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Mexican Fruit Fly Cooperative Eradication Program

Lower Rio Grande Valley, Texas

Environmental Assessment
February 2014

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Table of Contents

I. Need for the Proposal

The Mexican fruit fly (Mexfly), *Anastrepha ludens* (Loew), is native to central Mexico and is a major pest of agriculture throughout many parts of the Western Hemisphere. Commercial and homegrown produce attacked by the pest 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. Adult Mexflies are long lived (up to 11 months), highly fertile, strong fliers, and highly mobile (UFL, 2012). Because of its wide host range (over 40 species of fruits) and its potential for damage, a permanent infestation of Mexfly would be disastrous to agricultural production in the United States. In the past, eradication programs have been implemented successfully to prevent the pest from becoming permanently established on the U.S. mainland.

In January 2014 a new Mexfly outbreak was confirmed in the Lower Rio Grande Valley (LRGV) region of the State of Texas (APHIS**,** 2014a). Between January 6 and January 16, a total of five Mexflies (3 adult male, 1 immature male, 1 immature female) were detected on citrus hosts in a residential area of Hidalgo County in the vicinity of Weslaco, Texas. Another immature female was found in the same area on January 18, 2014 (APHIS, 2014b).

As a result of these six finds the Weslaco Quarantined Area[1] has been established: 107.3 square miles that contain commercial agriculture, undeveloped land, and properties in a mixed residential/urban area of Hidalgo County, extending westward toward the city of Alamo and eastward to within 2.5 miles of the border shared with Cameron County, Texas (see appendix A). There are approximately 1,729 acres of commercial citrus groves inside the Weslaco program area; 109 of these acres lie within 4 core areas of the quarantine (APHIS, 2014a).

On January 21, 2014, a seventh non-sterile Mexfly, this time a single mated female, was trapped in a dooryard orange tree in the vicinity of Lyford, Willacy County, Texas, about 17 miles from the Weslaco Quarantined Area (APHIS, 2014c). The mated female Mexfly has resulted in the establishment of the Lyford Quarantined Area: approximately 81 square miles with 1 core area centering on the detection site. There are 27.5 acres of commercial citrus inside the Lyford program area, but none of these acres are inside the core area (APHIS, 2014d). See the maps in appendices A and B for the location of LRGV fly detections, core areas, and quarantine boundaries. Delimitation surveys continue around each of the Weslaco and Lyford detection sites.

[1] For the purposes of this document, and 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.

The fifth Hidalgo County Mexfly detection resulted in the involvement of U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) in the quarantine and control program for this outbreak. APHIS conducted an environmental assessment for the program in the Weslaco Quarantined Area shortly before the mated female Mexfly detection was made in Willacy County. Because of the evidence of expanding infestation, the potential environmental impacts of a Mexfly program in the adjacent counties of Hidalgo, Willacy and Cameron forming the southernmost region of Texas – the major citrus producing areas in the LRGV – will be considered in this environmental assessment (EA).

Mexfly outbreaks have occurred repeatedly in southern Texas due to the proximity of the infested areas to Mexico. In 2013, an expanding Mexfly infestation resulted in a coordinated pest control response over Hidalgo, Cameron, and Willacy Counties. The tri-county program was successful and the LRGV Mexfly quarantine was lifted on September 16, 2013 (APHIS, 2013; TDA, n.d.). The detections in January 2014 identified a new Mexfly infestation in Texas; at the time of preparation of this EA there are no Mexfly quarantines elsewhere in the United States.

The State of Texas has posted Mexfly intrastate quarantine information at https://www.texasagriculture.gov/RegulatoryPrograms/PlantQuality/PestandDiseaseAlerts/MexicanFruitFly.aspx. APHIS is initiating a parallel interstate quarantine. Following Mexfly program protocols for eradication in Texas, releases of sterile Mexflies continue year-round at a rate of 400 flies per acre in designated at-risk counties. Program officials have approved the following emergency actions:

- Application of the organic insecticide, spinosad, in core areas as a ground-based treatment to Mexfly host plants in a 500-meter radius around the affected properties;
- Notification to impacted property owners and citrus industry of the quarantine boundaries and requirements;
- Juicing or fumigation of all commercial citrus inside each of the core areas;
- Delimitation trapping in host species located outside Mexfly detection sites; and
- Surveys in order to detect larval infestations, and to plan chemical treatments.

Mexfly has been introduced into the United States repeatedly since its first detection in Texas in 1927 (NAPIS, n.d.). The current Mexfly infestation in the LRGV represents a major threat to the agriculture and environment of Texas and other U.S. mainland States. APHIS and the Texas Department of Agriculture (TDA) are proposing a cooperative program to eradicate the Mexfly infestation and to eliminate that threat. APHIS has cooperated with State departments of agriculture on a number of successful Mexfly programs in the past. Examples of such programs in Texas include the previously mentioned LRGV program (APHIS, 2013), as well as the "Mexican Fruit Fly Cooperative Eradication Program, Cameron, Hidalgo, and Willacy Counties, Texas" (APHIS, 2012), and the "Mexican Fruit Fly Cooperative Eradication Program, Brooks County, Texas" (APHIS, 2009).

APHIS' authority for cooperation in the program is based upon the Plant Protection Act (Title 4 of the Agricultural Risk Protection Act of 2000). This Act authorizes the Secretary of Agriculture to carry out operations to eradicate insect pests, and to use emergency measures to prevent the dissemination of plant pests new to, or not widely distributed throughout, the United States.

This EA analyzes the environmental consequences of alternatives which have been considered for Mexfly eradication, and considers, from a site-specific perspective, environmental issues relevant to this particular program. Alternatives for Mexfly eradication have been discussed and analyzed comprehensively by APHIS and its cooperating partners since 1984.

APHIS first evaluated the environmental impacts of fruit fly control technologies in the "Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001" (EIS1) (APHIS, 2001). APHIS reexamined its findings and introduced an additional tool for eradication in the "Use of Genetically Engineered Fruit Fly and Pink Bollworm in APHIS Plant Pest Control Programs, Final Environmental Impact Statement—2008" (EIS2) (APHIS, 2008). Both EIS1 and EIS2 consider fruit fly risks and mitigations at the programmatic level. This case-specific EA incorporates the findings of EIS1 and EIS2 by reference. The eradication measures being considered for this program have been discussed and analyzed comprehensively within the fruit fly chemical risk assessments (APHIS, 1998a, 1998b) and risk assessments for spinosad (APHIS, 2003, 1999). These documents are also incorporated by reference and summarized within this EA.

