonias	None in treatment core. Some within the quarantine.
Nurseries, Garden Centers	None in treatment core. 5 within the quarantine.
Organic Production, Farmer's Markets	None in treatment core. 3 organic farms within the quarantine. 1 farmers market 0.1 miles outside the quarantine.
Schools, Academic Institutions	None in treatment core. More than 15 within the quarantine.

* See appendix B for data source.

Table 3 contains summary information about the seven Texas counties that comprise the potential Mexfly program area.

[4] This statement is based on historic information available to USDA APHIS and may not be an accurate description of the current number and location of colonias in the proposed Mexfly Program area.

Table 3. Demographic Information for Counties in the Potential RGV Mexfly Program Area.

County	Reported Population in 2010	2010 Land Area (sq mi)	Economy	Recreation	Principal Agriculture
Brooks	7,223	943.7	Oil, gas, hunting leases, agriculture	Hunting, fishing, Heritage Museum, Don Pedro Jamillo shrine, Fiesta del Campo in October	Cattle, hay, squash, watermelons, habañero peppers
Cameron	406,220	890.9	Agribusinesses, tourism, seafood processing, manufacturing, government/services	South Padre Island, fishing, hunting, water sports, historic sites, Palo Alto Visitors Center, state parks, wildlife refuge, recreational vehicle center	Cotton, grain sorghums, vegetables, sugar cane, wholesale nursery plants, cattle, aquaculture
Hidalgo	774,769	1570.9	Food processing and shipping, other agribusinesses, tourism, mineral operations	Winter resort, retirement area, fishing, hunting, Mexico gateway, historic and natural sites, museums, agricultural shows	Sugar cane, grain sorghum, citrus, vegetables, cotton, cattle
Starr	60,968	1223.2	Vegetable packing, other agribusiness, oil processing, tourism, government/services	Falcon Reservoir activities, hunting, access to Mexico, historic sites, grotto at Rio Grande City, Roma Fest in November	Cattle, vegetables, cotton, sorghum
Webb	250,304	3361.5	International trade, manufacturing, tourism, government/services, natural gas, oil	Tourist gateway to Mexico, hunting, fishing, Lake Casa Blanca Park, water recreation, historic sites, Museum of the Republic of the Rio Grande, Fort McIntosh, minor league baseball, hockey, Washington's Birthday celebration	Onions, melons, nursery crops, cattle, horses, goats, mesquite
Willacy	22,134	590.6	Agribusiness, oil, government/services	Fresh and saltwater fishing, hunting, tourism	Cotton, sorghum, corn, vegetables, sugar cane, cattle, horses, goats, hogs
Zapata	14,018	998.4	Natural gas, oil, ranching, Falcon Reservoir activities, government/services	Lake, state park, Dolores Hacienda site, rock hunting, hang gliding, wildlife hunting	Cattle, onions, cantaloupes, melons, goats

(Sources: TSHA, 2018b; USCB, 2020a, 2020b)

B. Water Resources

Ground water and surface water resources in the seven counties of the potential program area can be affected by weather events, such as hurricanes, drought, water impairment, and ongoing residential population expansion (Combs, 2014). Nearly all major Texas cities are vulnerable to flash-flooding or Gulf Coast hurricanes (FEMA, 2019). Nonetheless, due to a lack of precipitation six of the seven potential counties in the RGV Mexfly Program are currently experiencing abnormally dry to severe drought conditions (see figure 2) (Riganti, 2020). Records indicate that the climate of Texas is highly variable, and that droughts of notable duration and/or intensity could occur in the future. Given that history, as well as a projected decline in natural water resources, Texas plans to continue water conservation efforts, even in non-drought conditions. (TWDB, 2017). The potential Mexfly program area relies on ground and surface water for most drinking and irrigation needs.