II. Alternatives

Alternatives considered for this proposed program include (A) no Federal action, (B) quarantine and commodity certification, and (C) the preferred alternative, eradication using an integrated pest management (IPM) approach. Component techniques of alternative C include the use of chemical pesticides to facilitate the timely elimination of the current Mexfly infestation.

A. No Action

The no action alternative would involve no Federal effort to eradicate Mexfly or restrict its expansion from the infested areas. In the absence of a Federal effort, quarantine and control would be left to State 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 action" might be the only reasonable alternative for some sensitive sites; in such cases, lack of action could lead to a continuing and expanding infestation. An expansion of the infestation would likely result in substantial economic losses to growers in the United States, as well as the loss of U.S. export markets.

B. Quarantine and Commodity Certification

This alternative combines a Federal quarantine with commodity treatment and certification. Regulated commodities harvested within a quarantined area would be restricted to movement within that area, unless treated with prescribed treatments and certified for movement to outside the area. For a large infestation, intensive quarantine enforcement activities might be necessary, including the safeguarding of local fruit stands, mandatory baggage inspection at airports, and judicious use of road patrols and roadblocks. The quarantine actions of this alternative would result in a reduction of human-mediated movement of Mexfly in host plant materials outside the quarantined area; however, the infestation could 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 certificate, or limited permit, contingent upon commodity treatment, or the grower or shipper complying with specific conditions designed to minimize pest risk and prevent the spread of Mexfly. Control methods that may be used in this alternative include regulatory chemicals, cold treatment, vapor heat treatment, and irradiation treatment. Regulatory chemical treatments include fumigation with methyl bromide, and topical

bait spray made of a mixture of spinosad or malathion with a protein hydrolysate bait. (Refer to EIS1 (APHIS, 2001) for more detailed information about the chemicals and their uses.) Cold treatment, vapor heat treatment, or irradiation treatment of certain produce (as a requirement for certification and shipping) must be done in facilities that are inspected and approved by APHIS.

C. Eradication Using an IPM Approach (Preferred Alternative)

APHIS' preferred alternative for the LRGV Mexfly program is eradication using an integrated pest management (IPM) approach. This alternative combines quarantine and commodity certification with eradication treatments. Eradication efforts may include any or all of the following:

- chemical control,
- sterile insect technique (SIT),
- physical control,
- cultural control, and
- regulatory control.

APHIS' cooperative Mexfly programs in Texas have well-established procedures and treatments. The proposed program for Mexfly host plants will be conducted by APHIS-approved personnel on quarantined property using chemical formulations and ground-based treatment protocols approved by APHIS.

Program officials are delineating quarantine areas and are identifying regulated entities that may be affected by the program. Mexfly surveillance and trapping will be carried out in the areas surrounding a detection site. Quarantine boundary lines may be expanded should a new Mexfly detection occur outside the core areas or the established quarantine zone. Growers will be able to move their harvested fruit out of the quarantined area, under a limited permit, to enclosed facilities for packing or processing into juice, or after methyl bromide treatment at a packing shed. (There is a commercial citrus packing shed inside the Weslaco program area near Donna, Texas (APHIS, 2014a). The facility is about 20 miles away from the Lyford program area.) Should the Mexfly quarantine spread to federally protected historical sites, wilderness, or tribal lands, program treatments will be restricted to those approved for the type of site in question.

An APHIS Mexfly eradication program can include ground applications of either malathion or spinosad bait, targeted around each fly detection site. Where Mexfly larvae are found, malathion or spinosad bait treatments may take the form of foliar sprays to host plants around an infested

property; eradication formulations are applied with hydraulic spray or hand-spray equipment. For the Weslaco and Lyford Quarantined Areas, a spinosad ground-based treatment will be applied to Mexfly-host plants in a 500-meter radius around each fly find, and will be repeated every 7 to 10 days (APHIS, 2014a and 2014d).

Sterile fly release across south Texas counties, in conjunction with targeted bait treatments, has been successful in controlling Mexfly outbreaks (APHIS, 2010). SIT will be conducted at the rate of 900 flies per acre to achieve quarantine-protocol density over the regulated areas (APHIS, 2014a and 2014d). For more detailed information on the alternatives for Mexfly control and their component methods, refer to the previously mentioned fruit fly risk assessments (APHIS, 2003, 1999, 1998a, 1998b).

Before taking action, program officials are to inform the public and impacted industry via press releases, meetings, and other forms of communication appropriate for the recipients. Notification letters will be sent to trading partners as they are identified. Given the potential impacts to commercial production, grove owners, packing sheds, nurseries, vendors, and other citrus industry operations will be notified of the Mexfly quarantine location and treatment schedule.

III. Potential Environmental Consequences

This EA analyzes the potential environmental consequences of alternatives which have been considered for Mexfly control, and considers, from a site-specific perspective, environmental issues that are relevant to this particular program.

A. No Action

It is possible that Federal support of Mexfly research could result in the discovery of improved methods of Mexfly control. In certain situations, however, lack of Federal control action could lead to a continuing and expanding infestation. An expansion of the infestation would likely result in substantial economic losses to growers in the United States, commodity scarcity and higher costs for U.S. consumers, and the temporary or permanent loss of U.S. export markets.

B. Quarantine and Commodity Certification

The quarantine actions of this alternative would result in a reduction of the human-mediated movement of Mexfly in host plant materials outside the

quarantined area; however, the infestation could remain established within the quarantine boundaries. A specific comparison of potential impacts from initiation of this alternative, relative to the preferred alternative, is provided within the environmental consequences section on the preferred alternative.

C. Eradication Using an IPM Approach (Preferred Alternative)

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

- no action,
- quarantine,
- regulatory chemical application (fumigation and bait spray application),
- eradication chemical applications (protein bait spray), and
- cold treatment.

Alternatives for Mexfly control have been discussed and analyzed comprehensively within EIS1 and EIS2 (APHIS, 2001, 2008), incorporated by reference and summarized within this EA. The control measures being considered for this program have also been evaluated within the fruit fly chemical risk assessments (APHIS, 1998a, 1998b) and risk assessments for spinosad (APHIS, 2003, 1999). These documents are incorporated by reference and summarized within this EA, as well. Environmental documentation for APHIS fruit fly control programs may be viewed online via the following links: APHIS fruit fly control program environmental documentation and APHIS GE control applications for plant health.

The LRGV's site-specific characteristics were considered with respect to the program's potential to affect human health, nontarget species (including threatened and endangered species), and environmental quality. In addition, potentially sensitive areas have been identified, considered, and accommodated through special selection of control methods and use of specific mitigation measures.