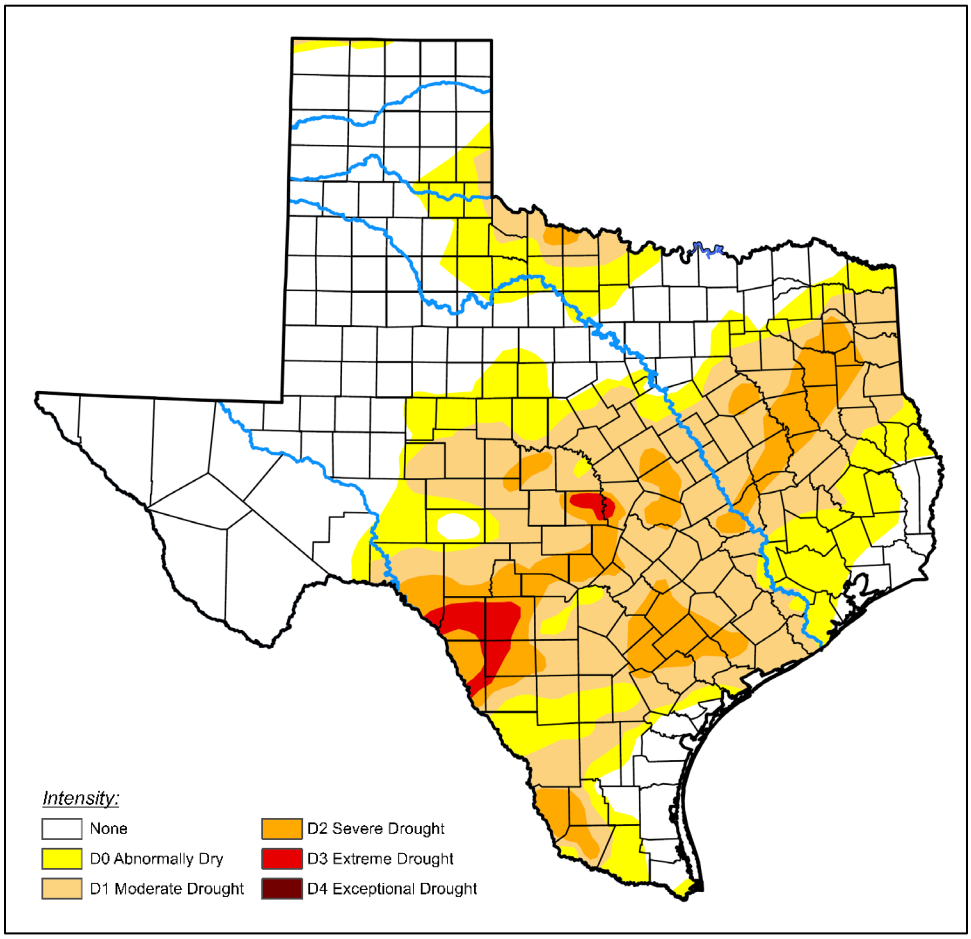

Figure 2. Drought conditions in Texas as of January 14, 2020. (Source: Riganti, 2020)

There are two major natural river systems in the RGV, the Rio Grande—which defines much of the international boundary between the United States and Mexico—and the Arroyo Colorado. Five of the seven counties are bordered by the Rio Grande. The Arroyo Colorado is an ancient channel of the Rio Grande, extending from southern Hidalgo County, across Cameron County, and into Willacy County, Texas; portions of it are impaired, as defined under section 303(d) of the Clean Water Act. The U.S. Environmental Protection Agency (EPA) defines impaired waters as "waterways that are too polluted or otherwise degraded to meet the water quality standards set by States, territories or authorized tribes in the U.S." (EPA, 2018). The tidal segment of the Arroyo Colorado that connects to the Gulf of Mexico is defined as a coastal natural resource area and a coastal wetland under the Coastal Coordination Act (TAMU, 2011). The lower RGV relies on ground and surface water for most drinking and irrigation needs.

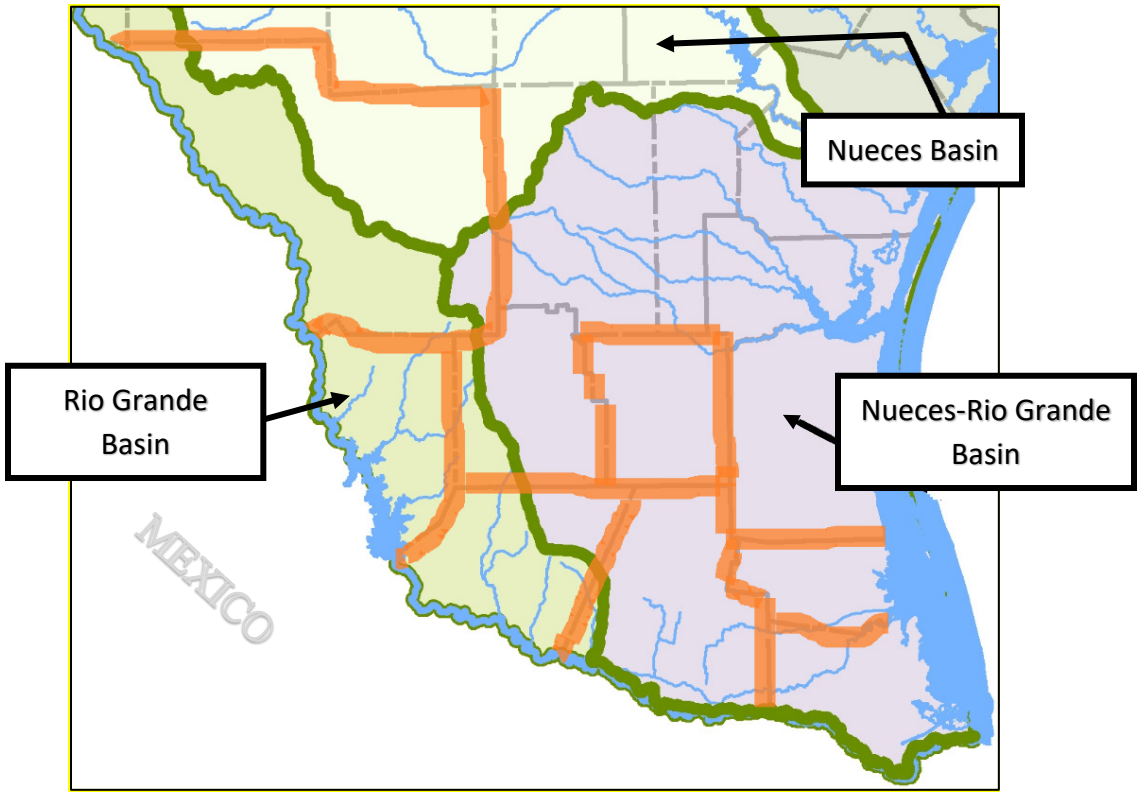

Figure 3. Major water basins in the potential Mexfly program area. The seven Texas counties in the potential program area are outlined in orange. (Source: TCEQ, 2017)

The seven counties in the potential RGV Mexfly Program area are associated with three Texas-designated water basins. Brook, Cameron, Hidalgo, Starr, and Willacy Counties occupy part of the Nueces-Rio Grande Coastal Basin. Figure 3 shows how the Nueces-Rio Grande Coastal Basin is bounded on the north by the Nueces River Basin (Webb County), on the south and west by the Rio Grande Basin (Hidalgo, Starr,

Webb and Zapata Counties), and on the east by bays and other outlets to the Gulf of Mexico (TCEQ, 2017). Table 4 shows the distance between the proposed Harlingen Mexfly program and water resources of potential concern.