1. Affected Environment and Demographics

a. Land Characteristics and Demographics

The first Mexfly outbreak in Texas during 2014 has extended over portions of Hidalgo and Willacy Counties. The infestations confirmed as of January 27, 2014 center on residential property in dooryard trees and in proximity to commercial citrus groves. The Lyford Mexfly infestation is located about 1.6 miles outside Hidalgo County, and about 1.5 miles from the Cameron County border.

Local land use in the Mexfly-affected region of the LRGV is mainly agricultural, with rural residential neighborhoods and **s**cattered urban and light industrial districts. The LRGV is considered part of the South Texas Plains, which features a mixture of native grasses and scrub vegetation, mesquite, live oaks, and chaparral. The Texas citrus industry is almost totally located in the Lower Rio Grande Valley, with about 85 percent of the acreage in Hidalgo County and the rest in Willacy and Cameron Counties (Sauls, 2008).

The LRGV 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, n.d.). The local 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).

Although located in a floodplain, the LRGV was experiencing surface water losses from severe drought at the time of its 2013 Mexfly program; the region has largely recovered and at this time is reporting some dry conditions but no drought in the Mexfly program areas (see figure 1). Precipitation in the LRGV can average 26 inches per year; the growing season lasts 320 days, from late January until mid-December (Garza, n.d. (1) and (2); Garza and Long, n.d.; TSHA, n.d.(1), (2), and (3)).

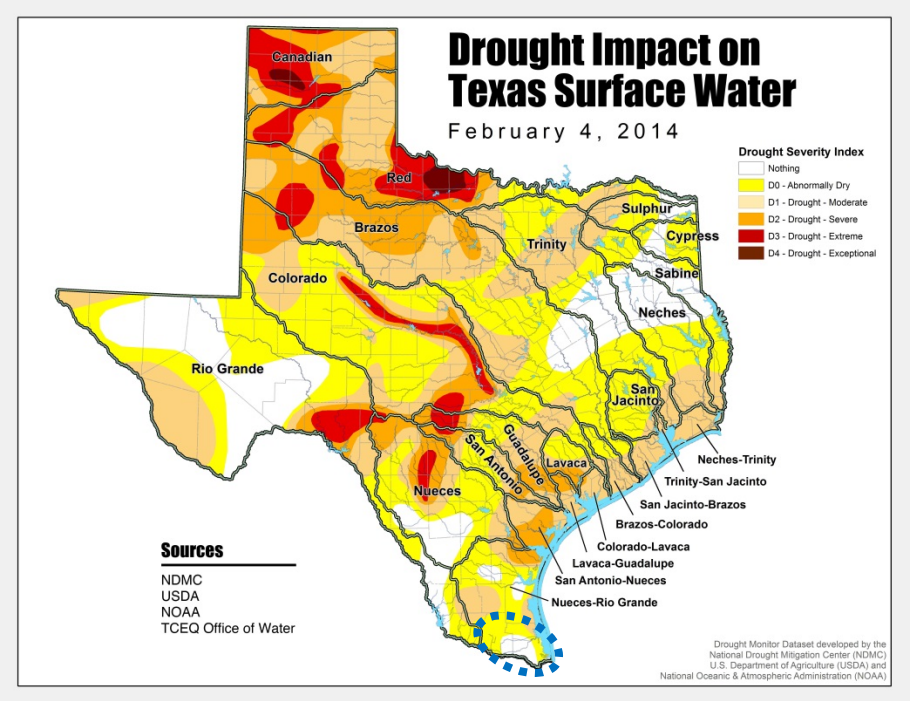

Figure 1. Surface water conditions in Texas as of February 4, 2014. Dotted oval encloses the three LRGV program counties. (TCEQ, 2014.)

Hidalgo County has a land area of over 1,570 square miles. It is located in the Rio Grande Delta in southern Texas and reported a year-round population of 806,552 in the 2010 U.S. Census (USCB, 2014a). It is bordered on the north by Brooks and Kenedy Counties, on the west by Starr County, on the east by Willacy and Cameron Counties, and on the south by the Rio Grande and Mexico. The county seat, Edinburg, is located about 10 miles from the city of McAllen, which has the highest recorded population in the county—an estimated 134,719 in 2012 (USCB, 2014b). The city of Weslaco is about 15 miles east of McAllen, in the southern portion of Hidalgo County. In 2012 it had an estimated population of almost 36, 850 (USCB, 2014c). As of January 17, 2014, the Weslaco Quarantined Area covered over 107 square miles (APHIS, 2014a) encompassing the cities of Weslaco, Donna, and Mercedes. The southernmost portion of the program area ends a little more than half a mile from the Mexican border.

Weslaco lies along U.S. Highway 83, about equidistant between the cities of Mercedes and Donna. The city of Mercedes is located 5 miles east of Weslaco, also off U.S. Highway 83; the city of Donna is 4 miles to the west. Mercedes occupies over 11 square miles, and Donna over 8 square miles (USCB, 2014d, 2014e). They are smaller cities than Weslaco, each with populations estimated at a little more than 16,200 in 2012 (USCB, 2014d and 2014e). Over a third of county inhabitants live below the

poverty level; many are less than fluent in English (USCB, 2014a). There are at least 943 recorded colonias[2] in Hidalgo County, of the more than 2,294 colonias in Texas (TX Secretary of State, n.d.).

The Hidalgo County Historical Corridor spans the southern portion of the county, and there are local parks such as Estero Llano Grande State Park, and units of conservations areas such as the Santa Ana National Wildlife Refuge and the Las Palomas Wildlife Management Area (Garza, n.d. (1); TSHA, n.d. (1)). A unit of the Lower Rio Grande National Wildlife Refuge is located inside the Weslaco program area.

Willacy County has a land area of slightly over 590 square miles, and a resident population estimated in 2012 to be 22,058 (USCB, 2014f). It is bounded on the north by Kenedy County, on the west by Hidalgo County, on the south by Cameron County, and on the east by the Gulf of Mexico.

Willacy County consists of flat coastal prairie sloping toward the Gulf of Mexico; the Padre Island National Seashore and a portion of the Texas Tropical Trail are protected areas, as are the county's salt lake and various parks and conservation areas such as the Laguna Atascosa National Wildlife Refuge (Garza, n.d. (2); TSHA, n.d. (2)). Over a third of county residents live below the poverty level; many are less than fluent in English (USCB, 2014f). There are 16 listed colonias in the county (TX Secretary of State, n.d.).

The nearest population centers to the Lyford Quarantined Area are Lyford, Texas, and Sebastian, Texas. Lyford is a small town with about 2,600 residents; it lies south of the county seat of Raymondville and is located on U.S. Highway 77, about 4 miles from the Mexfly detection site. Sebastian is closest to the Mexfly detection site; it is a small, unincorporated community having fewer than 1,950 residents in 2010. Sebastian is also located off U.S. Highway 77, at the southern boundary of Willacy County with Cameron County (USCB, 2014g). Portions of the Las Palomas Wildlife Management Area are located inside the Lyford Quarantined Area.