Table 4. Proposed Mexfly Program in Relation to Certain Water Resources.*

Type of Resource	Harlingen Program Area (Distance Rounded Off to Nearest Tenth of a Mile)
Gulf of Mexico	From nearest quarantine boundary, 23.0
Rio Grande	From nearest quarantine boundary, 2.5
Watersheds	Within treatment core and quarantine • Line V Canal-Arroyo Colorado, HUC 12 ID 121102080700 Within quarantine • La Feria Main Canal-Arroyo Colorado, HUC 12 ID 121102080600
Wetlands	Within treatment core and quarantine • Freshwater emergent • Freshwater forested/shrub • Freshwater pond • Lake • Riverine
Waterbodies	Within treatment core and quarantine • Reba Bass Lake • Wilson Canal • Evans Canal • 4 unnamed ponds Within quarantine • Arroyo Colorado • La Feria Reservoir • Adams Garden Reservoir • City of Harlingen Reservoir • 6 unnamed ponds
Impaired Waters	Arroyo Colorado above tidal, ID TX-2202_03

* See appendix B for data source.

In addition to reduced or polluted water resources, the spread of invasive aquatic weeds, international treaty issues, and increased demand also threaten long-term water availability in south Texas (LRGVDC, 2018). Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties draw the majority of their water from the Rio Grande, via the Amistad-Falcon Reservoir system, which is shared with Mexico. The waters of the Middle and Lower Rio Grande are managed by the International Boundary Waters Commission and Texas' Rio Grande Watermaster. Studies show aquifers

in Mexico's Rio Grande Watershed are overextended; growth on both sides of the border will continue to put pressure on the capabilities of both surface and ground water. Brooks County receives ground water supplies from the Gulf Coast Aquifer; no foreseeable water shortages are expected for this county (TWDB, 2016a, 2016b).

IV. Potential Environmental Consequences

This EA analyzes the potential environmental consequences of alternatives considered for Mexfly control and eradication. The site-specific characteristics of the proposed Harlingen Mexfly program area and the potential 7-county RGV Mexfly 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 Mexfly 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 Texas. It is reasonable to expect that Mexfly populations would continue to expand in number 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 Mexfly by preventing the transportation of host plant materials beyond the quarantine boundary. As in the no action alternative, USDA APHIS expects a resident Mexfly population would persist within

the quarantine boundary. Any failure in quarantine actions could lead to Mexfly 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 Mexflies;
- host removal;
- eradication chemical applications;
- mass trapping using food bait as an attractant;
- SIT.

Implementation of "no Federal action" or 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.

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 bait, and sticky panels approved for trapping Mexflies 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 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.

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 the environmental fate for a particular pesticide.

Exposure to program pesticides can vary, depending upon the pesticide and the use pattern. Mexfly eradication programs in Texas may employ ground-based targeted applications of spinosad with protein bait, and MB (as a fumigant). Workers who mix, load, and apply pesticides, and members of the public who live in or visit a Mexfly 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).

Spinosad bait applications in Texas occur at 7- to 10-day intervals for three Mexfly life cycles. 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 Mexfly as readily, or as effectively, as the preferred alternative. Implementation of alternatives A and/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

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 on, or eligible for inclusion on, the National Register of Historic Places (36 CFR parts 63 and 800). The visual resources for the listed counties in Texas include any buildings, street patterns and road characteristics, viewsheds, and vistas. The visual resources also include the rangeland and pastures serving as habitat for animals. In general, these counties are of minimal recreational or scenic interest except for areas directly along the Rio Grande River. Hunting occurs in some areas. Fruit fly eradication program activities do not use heavy equipment that creates noise levels requiring auditory protection. There will not be any ground disturbance. Any visual, atmospheric, or auditory effects during application of program chemicals will be limited in duration, intensity, and area. USDA APHIS' proposed program activities will not alter, change (restore or rehabilitate), modify, relocate, abandon, or destroy any historic buildings, edifices, or nearby infrastructure, therefore, USDA APHIS program activities will not directly or indirectly alter characteristics of a historic place that qualify it for inclusion on the National Register.

The SHPO concurred with the USDA APHIS findings that historic places are not affected by fruit fly program activities in the Rio Grande Valley (2014, 2016, 2017 and 2018). USDA APHIS considers all of the federally listed historic places within each county along with the potential for expansion of the quarantine area as additional Mexfly detections occur. USDA APHIS lists of these historic places are part of the program's consultations with the SHPO.

Currently, the seven counties have a number of historic places listed on the National Register: one in Brooks County, 33 in Cameron County, 22 in Hidalgo County, nine in Starr County, nine in Webb County, two in Willacy County, and six in Zapata County (THC, 2020). The Texas Historic Commission Atlas also lists two Historic Texas Cemeteries in Brooks County, 17 cemeteries in Cameron County, 14 in Hidalgo County,

two in Starr County, three in Webb County, two in Willacy County, and one in Zapata County (THC, 2020). USDA APHIS does not consider the cemeteries further because these grassy and open landscapes typically do not include fruit fly fruit-bearing bushes or tree hosts. Several National Register listings are historic battlefields and/or ranches that have similar non-Mexfly-host landscapes. The remaining historic places generally consist of a variety of buildings that may have surrounding landscaping with host plants (e.g., courthouses, schools, historic districts, and period dwellings) (THC, 2020).

Cameron County reported six new listings[5] on the National Register since USDA APHIS's last consultation with the SHPO (THC, 2020). These sites would not be affected based on their similarity to historic places where the SHPO previously concurred with USDA APHIS' no effect determination. USDA APHIS will notify the SHPO of our no effect determination for these additional sites and consult as needed.