Portions of Cameron County have been affected by Mexfly infestations in the past, most recently in 2012 and 2013. The county is bordered by the Gulf of Mexico on the east, by Hidalgo County on the west, and by Willacy County on the north, and by the Rio Grande and Mexico on the south. It has a land area of over 890 square miles and reported a population of 406,220 in 2010 (USCB, 2014h). The county seat and its largest city is Brownsville. Over a third of county residents live below the

[2] "Colonias" are communities the Texas government defines as residential areas along the Texas-Mexico border that may lack some of the most basic living necessities, such as potable water and sewer systems, electricity, paved roads, and safe and sanitary housing (TX Secretary of State, n.d.).

poverty level; many lack fluency in English (USCB, 2014h). There are 31 listed colonias in the county (TX Secretary of State, n.d.).

Protected areas in Cameron County include Palo Alto Battlefield National Historic Site, Resaca de la Palma Site State Park, Port Isabel Lighthouse State Historic Structure, Brazos Island State Scenic Park, as well as other cultural and conservation sites. Hunting and fishing, both recreational and commercial, are possible throughout the year (Garza and Long, n.d.; TSHA, n.d. (3)).

Economic drivers in the LRGV include agriculture, trade, services, manufacturing, and hydrocarbon production (Combs, n.d. (1)). Texas is the nation's fourth-largest producer of sugarcane, and all of it is grown in the South Texas region, primarily in Hidalgo, Willacy and Cameron Counties (Combs, n.d. (2)). Major sources of income near the LRGV program areas are farming, ranching, and tourism, including nature tourism, recreational hunting, and freshwater and marine fishing. The area's mineral and oil deposits have led to the development of related commercial enterprises. Coastal and inland aquaculture of shellfish and finfish are also important industries (Garza, n.d. (1) and (2); Garza and Long, n.d.; TSHA, n.d. (1), (2) and (3)). Agribusiness is the mainstay of the economy in the program areas; Cameron, Hidalgo, and Willacy counties historically form the center of Texas commercial citrus production (Vigness and Odintz, n.d.). Citrus and other potential Mexfly hosts are also widely grown by residents in all three counties.

The LRGV population fluctuates due to the movements of migratory workers, tourists, sports enthusiasts, and seasonal visitors. There are also numerous undocumented residents in the region. Texas State highways and local farm-to-market roads cross the program areas and connect to the remainder of the United States, as well as nine international bridges to Mexico. Brownsville, Texas is the seaport nearest to either of the program areas, about 45 miles to the south; the next-closest ports of Corpus Christi (sea) and Laredo (inland) are about 150 and 175 miles away, respectively. Multiple domestic and international airports are within 200 miles of the current program areas. Weslaco's Mid Valley Airport recently received permission to land small aircraft from foreign areas (CBP, 2011). The closest major airports are McAllen-Miller International, located 18 miles west of Weslaco, and Valley International, located 13 miles from Sebastian in Cameron County.

b. Water Resources

All three counties contain "economically distressed areas" lacking sufficient water resources, as determined by the Texas Water Development Board (TWDB, 2013). Rainfall in September 2013 relieved the drought in the LRGV, but rainfall since then has been lower than average. The LRGV relies on ground and surface water for most drinking and irrigation needs. There are two major natural waterways in the region—the Rio Grande, which defines much of the international border between the United States and Mexico, and the Arroyo Colorado. Both river systems approach within a few miles of the program area. The Arroyo Colorado is an ancient channel of the Rio Grande River, extending from southern Hidalgo County across Cameron County and into Willacy County, Texas. 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). Canals and ditches inside the Weslaco program area flow into the Arroyo Colorado, whose waters have been impaired in part by pesticide runoff (EPA, 2010).

The Gulf Coast Aquifer and several reservoirs are located in the program area; both ground water and surface water resources in the region continue to be adversely affected by drought conditions, water impairment, and ongoing residential population expansion (Combs, 2014).

Delta Lake is the largest freshwater reservoir in the vicinity, located about 18 miles north of Weslaco and almost 11 miles northwest of Sebastian. Valley Acres Reservoir is about 8 miles north of Mercedes. Inland saline water bodies, known as La Sal del Rey (Hidalgo County) and La Sal Vieja (Willacy County), are each about 10 miles north of Delta Lake. La Sal del Rey and La Sal Vieja are home to a wide diversity of native plants and wildlife, and both lie within the LRGV National Wildlife Refuge. At present, only La Sal del Rey is accessible to the public. Both saline water bodies provide habitat for endangered and protected species, and are also sites of archeological interest (Fort, 2012; Coole, 2012).

The three counties are part of the Nueces-Rio Grande Basin, one of eight designated coastal basins in Texas (see figure 2). The Nueces-Rio Grande Basin is bounded on the north by the Nueces River Basin, on the south by the Rio Grande Basin, and by bays or other outlets to the Gulf of Mexico (TWDB, n.d.)

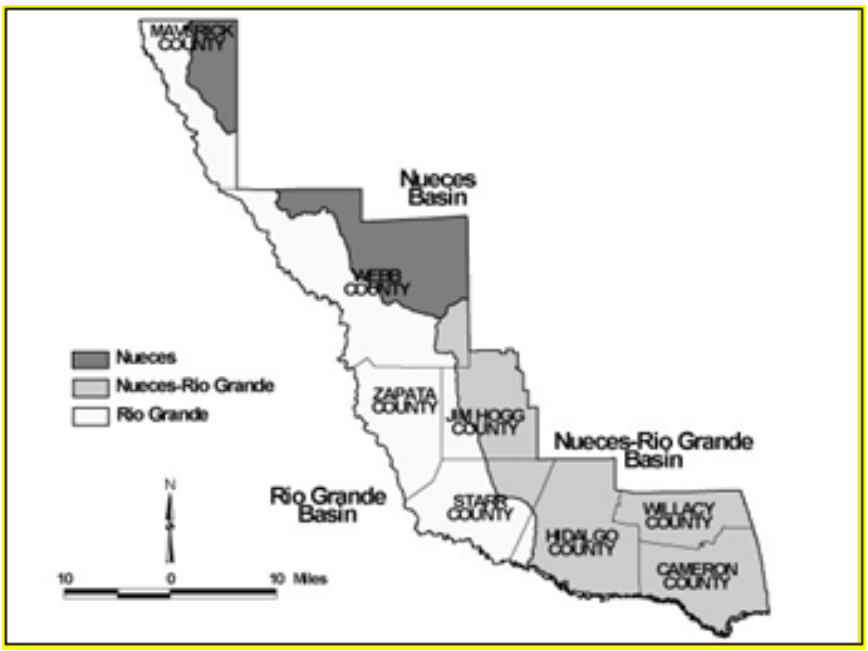

Figure 2. Rio Grande Region Water Planning Area (Region M). (State of Texas, 2010.)