In general, USDA APHIS' fruit fly eradication programs are compatible with the preservation of historic sites because USDA APHIS discretely integrates control activities into the site; the proposed RGV Mexfly Program activities will 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 also can modify normal program activities at historically significant locations to reduce pesticide release, if necessary. USDA APHIS will not conduct aerial chemical applications over the RGV Mexfly Program area; spraying will be ground-based, directly targeting foliage, which may include hand-spraying with a backpack sprayer. Surveillance trapping and fruit stripping by hand may occur. If USDA APHIS discovers any archaeological resources, it will notify the appropriate individuals.

Federal agencies identify and address the disproportionately high and adverse human health or environmental effects 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, Tribal interactions, and historical and culturally sensitive sites in the program area.

[5] The six new listed historic places in Cameron County are: (1) Baxter Building (Reference # 2100003420; listed on 3/6/2019), (2) Brownsville City Hall & Market House (2100004474; 9/30/20019), (3) Brownsville Freight Depot & Warehouse District (2100002266; 3/26/2018), (4) Cleta Friedman & Harry W. Hollowell House (2100003533; 1/12/2019), (5) Fernandez & Laiseca Building (2100002433; 5/11/2018), and (6) Central Brownsville Historic District (2100004008; 5/31/2019).

Residents, farmers, and fruit fly program employees are likely to be in the identified counties. Under all of the alternatives, humans will vary in the extent of their exposure to USDA APHIS program activities. Residents include but are not limited to adults and children living in colonias. Exposure to fruit fly program activities is unlikely for most residents during the course of their normal activities. Increased risk of exposure occurs when humans are in areas where surveillance trapping occurs, such as when children play outside of buildings or adults exercise outdoors near the traps. Fruit fly traps generally are not accessible to children or other residents because they are placed above the ground at a height that exceeds the unaided reach of most adults. In general, farmers are unlikely to be exposed to applied products because of the methods of application and rapid decomposition of program chemicals (USDA APHIS, 2018a). There is minimal exposure to program chemicals for USDA APHIS and cooperating Texas employees during the course of their work duties because of the required use of personal protective equipment (USDA APHIS, 2018a).

"Colonia" is a term describing subdivisions where developers divide the land into small lots and offer housing to low-income families. Purchase of these lots occurs through a contract for a deed with a down payment and monthly payments. The title for the house is issued only after the homeowners make the final payment (TDHCA, 2018). Residents build the housing in these locations over time as they can afford materials. They typically lack potable water, adequate sewage systems, drainage, utilities, and paved roads (TDHCA, 2018). For example, approximately 760 colonias lacking these basic amenities and serving more than 100,000 residents were identified in Cameron, Hidalgo, Starr and Webb Counties in 2014 (T0SS, 2014). Reportedly, the poverty rate in these counties is more than twice the Texas poverty rate in recent years (TDHCA, 2020).

The demographics for each county in the potential program area indicate that the overall population has a large proportion of Hispanics, who generally have graduated high school and are not likely to speak English at home (see table 5). Table 5 also shows the percentage of high school graduates in each county is almost 20 percent lower than the state (USCB, 2020a, 2020b). In general, the population of Region 11 as identified by the Texas Department of Housing and Community Affairs in 2019 indicates that 91.8 percent identifies as White and 91.0 percent identifies as Hispanic or Latino: these are the highest reported figures in the state. Conversely, 7.6 percent of this region classifies as White Not Hispanic which is the lowest percentage in the state. This region exhibits the lowest population percentage of individuals identifying as Black or African American (0.5 percent), American Indian and Alaska Native (0.3 percent), Asian (0.7 percent), and Native Hawaiian (0.2 percent) (TDHCA, 2020).

Table 5. Select Demographics in the Program Area.

Location	Percent language other than English at home	Percent high school graduate or higher	Percent below poverty level[2]
State of Texas	35.5	83.2	14.9
Brooks County	62.4	70.1	31.0
Cameron County	73.1	67.2	27.9
Hidalgo County	83.4	64.5	30.0
Starr County	95.3	51.5	33.2
Webb County	90.4	67.3	25.7
Willacy County	64.6	65.9	35.0
Zapata County	91.1	60.0	32.1
County averages	560.3/7 = 80.0	446.5/7 = 63.7	214.9/7 = 30.7

[1] Based on U.S. Census Bureau data Population estimates, July 1, 2019. or 2014-2018 estimates for other categories, last accessed January 9, 2020 (Source: USCB, 2020a, 2020b)
[2] Based on the U.S Census Bureau poverty definition that uses monetary income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps). If the total income for a family is less than the threshold, then that family (and every individual in it) is considered in poverty. (Source: USCB, 2019)

To meet the needs of these low-income and minority groups, USDA APHIS will provide advance notice of program activities and potential exposure hazards to members of colonias, other non-English-speaking populations, and people in areas that generally lack access to news media. Providing notice ensures people avoid exposure during bait trap placement and maintenance. Any exposure to applied products by low-income or minority individuals is negligible based on the program's application methods and the product formulations (USDA APHIS, 2018a).

Federal agencies must ensure their programs and activities are accessible to persons with limited English proficiency as directed by EO 13166, "Improving Access to Services for Persons with Limited English Proficiency." To meet this need, USDA APHIS conducts outreach to English-speaking and Spanish-speaking communities through a variety of public notices and informational brochures about fruit fly eradication program activities. USDA APHIS invites all stakeholders, including colonia ombudspersons and residents of colonias, to any public meetings. If possible within budgetary constraints, USDA APHIS may provide a Spanish translation of the FONSI to program and Texas representatives for their use when working with the public.

Compliance with EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks" requires Federal agencies to consider a proposed action's potential effects on children. 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, the placement of these traps is likely to be far above their reach. Residential areas, schools, outdoor play areas, and the roads children routinely use for transit among these sites are located throughout the proposed program's counties. Generally, zoning restrictions ensure separation of agricultural areas from residential areas. This situation means children (as well as other residents) are unlikely to see or be aware of program activities including pesticide use.

The city of Harlingen appears to have more than 19 elementary schools and three recreational parks within the quarantine zone (see appendix B for data source). USDA APHIS finds there are more than 300 additional elementary schools in the potential program area (TSG, 2019). Where possible, USDA APHIS will not apply baits on school property. When pesticide applications are essential, USDA APHIS would use either a bait trap or backpack sprayer. Any exposure of children to applied products is negligible based on the program's application methods and the product formulations. The proposed program does not pose any highly disproportionate adverse effects to children, minority, or low-income populations because (1) these individuals are unlikely to be present when USDA APHIS applies treatments or maintains bait traps, and (2) exposure to applied pesticides is 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. 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.

USDA APHIS program representatives discussed fruit fly eradication efforts (among other issues) with the Tribal Administrator for the Kickapoo Traditional Tribe of Texas in 2013. At that time, the Texas Kickapoo Indian Reservation in Maverick County included 125 acres of trust land along the Rio Grande, an additional 13,000 acres in Maverick County, and an interest in a 9,000 acre cattle ranch in Spofford, Texas. While conducting scoping for an EIS supporting the Cattle Fever Tick Eradication Program-Tick Control Barrier, USDA APHIS contacts with the Tonkawa Tribe of Oklahoma indicated their interests extend only to the disposition of artifacts that may be inadvertently uncovered (USDA APHIS, 2013b).

The proposed action will not disturb the ground, so program implementation is unlikely to affect Native American sites or artifacts. If USDA APHIS discovers any archaeological resources, USDA APHIS will

notify the appropriate individuals. If there is an ongoing presence of fruit flies that leads to the expansion of the program activities onto Tribal lands, program officials will initiate consultation with the governing Tribal authorities and local Tribal Historic Preservation Officers before taking further action. USDA APHIS will continue to work closely with the County Historical Commission Chairs in the various counties and Tribal entities including The Kickapoo Traditional Tribe of Texas and the Tonkawa Tribe of Indians of Oklahoma.

USDA APHIS considered the potential environmental impacts of implementing the alternatives discussed in chapter II on historical and culturally sensitive sites, minority and/or low-income communities, children, and Tribal interests in and near the program area. 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 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 prescribed ground surface-based chemical applications.

3. Nontarget Species

Potential environmental impacts of alternative A (the no action alternative) or alternative B (quarantine/commodity certification) on nontarget species could include loss of animal and plant life and habitat from unregulated pesticide use by the public, or from Mexfly host damage. Under the preferred alternative, the principal concerns for nontarget species, including threatened and endangered species, relate to potential harm from the use of spinosad. Program use of SIT is expected to have no adverse effect on nontarget species.

Paralleling human health risk, the risk to nontarget species is related to spinosad's fate in the environment, its toxicity to the nontarget species, and its exposure to nontarget species.

Spinosad is highly toxic to invertebrates, although the likelihood of exposure (and thus, impacts) varies with the use pattern. In general, a well-coordinated 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 and the quarantine/commodity certification alternative 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.

For the fumigant methyl bromide, the methods for its application are designed to protect nontarget species by preventing their exposure to the pesticide (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).

Conservation areas in the lower RGV provide important habitat for a wide variety of wildlife that cannot be seen anywhere else in the United States. The lower RGV contains numerous protected wetlands, parkland and refuges; the Padre Island National Seashore, the Laguna Atascosa National Wildlife Refuge, the Santa Ana National Wildlife Refuge, and the Lower RGV National Wildlife Refuge are within the 7-county Mexfly program area. USDA APHIS' Mexfly programs are designed to prevent the introduction of program chemicals into nontargeted areas. 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. Aerial SIT and surveillance trapping will continue, and fruit stripping by hand will be undertaken if Mexfly detections occur at such locations.

a. Migratory Birds

Unless permitted by regulation, the Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703–712) provides that it is unlawful 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); this promotes the conservation of migratory bird populations. On August 2, 2012, an MOU between USDA and FWS was signed to facilitate the implementation of this EO.

More than 500 species of birds have been documented in the lower RGV (FWS, undated; Cornell Lab of Ornithology, 2018). The lower RGV is an important migration corridor which provides suitable

habitat for many bird species. (See table 6 for a list of migratory birds of conservation concern in Brooks, Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties.) Birds of conservation concern are bird species, subspecies, and populations of migratory nongame birds which, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act.

USDA APHIS evaluated the proposed Mexfly program in terms of potential impact on migratory avian species. Spinosad acute and chronic toxicity to birds is low (USDA APHIS, 2014). USDA APHIS evaluated the proposed Mexfly program in terms of potential impact on migratory avian species in the program area. The targeted application of the spinosad baits to Mexfly host plants within 500 meters of Mexfly detections are usually in residential areas; the localized and direct application of spinosad baits to host plants would not result in any impacts to food of birds. Birds would not be exposed to MB treatments.

Table 6. Migratory Birds of Conservation Concern in Brooks, Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties.