Hidalgo County is located within four Texas watersheds, including Central Laguna Madre, South Laguna Madre, Los Olmos, and the Lower Rio Grande (EPA, 2012). The Rio Grande forms the county's southern border, and is the county's main source of potable and irrigation water. Water is stored in regional reservoirs, and then sent to local water treatment plants for disinfection and purification (LRGVDC, 2009).

Willacy County crosses two Texas watersheds: Central Laguna Madre and South Laguna Madre (EPA, 2012). Potable water and water for irrigation and recreational purposes in Willacy County are obtained primarily from the Rio Grande via neighboring Cameron County. The water is stored in reservoirs and lakes, and then sent to treatment plants. The Sebastian community completed setting up its first wastewater service in 2013, financed in part by USDA (TWDB, 2013).

Cameron County is located within two Texas watersheds: South Laguna Madre and Lower Rio Grande (EPA, 2012). The Rio Grande forms part of the county's southern border and is the county's main source of potable and irrigation water. Facility plans for water projects in rural areas of the county were completed in 2013; construction is being funded by USDA (TWDB, 2013).

Abnormally dry conditions continue to result in mandatory water conservation, recycling, and restricted use throughout much of Texas. In southern Texas, the spread of invasive aquatic weeds, international treaty issues and increased demand are also threatening long-term water

availability (LRGVDC, 2009). The vast majority of the Rio Grande water available to the region—more than 94 percent—comes from supplies stored in the international Amistad and Falcon Reservoir System, owned by the United States and Mexico, and administered by the International Water and Boundary Commission (State of Texas, 2010).

The Rio Grande Regional Water Planning Group (RGRWPG) is one of 16 regional groups set up under Texas State law to conduct long-range analysis of water needs and to develop water management strategies to meet those needs. RGRWPG covers eight counties along the mid and lower Rio Grande, including Cameron, Hidalgo, Jim Hogg, Maverick, Starr, Webb, Willacy, and Zapata. (See figure 2 for a map of the eight counties in the group.) Maintaining water quality standards is crucial for LRGV communities like those in the program area who are dependent upon limited quantities of surface water (LRGVDC, 2009).

2. Human Health

The principal concerns for human health are related to the program use of three chemical pesticides including malathion bait, spinosad bait, and methyl bromide (a fumigant). The three major factors influencing the human health risk associated with pesticide use include: (1) fate of the pesticides in the environment, (2) their toxicity to humans, and (3) potential exposure to humans. While not taking Federal action does not expose the public to the planned program pesticides, human health and safety could be indirectly affected by unrestrained eradication activities. These indirect impacts are also expected to occur under the quarantine and commodity certification alternative. Each of the program pesticides of the preferred alternative is known to be toxic to humans; the preferred alternative includes mitigation measures to limit pesticide exposures.

Exposure to program pesticides can vary, depending upon the pesticide and the use pattern. The potential exposure hazard is low for methyl bromide, but not for malathion or spinosad bait. Program use of malathion and spinosad bait is therefore limited to regulatory treatments only, and applied primarily to commercial groves where exposure to the general public is unlikely. The analyses and data of EIS1 and EIS2 and the associated human health risk assessments indicate that exposures to pesticides from normal program operations are not likely to result in substantial adverse human health effects. (Refer to EIS1 and EIS2 (APHIS, 2001, 2008) and the supporting human health risk assessments (APHIS, 1999, 1998a) for more detailed information relative to human health risk.)

Another mitigation measure that will further minimize exposure of humans to program pesticides is the requirement for public notification. The public will be kept informed of the Mexfly eradication program via written notices and news releases to the media. Residents and property

owners will be notified prior to treatment or fruit removal and will be provided access to information regarding Mexfly program locations, activities, and treatments. The information will include a schedule to show the timing of program activities and treatments; harvest protocols for the public to follow before implementation of the program and guidelines for post-treatment will also be provided.

In general, a well-coordinated eradication program using IPM technologies is expected to result in the least usage of chemical pesticides overall, and to have the least potential to adversely affect human health. The no action alternative or quarantine and commodity certification alternative would not eliminate Mexfly as readily or as effectively as the eradication alternative. Over a protracted time period, there would likely be broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impacts to human health.

3. Other Aspects of the Human Environment

Potential environmental impacts of implementing the action alternatives have been considered regarding minority and/or low-income communities, tribal interactions, and historical and culturally sensitive sites in the program area. Not taking Federal action could result in adverse economic and health impacts on affected producers and consumers, such as decreased harvests, higher consumer prices, loss of employment, reduced nutritional options, loss of market share, compromised mental and physical health, loss of property, and the like. These indirect impacts are expected to occur to a lesser extent under the quarantine and commodity certification alternative. No adverse effects are anticipated as a result of carrying out the preferred alternative's surveillance activities, trapping, SIT, or program chemical applications.

The National Historic Preservation Act of 1966, as amended (NHPA; 16 U.S. Code § 470 et seq.) requires Federal agencies to consider the impact on properties included in, or eligible for inclusion in, the National Register of Historic Places (36 Code of Federal Regulations §§ 63, 800). The Archaeological Resources Protection Act of 1979 (16 U.S. Code §§ 470aa-mm), secures the protection of archaeological resources and sites on public and Indian lands. Federal agencies identify and address disproportionately high and adverse human health or environmental effects of its proposed activities as described in Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" and Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks." According to the Texas Historical Commission, a project may be subject to the jurisdiction of the Antiquities Code of Texas if it will have an effect on a State Archeological Landmark (THC, 2014).

At this time, implementation of the preferred alternative is not expected to have adverse impacts on historic or culturally sensitive sites that APHIS identified within the Hidalgo-Willacy-Cameron area. APHIS intends to restrict program treatments and activities to protect these sites on an as-needed basis. The proposed action will not cause ground disturbance; however, if APHIS discovers any archaeological resources, the appropriate individuals will be notified.

a. National Historic Preservation Act

APHIS initiated consultation with the State Historic Preservation Office (SHPO) for Texas on January 29, 2014. The Mexfly project area to be evaluated by the SHPO includes Hidalgo, Willacy and Cameron Counties. There are 20 in-use registered historic sites in Hidalgo County, 23 in Cameron County, and two in Willacy County (Anon., 2013 a). All appear to be buildings except for: (a) the Louisiana--Rio Grande Canal Company Irrigation System, McAllen Ranch, Oblate Park Historic District, and Rancho Toluca in Hidalgo County; (b) Brownsville City Cemetery and Hebrew Cemetery, Garcia Pasture Site, Palmito Ranch Battlefield, Palo Alto Battlefield, the Resaca de la Palma Battlefield in Cameron County; and (c) King Ranch in Willacy County. Additionally, the Weslaco Cemetery is a non-registered historic property in Hidalgo County that opened in 1921 (Anon., 2013 b).