Common Name	Scientific Name	Breeding Season
Altamira oriole	*Icterus gularis*	April 1–July 15
American golden-plover	*Pluvialis dominica*	Breeds elsewhere
American oystercatcher	*Haematopus palliatus*	April 15–August 31
Audubon's oriole	*Icterus graduacauda*	April 15–September 20
Audubon's shearwater	*Puffinus lherminieri*	Breeds elsewhere
Bald eagle*	*Haliaeetus leucocephalus*	October 15–July 31
Band-rumped storm-petrel	*Oceanodroma castro*	Breeds elsewhere
Black rail	*Laterallus jamaicensis*	March 1–September 15
Black skimmer	*Rynchops niger*	May 20–September 15
Black-legged kittiwake	*Rissa tridactyla*	Breeds elsewhere
Black skimmer	*Rhynchops niger*	May 20–September 15
Bonaparte's gull	*Chroicocephalus philadelphia*	Breeds elsewhere
Botteri's sparrow	*Aimophila botterii*	June 15–September 15
Bridled tern	*Onychoprion anaethetus*	Breeds elsewhere
Brown pelican	*Pelecanus occidentalis*	January 15–September 30
Buff-breasted sandpiper	*Calidris subruficollis*	Breeds elsewhere
Burrowing owl	*Athene cunicularia*	March 15–August 31
Cassin's sparrow	*Aimophila cassinii*	August 1–October 10
Chestnut-collared longspur	*Calcarius ornatus*	Breeds elsewhere
Clapper rail	*Rallus crepitans*	April 10–October 31

Common Name	Scientific Name	Breeding Season
Common loon	*Gavia immer*	Breeds elsewhere
Common tern	*Sterna hirundo*	Breeds elsewhere
Cory's shearwater	*Calonectris diomedea*	Breeds elsewhere
Curve-billed thrasher	*Toxostoma curvirostre*	February 15–August 15
Double-crested cormorant	*Phalacrocorax auritus*	April 20–August 31
Elf owl	*Micrathene whitneyi*	May 1–July 15
Golden eagle*	*Aquila chrysaetos*	January 1–August 31
Great black-backed gull	*Larus marinus*	Breeds elsewhere
Great shearwater	*Puffinus gravis*	Breeds elsewhere
Gull-billed tern	*Gelochelidon nilotica*	May 1–July 31
Herring gull	*Larus argentatus*	April 20–August 31
Hooded oriole	*Icterus cucullatus*	April 20–August 15
Hudsonian godwit	*Limosa haemastica*	Breeds elsewhere
King rail	*Rallus elegans*	May 1–September 5
Lark bunting	*Calamospiza melanocorys*	Breeds elsewhere
Le Conte's sparrow	*Ammodramus leconteii*	Breeds elsewhere
Lesser yellowlegs	*Tringa flavipes*	Breeds elsewhere
Long-billed curlew	*Numenius americanus*	Breeds elsewhere
Long-tailed duck	*Clangula hyemalis*	Breeds elsewhere
Magnificent frigatebird	*Fregata magnificens*	Breeds elsewhere
Manx shearwater	*Puffinus puffinus*	April 15–October 31
Marbled godwit	*Limosa fedoa*	Breeds elsewhere
Mountain plover	*Charadrius montanus*	Breeds elsewhere
Nelson's sparrow	*Ammodramus nelsoni*	Breeds elsewhere
Northern gannet	*Morus bassanus*	Breeds elsewhere
Parasitic jaeger	*Stercorarius parasiticus*	Breeds elsewhere
Pomarine jaeger	*Stercorarius pomarinus*	Breeds elsewhere
Prothonotary warbler	*Protonotaria citrea*	April 1–July 31
Red-breasted merganser	*Mergus serrator*	Breeds elsewhere
Reddish egret	*Egretta rufescens*	March 1–September 15
Red-breasted merganser	*Mergus serrator*	Breeds elsewhere
Red-necked phalarope	*Phalaropus lobatus*	Breeds elsewhere
Ring-billed gull	*Larus delawarensis*	Breeds elsewhere
Royal tern	*Thalasseus maximus*	April 15–August 31

Common Name	Scientific Name	Breeding Season
Seaside sparrow	*Ammodramus maritimus*	May 10–August 20
Semipalmated sandpiper	*Calidris pusilla*	Breeds elsewhere
Short-billed dowitcher	*Limnodromus griseus*	Breeds elsewhere
Sooty tern	*Onychoprion fuscatus*	March 10–July 31
Sprague's pipit	*Anthus spragueii*	Breeds elsewhere
Surf scoter	*Melanitta perspicillata*	Breeds elsewhere
Swallow-tailed kite	*Elanoides forficatus*	March 10–June 30
Varied bunting	*Passerina versicolor*	April 25–September 30
Whimbrel	*Numenius phaeopus*	Breeds elsewhere
White-winged scoter	*Melanitta fusca*	Breeds elsewhere
Willet	*Tringa semipalmata*	April 20–August 5
Wilson's plover	*Charadrius wilsonia*	April 1–August 20

*Also protected under the Bald and Golden Eagle Protection Act.

(Source: FWS, 2018)

In a July 2015 concurrence letter for Endangered Species Act (ESA) consultation, FWS made recommendations regarding the protection of migratory birds (FWS, 2015). FWS recommended that activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individual birds, nests, or eggs. If project activities must be conducted during this time, FWS recommends surveying for nests prior to commencing work. If a nest is found, if possible, FWS recommends a buffer of vegetation (≥ 50 feet) remain around the nest until young have fledged or the nest is abandoned.

b. Endangered Species Act

Section 7 of 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.

There are 19 federally listed species in Brooks, Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties: ocelot (*Leopardus pardalis*), Gulf Coast jaguarundi (*Felis yagouaroundi*), West Indian manatee (*Trichechus manatus*), northern aplomado falcon (*Falco femoralis*

septentrionalis), least tern, Interior population (*Sterna antillarum*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), Texas hornshell (*Popenaias popei*), ashy dogweed (*Thermophylla tephroleuca*), South Texas ambrosia (*Ambrosia cheiranthifolia*), Texas ayenia (*Ayenia limitaris*), Walker's manioc (*Manihot walkerae*), star cactus (*Astrophytum asterias*), and Zapata bladderpod (*Lesquerella thamnophila*) (FWS, 2020).

USDA APHIS prepared a programmatic biological assessment (BA) for program activities in Cameron, Hidalgo, and Willacy Counties that was submitted to FWS in 2008, and received a concurrence letter dated July 31, 2008. Since then, this programmatic consultation has been updated yearly to include any new listed species or critical habitat in the program counties. In 2016, USDA APHIS submitted a BA to FWS to add Webb and Zapata Counties to the programmatic consultation; Brooks and Starr Counties were added in 2017.

USDA APHIS coordinates with FWS, Texas Coastal Ecological Services Field Office in Houston, Texas, and the Alamo Ecological Services sub-office before implementing Mexfly program activities. FWS reviews maps of the quarantined area, and notifies USDA APHIS if listed species are present in the program area. If listed species are present, USDA APHIS implements protection measures for those species, as described in the most recent programmatic BA (USDA APHIS, 2018h).

Should the program area expand, or further outbreaks be detected, USDA APHIS, in cooperation with TDA, will consult with FWS and other appropriate agencies, 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 a more detailed consideration of the program pesticides' environmental fates.)

4. Environmental Qualilty

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, 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 spinosad and MB 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 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 RGV Mexfly Program is not expected to result in impacts to environmental quality beyond those described for the chemicals listed below (USDA APHIS, 2018g).

- **Spinosad** is not considered mobile in soil as 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).

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

Urban and agricultural runoff may flow directly into local waters, picking up trash, dirt, chemicals, and other contaminants along the way. If treatment is indicated in close proximity to a body of water where pesticides might be directly discharged into the water, TDA 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 Mexfly 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 a 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 Mexfly 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 Mexfly program was examined for potential cumulative environmental impacts. The lower RGV is an area of concern for pesticide exposure from the use of pesticides on adjacent fields, in homes or gardens in the rural agricultural communities, and the urban communities in close proximity to agriculture (Belson et al., 2003; Donnelly and Cizmas, 2007).

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 potential program area (e.g., cattle fever tick and bollworm eradication 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 Mexfly programs could potentially merge into one larger program area. When Mexfly eradication programs are combined with trapping and eradication actions across Texas counties, USDA APHIS expects a beneficial cumulative impact on the environment: from reduced Mexfly populations causing damage to fruit, and from overall fewer chemical treatments.

Trapping and surveys for Mexfly continue under the Texas State fruit fly detection and monitoring program; sterile Mexflies are released over high-risk regions as a preventive measure. No adverse cumulative impacts are expected to result from these actions.

Program pesticides approved for use against Mexfly are also prescribed treatments for other Mexfly programs. At the time of preparation of this document, there are no other Mexfly quarantines in the 7-county potential program area.[6] The proposed Harlingen quarantine lies approximately 135 miles from the December 2019 and January 2020 Mexfly detections in Webb County (personal communication, D. Smith, 2020-January-20). No eradication treatment cores overlap one another. Use of program pesticides in a Mexfly program that overlaps with another fruit fly program are monitored and adjusted, where necessary, to minimize environmental impacts. During 2014, for example, infestations of West Indian fruit fly (*Anastrepha obliqua* (Macquart)) were detected in areas being treated for Mexfly. As the eradication program protocols for West Indian fruit fly were the same as those in use for Mexfly, no additional chemical treatments were considered necessary. Due to the passage of time and the prevailing weather conditions in southern Texas during 2019 and early 2020, no chemical residues are believed to remain from previous Mexfly programs that could result in additive or synergistic chemical effects with the proposed program's chemical applications.

[6] Mexfly detections reaching quarantine levels have since been reported in Hidalgo and Willacy Counties, as well as the Brownsville region of Cameron County – program response to those infestations could occur under implementation of the preferred alternative discussed in this document (S. Usnick, personal communication, 2020-January-22).

No significant environmental impacts are expected to result from proper implementation of the proposed Mexfly eradication and control program. The differences in pesticide mechanisms of toxic action, targets for pesticide application, affected species and resources, and application timing between the RGV Mexfly Program and other pest control programs in Texas are unlikely to create significant cumulative impacts in the human environment. No synergistic or cumulative impacts from pesticide applications are expected with the following active control programs in Texas (TDA, 2020; TBWEF, 2019):

- **Asian citrus psyllid—**Quarantine over the entire State; chemical applications in the citrus-growing zone of Texas (Brooks, Cameron, Hidalgo, Jim Hogg, Kenedy, Starr, Willacy, and Zapata Counties)

- **Boll weevil—**Quarantine and chemical applications in 10 counties of southern Texas, including all 7 counties in the potential Mexfly program area

- **Exotic fruit fly species—**In addition to the proposed Harlingen Mexfly Quarantine, multiple proposed Mexfly quarantines for different regions of Cameron, Hidalgo and Willacy Counties, based on January 2020 detections; ongoing Mexfly delimitation with bait station application at detection sites in Webb County

- **Red imported fire ant—**Quarantine over much of the State, including all counties in the potential Mexfly program area except Zapata County

Care should be taken, however, when multiple pest species in the same area are targeted for treatment using the same chemical. To avoid additive chemical impacts, Mexfly program treatment schedules are adjusted in locations where another State or USDA APHIS program may have scheduled similar treatments. Spinosad, for example, has other labeled food and non-food uses; it is currently used in a variety of pest control efforts, including the control of fire ants, beetles, caterpillars, termites, and thrips (USDA APHIS, 2014; Merchant, 2004). Implementation of a governmental Mexfly eradication program could lead to an increase in spinosad use, and the possible overlap of USDA APHIS and non-USDA APHIS program treatments.

MB is a regulatory treatment that may be used in order to move Mexfly-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; mills, ships,

and transportation vehicles (Chin, 2003). USDA APHIS determined that use of MB as a fruit fly quarantine treatment poses negligible potential for cumulative impacts to the environment. For information on potential depletion of the ozone layer relating 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).

It is uncertain how pesticides may be used by private entities in the Mexfly program area. In terms of Federal and State program activities, 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 Mexfly cooperative eradication program.