APHIS will not permit aerial chemical applications at locations identified as having historical or archeological importance. Hand spraying with a backpack sprayer may be permitted after consultation with the SHPO. Aerial SIT, surveillance trapping, and fruit stripping by hand will be permitted. Therefore, historic properties will not be adversely affected by the proposed action.

b. Native American Considerations

Using the Native American Graves Protection and Repatriation Act Online Databases (NPS, 2013; 25 U.S. Code §§ 3001 et. seq.), APHIS determined that there is only one Tribe in the region. The Kickapoo Reservation is located approximately 250 miles from the quarantine area in Hidalgo County. APHIS met with the Kickapoo Tribe on February 4, 2013 to review the Tribe's needs, interests, and concerns. During the discussion, the Tribal Administrator reiterated that the Kickapoo Tribe does not have any land holdings within the Lower Rio Grande Valley area (Roberta Duhaime, personal communication, 30-January-2014).

c. EO 12898, Environmental Justice

Colonia is a term used in the southwestern States to describe a subdivision where developers divide the land into small lots and offer affordable housing to low-income families. These lots are often purchased through a contract for a deed with a low down payment and low monthly payments. The title for the house is not issued until the final payment is made by the homeowner (Anon., 2013 c). Housing in these locations is built by residents over time as they can afford materials. Consequently, many residences lack connections to sewers or running water, and residents may not be able to access water lines because their homes do not meet county building codes (Anon., 2013 c).

In Hidalgo County, 90.9 percent of the population identifies itself as Hispanic or Latino (USCB, 2014a). In Cameron County, the percentage is 88.4 (USCB, 2014h) and 87.3 percent in Willacy County (USCB, 2014f). To meet the needs of these groups, advance notice of program activities and potential exposure hazards will be provided to members of colonias and other non-English-speaking populations or people in areas that generally lack access to news media.

There are numerous schools within the quarantine areas; however, the proposed program does not pose any disproportionate adverse effects to children, minority, or low-income populations because these individuals are unlikely to be present when APHIS applies treatments or otherwise become exposed to the applied products.

4. Nontarget Species

Potential environmental impacts of alternative A (the no action alternative) or alternative B (quarantine and 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 program pesticides. Paralleling human health risk, the risk to nontarget species is related to the pesticides' fate in the environment, their toxicity to the nontarget species, and their exposure to nontarget species.

All of the pesticides considered in this EA are highly toxic to invertebrates, although the likelihood of exposure (and thus, impacts) varies a great deal from pesticide to pesticide and with the 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 and 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. (Refer to EIS1 and EIS2 (APHIS, 2001, 2008) and the supporting nontarget risk assessments (APHIS, 2003, 1998b) for more information on risks to all classes of nontarget species.)

Conservation areas in the LRGV provide important habitat for a wide variety of wildlife that cannot be seen anywhere else in the United States. The LRGV contains numerous protected wetlands, parkland and refuges; among others, units of the Las Palomas National Wildlife Management Area (Las Palomas WMA), the Laguna Atascosa National Wildlife Refuge, and the Lower Rio Grande Valley National Wildlife Refuge lie inside or within 30 miles of current Mexfly program areas. (A unit of the LRGV National Wildlife Refuge lies within the current Weslaco program area, and two units of the Las Palomas WMA overlap the Lyford program area. See appendix C for distances between Mexfly program areas and LRGV conservation areas). 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. Code 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.

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

More than 500 species of birds have been documented in the Rio Grande Valley. The LRGV is an important migration corridor that provides suitable habitat for many bird species. Two units of the Las Palomas WMA, which preserves nesting habitat for white-winged doves (TPWD, n.d.), lie inside the Lyford quarantine boundary and fewer than 3 miles from the core area. APHIS evaluated the proposed Mexfly program in terms of potential impact on migratory avian species. Implementation of the preferred alternative is not expected to have any adverse effect on migratory birds or their flight corridors.

b. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) and ESA's implementing regulations require Federal agencies to consult with the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service to ensure that their actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat.

There are 14 federally listed species in Cameron, Hidalgo, and Willacy Counties: ocelot (*Leopardus pardalis*), Gulf Coast jaguarundi (*Felis yagouaroundi*), West Indian manatee (*Trichechus manatus*), northern aplomado falcon (*Falco femoralis septentrionalis*), piping plover (*Charadrius melodus*), 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*), South Texas ambrosia (*Ambrosia cheiranthifolia*), Texas ayenia (*Ayenia limitaris*), Walker's manioc (*Manihot walkerae*), and star cactus (*Astrophytum asterias*). In addition, there are two bird species proposed for listing as threatened, the yellow-billed cuckoo (*Coccyzus americanus*) and red knot (*Calidris canutus rufa*). 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. This programmatic consultation is updated yearly to include any new listed species in the three counties.

APHIS coordinates with the FWS, Ecological Services Field Office in Corpus Christi, Texas, before implementing Mexfly program activities. FWS reviews maps of the quarantined area, and notifies APHIS if listed species are present in the program area. If listed species are present, APHIS implements protection measures for those species, as described in the programmatic BA.

5. Environmental Quality

The principal environmental quality concerns are for the protection of air quality, water quality, and the minimization of the potential for environmental contamination. In relation to preserving environmental quality, program pesticides remain the major concern for the public and the program. Under the no action alternative or the quarantine and commodity certification alternative, pesticides could potentially be employed in more formulations, at higher frequency, and in broader areas than allowed under the preferred alternative. Although program pesticide use is limited, especially in comparison to other agricultural pesticide use, implementing the preferred alternative would result in a controlled release of chemicals into the environment. The fate of those chemicals varies with respect to an environmental component (e.g., air, water, or other substrate) and its characteristics (temperature, pH, dilution, etc.). The environmental fates of spinosad, malathion, and methyl bromide are outlined below. (Refer to EIS1 and EIS2 (APHIS, 2001, 2008) for more detailed consideration of program pesticides' environmental fates.)