Should the Harlingen Mexfly infestation expand or quarantine-triggering levels of Mexfly detection be made elsewhere in the 7-county potential program area, 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 RGV Mexfly 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

State Historic Preservation Officer
Texas Historical Commission
P.O. Box 12276
Austin, TX 78711

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Plant Health Programs–Pest Management
4700 River Road, Unit 26
Riverdale, MD 20737

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

U.S. Fish and Wildlife Service
Texas Coastal Ecological Service Field Office
3325 Green Jay Road
Alamo, Texas 78516

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TCEQ—See Texas Commission on Environmental Quality

TDA—See Texas Department of Agriculture

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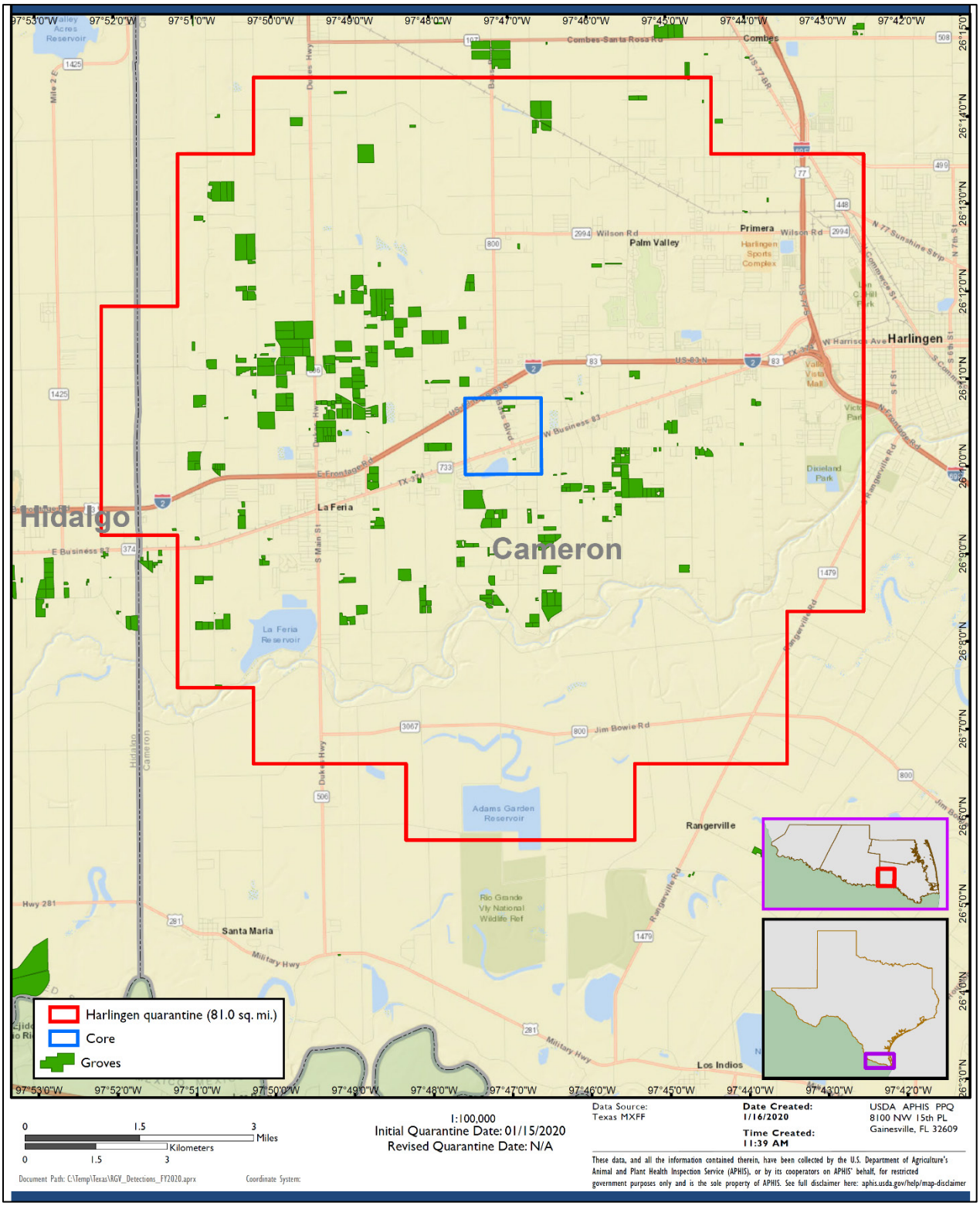
USCB—See U.S. Census Bureau

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

Vigness, D.M., and Odintz, M., 2015. Texas almanac: Rio Grande Valley. Handbook of Texas online. Published by the Texas State Historical Association. [Online: Accessed on 2019-03-26 at http://www.tshaonline.org/handbook/online/articles/ryr01].

Appendix A. Rio Grande Valley Mexfly Cooperative Eradication Program as of January 15, 2020



Mexfly quarantine boundary and treatment core proposed for Harlingen, Texas.
Source: USDA APHIS

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

USDA APHIS accessed the following resources January 17-19, 2020.

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
- **Colonias:** https://www.texasattorneygeneral.gov/divisions/colonias
- **Crop Data:** http://nassgeodata.gmu.edu/CropScape/
- **Farmers Markets:** https://www.ams.usda.gov/local-food-directories/farmersmarkets
- **Historic Sites:** https://www.nps.gov/subjects/nationalregister/index.htm
- **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.fs.fed.us/spf/tribalrelations/

- **USFWS (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

- **Waterbody Quality Repor**t: https://ofmpub.epa.gov/waters10/attains_waterbody.control?p_list_id=TX-2202_03&p_report_type=T&p_cycle=2010

- **Wetlands:** http://nassgeodata.gmu.edu/CropScape