- Spinosad adsorbs strongly to soil particles, and is unlikely to leach to great depths. Dissipation half-lives for spinosad in the field may last 0.3 to 0.5 day. It is photodegraded quickly on soil exposed to sunlight, but the degradation rate is decreased at longer exposure times. Spinosad is quickly metabolized by soil micro-organisms under aerobic conditions, and has a half-life of 9.4 to 17.3 days. Because natural water bodies and rain are generally not of basic pH, spinosad will not hydrolyze in them or on moist plant surfaces. Aqueous photolysis is rapid in natural sunlight (half-life of less than 1.0 to 1.6 days), and is the primary route of degradation in aquatic systems exposed to sunlight. Under anaerobic conditions, the degradation rate is slower, between 161 and 250 days. Spinosad has a half-life of 2.0 to 5.3 days on foliar surfaces. After initial photodegradation, residues are available for metabolism by plant biochemical processes. Effects from residues of individual treatments are no longer detectable in environmental substrates within a few weeks of application (Kollman, 2003).

- Malathion is toxic to many nontarget species; it is used less widely than spinosad, and primarily by commercial growers on private property. Malathion is considered lower in toxicity and less persistent (1 to 25 days in soil) than other organophosphorus pesticides. In water, malathion has a half-life of approximately 1 week, and is more stable in acidic aquatic conditions. Malathion is soluble in water, and can be highly mobile in soil. Generally, degradation occurs rapidly; application to foliage allows for exposure of residues to degradation from processes (e.g., photolysis), resulting in a reduced potential for significant movement to ground water.

Malaoxon is an oxygen analogue of malathion, and it can be found either as an impurity in malathion products, or can be generated during the oxidation of malathion in air or soil. Malathion and malaoxon can be transported in air over large distances and elevations (Newhart, 2006).

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

Urban and agricultural runoff may flow directly into local waters, picking up trash, dirt, chemicals, and other contaminants along the way. The Mexfly eradication plan calls for ground-based spray applications to host plants inside core-area boundaries, and no-spray buffers around all sensitive sites, including all water bodies. (See appendices A and B for further information about the current core areas.) This method of application is designed to minimize the potential for the harmful introduction of program chemicals to local marine and freshwater resources.

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

The proposed program area was examined to identify characteristics that would tend to influence the effects of program operations. Potentially sensitive areas were identified, considered, and accommodated, as necessary, through special selection of control methods and the 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 potentially adverse impacts to bodies of water are described in EIS1 (APHIS, 2001).

6. Cumulative Impacts

This section considers the potential of the alternatives to cause cumulative impacts on the human environment. Not taking Federal action is expected to result in the cumulative impacts that arise from tolerating uncontrolled Mexfly infestations in the United States. The quarantine and commodity certification alternative places the burden of control efforts and expense on producers already engaged in complying with other quarantine and commodity certification requirements. Also, this alternative may increase the time it takes for commodities to reach their intended markets, or may prevent them from reaching consumers at all, which may contribute to negative public perception of the affected industry. APHIS considered implementation of the preferred alternative in the context of, and in conjunction with, other pest insect eradication and quarantine projects in the program area (such as pink bollworm), and those proposed for the area (such as cattle fever tick eradication efforts).. The combination of different pesticide chemistries, targets for application, and application timings for these programs suggest interacting or multiple exposures are not likely to create significant cumulative impacts in the human environment.

Texas conducts continual SIT and monitoring in designated counties at risk of Mexfly infestation. Aerial sterile release for confirmed infestations occurs at a rate of 900 flies per acre (APHIS, 2014a and 2014d). No significant environmental impacts are expected to result from proper implementation of the Mexfly eradication and control program in the Weslaco Quarantined Area. There are no other regulated areas for Mexfly in the mainland United States.

The Mexfly program for the Quarantined Areas in the LRGV was examined for potential synergistic and cumulative environmental impacts. Malathion is one pesticide approved for use against Mexfly; it is also a prescribed treatment for the Texas cotton boll weevil eradication program. The use of malathion in a Mexfly program within the Texas boll weevil quarantine (currently active in the counties of Brooks, Cameron, Hidalgo, Jim Hogg, Kenedy, Maverick, Starr, Webb, Willacy, and Zapata) should therefore be monitored and adjusted, where necessary, to minimize environmental impacts (TBWEF, 2014). Other treatments for potentially overlapping eradication programs in southern Texas target different insect species, and do not affect the same nontarget organisms (TDA, 2014b). Additional eradication and quarantine programs affecting the LRGV at the time of preparation of this EA (TDA, 2014b), are designed to target plant pests including, but not limited to, Asian citrus psyllid and citrus greening.

There are no significant cumulative impacts anticipated as a consequence of the program or its use of component treatment measures. Residual impacts have not been reported from previous Federal and non-Federal actions targeting fruit fly infestations in the proposed program area, and APHIS does not anticipate any reasonably foreseeable future actions that could result in incremental increases in environmental effects.

Based on APHIS' review of the context and intensity of the existing ongoing and potential future treatments, there will be no cumulative impacts to the human environment resulting from this program.

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

IV. Agencies Consulted

State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, TX 78701

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

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Policy and Program Development
Environmental Risk and Analysis Services
4700 River Road, Unit 149
Riverdale, MD 20737–1238

U.S. Fish and Wildlife Service
Ecological Services
c/o TAMU-CC,
6300 Ocean Drive, Unit 5837
Corpus Christi, TX 78412

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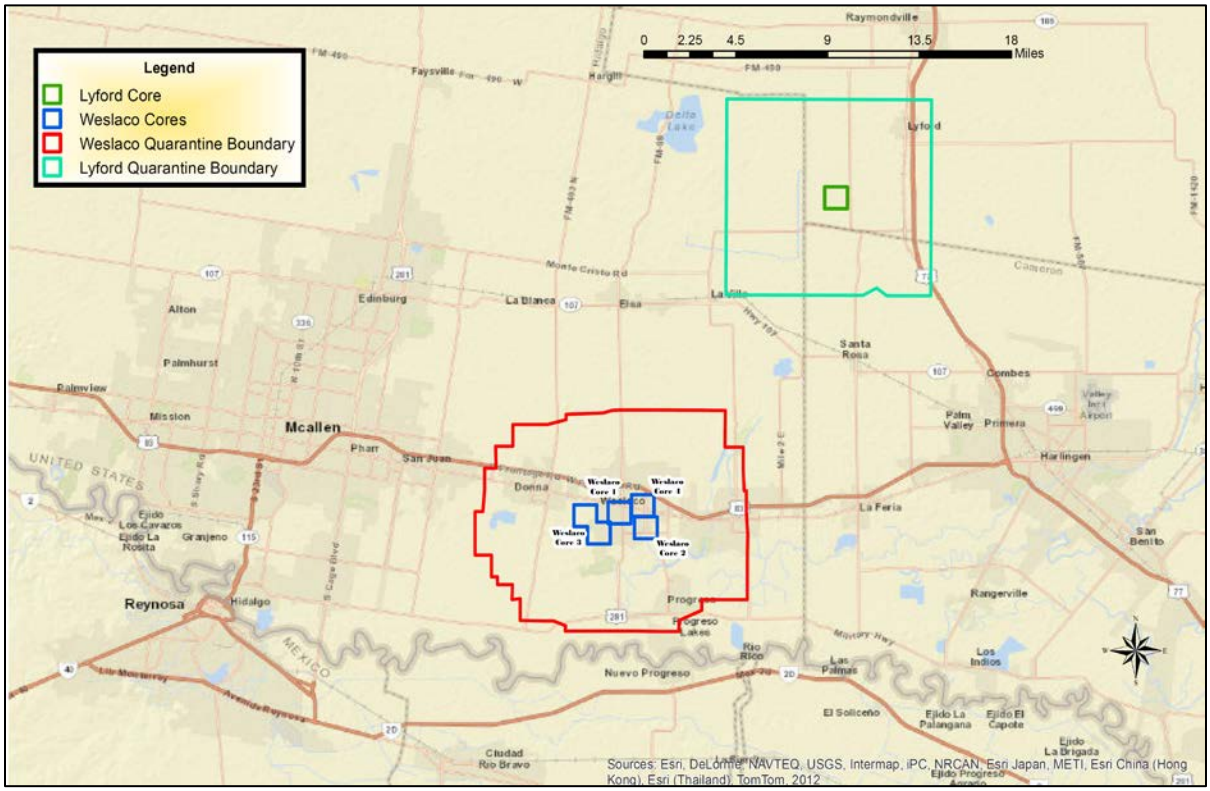
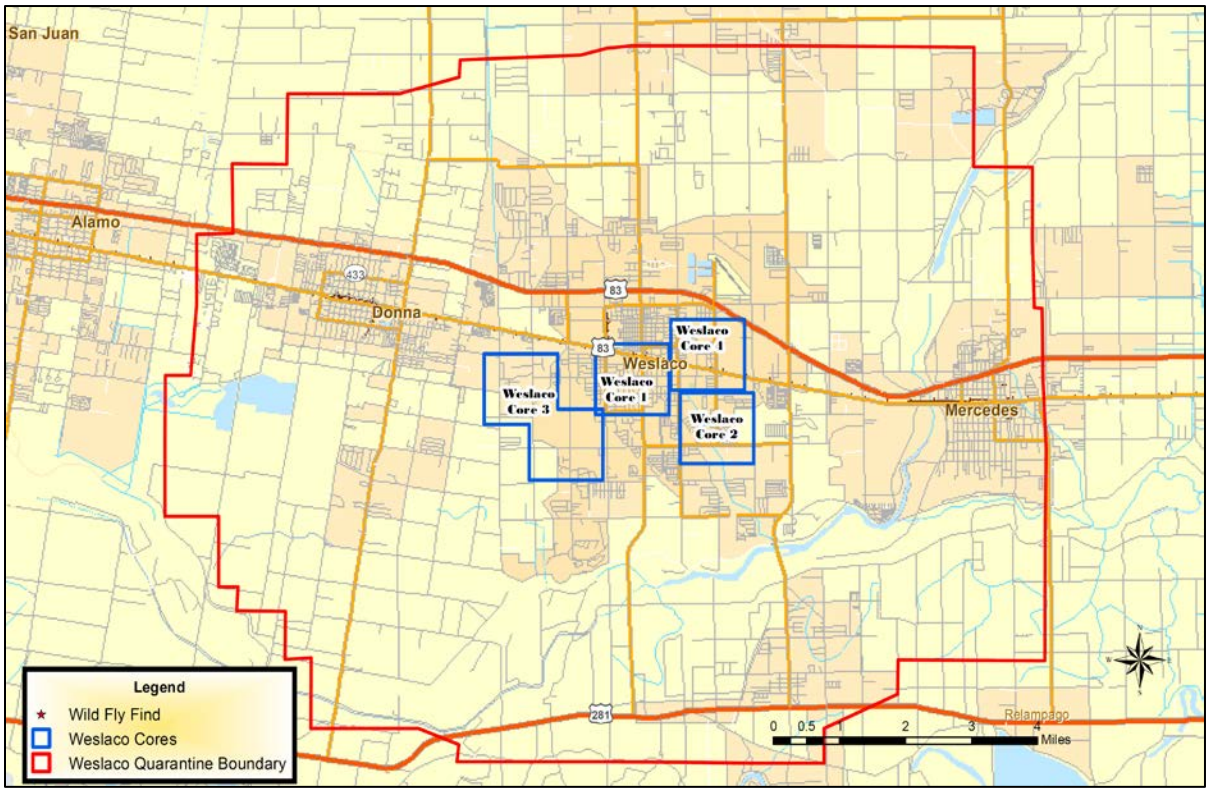
Appendix A. Lower Rio Grande Valley Mexfly Quarantined Areas, Texas—February 2014



Date of Map: 11 February 2014. **Source:** USDA-APHIS-PPQ

Appendix B. Detail of Lyford and Weslaco Quarantined Areas as of February 6, 2014

Date of Map: 23 January 2014. **Source:** USDA-APHIS-PPQ



Date of Map: 6 February 2014. **Source:** USDA-APHIS-PPQ

Appendix C. Distances from Mexfly Program Areas in the LRGV as of February 3, 2014

From	To	Miles [rounded to tenths]
Willacy County: January 21 fly find	Cameron County border	1.5
Willacy County: January 21 fly find	Hidalgo County border	1.6
Weslaco quarantine boundary	Nearest unit of Lower Rio Grande Valley NWR	0 – unit is inside quarantine
Lyford quarantine boundary	Frederick Unit: nearest of Las Palomas WMA	0 – unit is inside quarantine
Lyford quarantine boundary	Longoria Unit: nearest of Las Palomas WMA	0 – unit is inside quarantine
Lyford quarantine boundary	Nearest unit of Laguna Atascosa NWR	25.0
Lyford quarantine boundary	Nearest unit of Lower Rio Grande Valley NWR	5.3
Lyford core area	Frederick Unit: nearest of Las Palomas WMA	1.8
Lyford core area	Longoria Unit: nearest of Las Palomas WMA	3.1
Lyford core area	Nearest unit of Laguna Atascosa NWR	28.8
Lyford core area	Nearest unit of Lower Rio Grande Valley NWR	10.0

Source: USDA-APHIS-PPD